## Operational and Financial Budgeting

For more on how the rise in Cisco's inventories and receivables affects its prospects, check the article "Indecent Inventory Exposure" by Mike Orig at http://www.fool.com/ portfolios/rulemaker/2001/ rulemaker010314.htm.


## Learning Objectives

After reading this chapter, you should be able to:

- Explain how budgeting relates to the major functions of management.
- Describe the components and organization of a comprehensive budget.
- Describe several methods managers use to forecast sales and some of the problems of using each method.
- Describe two approaches to setting budget allowances for costs and the types of costs for which each is appropriate.
- Describe behavioral problems associated with budgeting.
- Prepare a budgeted income statement, a purchases budget, a cash budget, and a budgated balance sheet.
- Describe the leads and lags that complicate the budgeting of Gash receipts and disbursements.
- List several ways that managers might resolve cash deficiencies revealed by a cash budget.
- Describe similarities and differences between budgeting in for-profit and not-for-profit entities.
- State how zero-based budgeting and program budgeting differ from other budgeting processes.

Cisco Systems was the darling of Wall Street through early 2000, with high and rapidly growing profits and a soaring stock price. When networkequipment orders were soaring in the late 1990s, Cisco increased its ordering of communications chips, optical lasers, and subassembly boards based on optimistic sales forecasts. Its inventories increased rapidly. Unfortunately, the dot-com implosion and deteriorating economic conditions in the United States and abroad caused sales to decline sharply, leaving Cisco with billions of dollars in obsolete materials and components. (It is all the more interesting that Cisco was one of the companies featured in the previous edition of this book as having driven its inventories to very low levels, thereby reducing risks.) In one quarter the company warmed that "Due to the current slowdown in the economy, our current inventory levels are higher than our current sales forecasts, which could result in obsolescence charges or loss of cost savings on future inventory purchase. . . " Accounts receivable had also increased rapidly and Cisco stated that it maintained "appropriate accruals for such exposures," but also noted that some customers posed considerable credit risk. Cisco subsequently took a $\$ 2.25$ billion writeoff of obsolete inventory that it had built up over preceding periods. Its stock price had fallen over 80 percent.

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revious chapters focused on profit. To earn profits, managers must pay attention to inventories and receivables. More and more, companies, and financial analysts, are looking to cash flow and working capital management as a critical measure of success. Cash flow is vital to survival, and even short-term problems with cash can severely harm a company. The previous Cisco example shows how failure to anticipate changes severely hurt the company. The importance of cash flow is illustrated in comments from SEC filings and annual reports. Ariba, the B2B software provider, says, "We believe that our existing cash and cash equivalents and our anticipated cash flow from operations will be sufficient to meet our working capital and operating resource expenditure requirements for at least the next year. After that, we may need to raise additional funds and we cannot be certain that we will be able to obtain additional financing on favorable terms, if at all. If we cannot raise funds on acceptable terms, if and when needed, we may not be able to develop or enhance our products and services, take advantage of future opportunities, grow our business or respond to competitive pressures or unanticipated requirements, which could seriously harm our business."

Because of its high sales volume and rapid inventory turnover, Costco, the membership warehouse giant, receives cash from the sale of a substantial portion of its inventory even before it has to pay its merchandise vendors. The company says, "As sales in a given warehouse increase and inventory turnover becomes more rapid, a greater percentage of the inventory is financed through payment terms provided by vendors rather than by working capital."

Managing working capital has another aspect, current liabilities. They are sources of financing just like long-term/debt and common stock. Some companies make extensive use of trade accounts payable, in effect having their vendors finance part of their operations. For instance, Wal-Mart maintains accounts payable at about 48 percent of inventory, so that its vendors finance nearly half of inventory. Costco keeps payables at 80 percent of inventory. Of course, the downside to high payables is that vendors might become edgy and the company's credit rating could suffer. Paradoxically, it is often rapidly-growing companies that run out of cash. Applied Materials, the world's leading manufacturer of semiconductor manufacturing equipment, commented that its cash fell "during periods of revenue growth" because the company "incurs costs and expends cash in advance of receiving cash from its customers."

Interpreting and carrying out the strategies of a company require operational plans, including budgets. Budgets help to ensure that the functional areas of a business (marketing, production, personnel, finance, administration) work in harmony to achieve goals. Production people must make products that marketing can sell, but must not overproduce, because having too much inventory causes excessive costs for storage, insurance, taxes, interest, and the risk of obsolescence. For the same reason, a purchasing manager must not overpurchase, yet must ensure that materials and components are available to meet production schedules. Finance personnel must make cash available to pay for materials, labor, and other operating costs, as well as for dividends, acquisitions of assets, and debt repayments.

The plans of the business must be specified in sufficient detail that the managers of functional areas know what they must do to ensure smooth performance for other areas and for the company as a whole. Companies use comprehensive budgets to coordinate all of these activities.

## COMPREHENSIVE BUDGETS

A comprehensive budget, or master budget, is a set of financial statements and other schedules showing budgeted, expected, or pro forma results for a future period. A comprehensive budget normally contains an income statement, a balance sheet, a cash budget (statement of cash receipts and disbursements), and schedules of production, purchases, and fixed-asset acquisitions. The budget package also might have other components, depending on the entity's needs.

Comprehensive budgeting requires careful studies of cost behavior patterns. Budgeted income statements are similar to the income statements you developed for CVP analysis and for making short-term decisions. But budgeting involves more than CVP analysis. For instance, budgeting cash collections requires both predicting sales and estimating the pattern of cash collections (how much do we collect within 30 days? within 60 days?). Predicted cash collections from sales combine with cash receipts from planned borrowing and other sources to become a cash receipts budget. Exhibit 6-1 offers an overview of the relationships among the components of a typical comprehensive budget. You should refer to this exhibit as we discuss these relationships and the components in detail in this chapter.

Comprehensive budgeting is more complex than CVP analysis because a change in a single assumption affects the whole set of budgets, not just one or a few items in an income statement. For example, changing budgeted sales for a particular month affects not only budgeted variable costs and profit, but also plans for purchasing, the timing and amounts of expected cash receipts, payments for purchases, and perhaps even loans that must be negotiated. The ripple effects of changes in budgets make budgeting ideal for using computer spreadsheets.

Exhibit 6-1 Overview of the Relationships Among the Components of a Comprehensive Budget


Spreadsheet users can develop simple budgeting models and sophisticated software is available for complex applications that a spreadsheet cannot handle.

## Budgets and Planning

The comprehensive budget derives from corporate strategies and tactics. Formal planning requires explicit statements not only of objectives (such as sales volume and profit) but also of the means required to achieve them.

Budgets often reveal incompatibilities and conflicts. For example, a budget calls for high sales in the early part of the year, but the production manager finds that productive capacity is insufficient. The comprehensive budget also incorporates the current effects of plans for long-term financing and for acquisitions of major long-lived assets. The development of those long-term plans, and the related decision making, are discussed in Chapters 7 and 8.

## CHAPTER 8 -

## Budgets and Control

Budgets express targets or goals. Actual results express achievements. Comparing budgeted and actual results helps managers control future operations and provides a useful basis for evaluating performance. Problems showing up in the comparisons prompt managers to take corrective action.

Comparisons are meaningful only if expectations are reasonable and consider all available information. Usually, people who have participated in the development of their budgets are more likely to achieve budgeted results than those whose budgets have been imposed. Some like to compare current and prior periods, but past performance is often a poor standard for comparison. First, circumstances change. A company might change its marketing strategy by lowering selling prices and spending less on sales-promotion efforts (a strategy adopted by General Mills in the mid-1990s). Or perhaps managers believe that, in the second year of producing one of its products, some production costs will be lower than in the first year because workers are more familiar with their tasks. (The cost effects of learning are presented in Chapter 11.) Second, comparisons with past performance tell nothing about whether current performance is as good as it should be. A student whogets 38 percent on one examination and 42 percent on the next has improved but is still not performing adequately. Companies adopting the continuous improvement (Kaizen) philosophy, which is discussed more extensively in Chapter 11, set specific cost reduction targets based on past performance.

## Contents and Organization of Budgets

Budgets usually cover specific time periods. Most companies prepare a budget for the upcoming fiscal year, and for monthly or quarterly periods within that year. Many companies also prepare budgets for longer periods such as two, three, or five years. Because of forecasting difficulties, annual budgets and segments of longer-term budgets are less detailed than are budgets for periods closer at hand. Thus, the budget for one year out is more detailed than one for five years out.

Virtually all companies prepare a separate capital budget-a schedule of planned expenditures for long-lived assets. A capital budget often covers several years into the future. Forecasted expenditures from the capital budget become part of the cash budgets for the appropriate periods. Chapters 7 and 8 treat capi-

The budget for the current year usually contains budgets for shorter periods, because monitoring progress toward meeting the goals in the annual budget is easier for managers if checkpoints are available along the way. More important, what actually happens is often different from even the most sophisticated plans, so managers might need to make changes in operating plans for the remainder of the period.

Other factors also dictate that budgets be developed for interim periods. Seasonal businesses must make or buy large quantities of goods in advance of the selling season. Such purchases create needs for cash considerably in advance of cash collections from customers. Cash collections also lag behind cash needs during the busy season of service-providing businesses that are seasonal, such as accounting firms and landscape-maintenance companies. Additionally, cash requirements vary over the year because some costs are not paid evenly throughout the year.

Companies whose managers want to have plans for at least a year in advance often use continuous budgets. Continuous budgets are maintained by adding a budget for a month (or quarter) as one of these periods goes by. Thus, a 12-month budget exists at all times, and managers are aware of the needs for the next 12 months, regardless of the time of the year. The accompanying Insight describes one company's experience with continuous budgeting y

Although comprehensive budgets focus attention on time periods, many managers also find project budgets helpful. Project budgets reflect expectations for various stages of completing specific projects. A company building a new plant will have a time schedule (finish the exterior by June, the interior by November, begin production by March).

## Developing Comprehensiveßudgets

Well in advance of the start of new budget year, managers begin discussing prospects for the coming year. The earliest discussions normally focus on overall

## Continuous Budgeting at Alcoa

## INSIGHT

Alcoa, the large aluminum producer, had used traditional one-year budgets and forecasts, but upper-level managers were not making good use of them. For one thing, as the year progressed, the business climate changed, as did the company itself. The changes were not reflected in the one-year budget. The new Chief Financial Officer (CFO) introduced six-quarter rolling forecasts, which incorporate changing expectations. The former chairman of Alcoa, now U.S. Treasury Secretary, Paul O'Neill, praised the six-quarter rolling forecasts, saying that they were much more useful than the previous one-year forecasts.

Alcoa does not simply take nomal improvement as its objective. The company uses three-year stretch goals. Richard Kelson, its CFO, said, "It's not enough to be the best of the metals anymore. . . . What do people expect of high performance companies?" The company uses benchmarks from the best performing companies to set targets. Mr. Kelson received CFO Excellence Awards from CFO M agazine.

[^0]goals relating to profit or growth, such as a 10 percent increase in income, a 2 percent increase in return on sales or assets, a 15 percent increase in sales, or perhaps a 2-point increase in market share. (The overall goals are likely to be derived from longer-term goals and strategies adopted by the firm's top managers.) At least at the outset, most budgets are driven by desired results. But whatever the initial concerns, in every case the budget for the coming period begins with a sales forecast, the sales a company expects to achieve. The forecast is critical because expected sales determine the requirements for product, people, other operating costs, cash flows, and financing. The interrelationships among these various elements depend on managerial policies (how much inventory to keep, what credit terms to offer to customers) and operating characteristics (cost structure, cycle time).

Chapters 2 through 5 introduced you to income statements based on expected sales and information about cost behavior. Preparing a budgeted income statement is an extension of CVP analysis. Other budgets, especially the cash budget and the budgeted balance sheet, require consideration of leads and lags. For example, cash collections lag behind credit sales. Similarly, costs to purchase or produce goods for sale are normally incurred before the sale. That is, the costs lead (precede) the sale. Cash payments for incurred costs might be required immediately or might be delayed. These factors create the leads and lags between accrual accounting and cash flows.

## SALES FORECASTING

The sales forecast is the foundation for the comprehensive budget. For a large company, developing the sales forecast is complex and time-consuming. When Xerox's seven-member forecasting team adopted a sophisticated computer program, developing a forecast took 50 percent less time-but it still took three months. Businesses use many methods to forecast sales. Not all companies use all of the methods we mention but most use one or more. A later Insight discusses some companies' policies.

## External Indicators

Sales of many companies are closely associated with external factors. Sales of long-lasting consumer goods (cars, washing machines) correlate well with generaleconomic activity as reflected in Gross Domestic Product (GDP) and personal income Sales of baby food track the number of births, and sales of carpet with housing starts. Companies in such industries can often forecast total sales for their industry, and then develop a sales budget by estimating their share of the total market. Scatter diagrams and regression analysis, which we introduced in Chapter 3, are widely used in forecasting sales, just as they are in predicting costs.

Sales in some industries depend on sales of other industries. For example, makers of bottles and cans look at forecasts for sales of beer and soft drinks, and steel and tire companies watch sales of automobiles.

To be useful for sales forecasting, the value of the indicator must be known, or predictable, in advance of the period for which a budget is being prepared, and the farther in advance the better. For example, an equally strong relationship

Go to Web sites of some of these organizations (e.g., http:// www. businessw eek.com) and find out what kinds of information they provide. Think about how managers can use the information.
between their sales and the number of births would be more useful to makers of toddlers' clothes than to makers of baby food, because the value of the indicator is available farther in advance of the expected change in sales.

Managers obtain information about indicators from a variety of sources. Various segments of the U.S. government (e.g., the Departments of Commerce and Labor) develop and report data on broad indicators such as GDP, personal income, housing starts, and consumer prices. Some broad indicators originate with the Federal Reserve, private-sector entities such as Dow Jones \& Company and Dun \& Bradstreet, and widely distributed business publications such as Business Week and Forbes. For industry-specific indicators, managers often can refer to data developed by trade publications or associations (e.g., Ward's Automotive Reports and the American Iron \& Steel Institute.)

Sometimes managers can obtain predictions of their industry's sales directly from trade associations, many of which publish forecasts or studies that provide guidance in sales forecasting. For example, an association of appliance dealers might conduct studies to determine the likely sales of various kinds of appliances. Its forecast for the sales of washing machines might consider the overall economic outlook, forecasts for new housing units, previous sales of washing machines, and the results of a survey of consumers about the age of machines currently in use.

## Historical Analysis

Companies that operate chains of retail stores (e.g., Starbucks, Best Buy, Barnes \&
Noble) develop sales data and trends by age of store (i.e., new stores, second-year stores) and begin their forecasts for the coming year by projecting sales from such data and trends. Other companies analyze their total sales of previous years and project the trend to arrive at a forecast, Thus, if sales have been rising at 10 percent per year, the company will start with a forecast based on last year's sales plus 10 percent. However a preliminary forecast is developed, managers then look for factors that suggest the likelihood of higher or lower sales. Were last year's sales abnormally high or low because of a strike or unusual weather conditions? (For example, ice cream, beer, golf balls, and many other products sell better in hot weather.) Are there discernible changes in taste that could affect sales? The past can be used for guidance on what might happen, but differences in conditions can cause the future to differ from the past.

## Judgm

Some companies budget sales using judgment based on experience with their customers and products. For example, regional sales managers, in consultation with the sales staff, might estimate their sales, by customer or product line. The chief sales executive reviews and discusses the forecasts with the regional managers, then develops a sales budget for each area and for the entire company to submit to top management for approval.

The analysis underlying judgment-based forecasts follows the lines of the other methods described here, but is less formal. Instead of using regression analysis or some other mathematical tool, managers will rely on their own experience and perceptions of changing circumstances to develop a forecast of the prospects for the industry and for the company. For example, a manager may no-
tice an increasing number of newspaper and magazine articles about the decreasing length of the work week and reason that people will have increased leisure time. Managers in leisure industries will likely forecast increasing sales.

Relying on any single forecasting method is risky. Forecasts using judgment alone might reflect unwarranted optimism of the sales manager and sales force. Even where indicators or industry forecasts are available, current conditions might differ from those in effect when the relationships among the indicators or forecast and the sales of the company or industry were developed.

Most companies use a combination of forecasting methods, and successful forecasting tends to result from combining sound and experienced business judgment with the judicious use of quantitative tools. Whatever methods are used to forecast, the sales budget for the company as a whole is likely to evolve from several forecasts made on a smaller scale. The original forecasts might be by product, product line, geographical area, department, or some combination of these. The scope of the original forecasts and the methods used depend on the organization. The accompanying Insight (page 232) describes how some companies forecast sales, what factors they use, and how they respond to changes.

## Interim Period Forecasts

The forecasting methods discussed apply to sales forecasts of three distinct types: (1) annual forecasts, (2) longer-term forecasts (three to five years), and (3) quarterly or monthly forecasts. Once a forecast for the year has been approved as a basis for planning, it is necessary to breakit down into interim periods.

Often the data used to forecast annual sales (economic indicators, sales for other industries) are also available for quarters. In such cases, managers can base quarterly forecasts on the same indicator used for the annual forecast. Many companies have developed other reliable ways for breaking down annual forecasts. For example, experience might show that consistent percentages of yearly sales occur in particular quarters or months ( 15 percent of annual sales are concentrated in March, 40 percent in the first quarter, and so on).

Whatever the methods used to develop the sales forecast, and whatever the length of the forecast period, managers revise budgets when they obtain more information. (Remember the earlier example of revising the budget in the light of heavier-than-expected sales early in the year.) A budget is a plan, not a straitjacket; changing it in the face of changing conditions is sensible practice.

The accompanying Insight (pages 233-234) describes some companies' experiences and their difficulties with sales forecasting and the necessary inventory management, as well as steps they took to achieve goals in face of adverse circumstances.

## EXPENSE BULGETS

Each manager in an organization is responsible for specific tasks and their costs. So managers should have budget allowances, or expense budgets, stating the limits for costs they may incur in accomplishing their tasks.

There are two general ways to develop budget allowances for expenses. One way sets the budget at a single amount. An allowance set in this way is called a static budget, and this approach is used with most fixed costs. Managers set

## Sales Forecasting

## INSIGHT

Go to DuPont's Web site (http://www.dupont.com), find its annual report or SEC Form 10-K, and find more detail about its forecasting. How does DuPont use overall economic data such as Gross Domestic Product? W hat trends does it analyze? How does it forecast sales overseas?


DuPont's 2000 annual report commented on the prospects of most of its businesses, as they related to other economic factors. The company also commented on how it might better its situation. For example, "Nylon Flooring volume is closely tied to U.S. residential and commercial real estate markets. . . . Demand for industrial nylon is expected to continue softening, principally reflecting the decline in U.S. motor vehicle production. . . . Apparel markets in 2000 were adversely affected by weakening consumer markets in North America and Europe as well as the continuing shift of garment production from these markets to those in Asia. These market conditions are expected to continue into 2001, but should begin to be mitigated by the expanded DuPont emphasis on product differentiation and marketing."

In agricultural products, DuPont foresaw difficulties stemming from structural, as well as market, factors. "The crop protection industry has experienced significant change during the past two to three years with a depressed farm economy, industry consolidation, and the influence of insect and herbicide resistant crops."

In its 2000 Form 10-K, KLA-Tencor discussed trends in semiconductor manufacturing working to its advantage and guiding its efforts. The company makes process control and yield enhancement equipment used by semiconductor makers. "Several factors . . . drive the critical need for comprehensive process control and yield management solutions. Among the most significant . . . increasing device complexity, shrinking geometries, reduced product life cycles, . . . and increased competition. . . . Equipment that helps a manufacturer quickly increase new product yields and optimize device performance enables the manufacturer to offer these products in high volumes early in the product life cycle-the time when they are likely to generate the greatest profits."

Deere \& Co. said, "Based on a favorable outlook for further growth in the Equipment Operations, the Company's worldwide physical volume of sales is currently forecast to increase by 28 percent for the first quarter of 2001, in comparison with the corresponding 2000 period, and by 11 percent for the full year. . . . Lower than anticipated global production of grain and oilseeds has resulted in a modest price improvement for these commodities in recent weeks as well as a reduction in carryover stocks. At the same time, farmers remain in sound overall financial conditon."

Caterpillar began its discussion by saying, "Our current outlook calls for a significant slowdown in growth in the U.S. economy in early 2001, but growth is expected to pick up momentum in the second half of the year through 2002. Should recent interest rate reductions fail to stimulate the U.S. economy as expected, leading to a more protracted slowdown or recession in 2001, then sales of machines and engines would decline sharply this year and could be negatively impacted in 2002 as well." The company also commented that "The outlook for our sales also depends on commodity prices. . . . The Company operates in a highly competitive environment and our outlook depends on a forecast of the Company's share of industry sales. A reduction in that share could result from pricing or product strategies pursued by competitors, unanticipated product or manufacturing difficulties, a failure to price the product competitively, or an unexpected buildup in competitors' new machine or dealer owned rental fleets."

[^1]
## Managing Inventory and Sales Forecasts

## INSIGHT

The chairman of IBM, in its 2000 annual report, described the results of an unexpected surge in sales and being caught short of inventory. "Then, in a flip-flop the likes of which I have never seen, demand went through the roof. Within a 30-day period last summer, orders for some of our products tripled. We couldn't build fast enough to fill orders and, to make matters worse, we had shortages of some key components. Thanks to the determined, round-the-clock work of literally hundreds of thousands of IBMers, we got supply and demand into better balance in the final quarter of the year, and we finished strong. But, I don't need to describe to you the frustration of not being able to satisfy customer demand, particularly in view of the drought we had endured. I am determined that's not going to happen again."

The following statements in Microsoft's 2000 annual report highlight how changes in its strategy affect the risks of carrying inventory. "Additionally, cost of revenue in 1999 was positively impacted by a reduction in estimates of obsolete inventory and other manufacturing costs of $\$ 67$ million. As discussed previously, the Company's business model continues to evolve toward licensing from sales of packaged products through distribution channels. Consequently, risks associated with manufacturing and holding physical product have declined."

Reebok carefully outlined the risks its inventory brought in its Form 10-K." The footwear industry has relatively long lead times for the design and production of product and thus, Reebok must commit to production tooling and in some cases to production in advance of orders. If Reebok fails to forecast consumer demand accurately or if there are changes in consumer preference or market demand after Reebok has made such production commitments, Reebok may encounter difficulty in filling customer orders or in liquidating excess inventory, or may find that retailers are canceling orders or returning product, all of which may have an adverse effect on Reebok's sales, margins and brand image. . . . There can be no assurance that sales forecasts will be achieved and, to the extent sales forecasts are not achieved. . . . Reebok will experience higher inventory levels and associated carrying costs, all of which would adversely impact Reebok's financial condition and results. . . . In addition, a shift in the marketplace may occur that produces an over-inventoried promotional retail environment, resulting in Reebok encountering increased returns and cancellations. . . . Retailers may be more reluctant to place future orders for product than they would be otherwise, resulting in fewer future orders for Reebok and requiring Reebok to take more inventory risk to fulfill 'at once' business."

The Gap has similar problems. "Fluctuations in the retail apparel business especially affect the inventory owned by apparel retailers, since merchandise usually must be ordered well in advance of the season and sometimes before fashion trends are evidenced by customer purchases." Because of cyclical factors The Gap must "carry a significant amount of inventory, especially prior to peak selling seasons when the Company and other retailers generally build up their inventory levels. The Company must enter into contracts for the purchase and manufacture of apparel well in advance of the applicable selling season. As a result, the Company is vulnerable to demand and pricing shifts and to suboptimal selection and timing of merchandise purchases." The Gap must mark down slower-moving styles to clear them out.

## (continued)

## INSIGHT

Tommy Hilfiger has taken a different approach, trying to avoid buildups of inventory. "The Company has its products manufactured according to plans prepared each year which reflect prior years' experience, current fashion trends, economic conditions and management estimates of a line's performance. . . . The Company limits its exposure to holding excess inventory by committing to purchase a portion of total projected demand and the Company, in its experience, has been able to satisfy its excess demand through reorders. The Company believes that its policy of limiting its commitments for purchases early in the season reduces its exposure to excess inventory and obsolescence."

Brookstone, the speciality retailer manages its inventory closely. "The efficient coordination of inventory planning, inventory logistics and store operations is a primary focus for the Company. The Company uses distribution control software and a sales forecasting system. These systems, along with the store-based point-of-sale system, provide daily tracking of item activity and availability to the Company's inventory allocation and distribution teams. Additionally, the Company uses an inventory planning and distribution requirements planning client-server based system. This system uses weekly sales forecasts . . . to determine inventory replenishment requirements and will recommend inventory purchases to the merchandise procurement team."

In the spring of 2001, Ford found itself swimming in Expeditions and Navigators, its biggest SUVs. The company had an 85-day supply of inventories, about 17 days higher than normal. Ford responded by offering dealer incentives of over $\$ 2,100$, the highest in its history.

Sources: SEC filings, newspaper reports.
budget allowances for committed costs by looking at existing obligations. Managerial policies usually determine budget allowances for discretionary fixed costs. Static budget allowances often work fine for both such costs.

The second approach sets a variable budget, or flexible budget allowance, based on some measure(s) of activity. Budget allowances are set in this fashion for variable costs and mixed costs, and occasionally for some discretionary fixed costs. The character of flexible budget allowances is best exemplified by the budgeting of variable and mixed costs, which we discuss in the next section. Later in the chapter we discuss some special problems relating to discretionary fixed costs.

## Bydgeting Variable and Mixed Costs

CHAPTER ${ }^{3}$
Chapter 3 showed that the total amount of a variable or mixed cost varies with the level(s) of the cost driver(s). To develop budget allowances for such costs, managers rely on estimates of the expected levels of the activities. For example, the budget allowance for sales commissions is derived from the sales budget. Once the period is over, managers want to know whether they met their budgets. To do so they must see how their actual costs compared with costs budgeted for the actual level of activity (or activities). Thus, there are two budgeted amounts for costs using a flexible budget allowance: a "before" and an "after." The "before" budget allowance is primarily for planning; the "after" allowance is for control.

To illustrate more clearly the need for and use of the flexible budget allowance, consider the budgets of production managers. Some costs are variable, some fixed, and some mixed, and the cost-driving activity will most likely be some measure of production activity. Suppose the manager and supervisor of the Mixing Department agree on the following flexible budget allowances for the listed components of factory overhead in the department. The cost-driving activity for the department's mixed costs is direct labor hours.

| Cost | Fixed Amount per Month | Variable Amount per Direct Labor Hour |
| :---: | :---: | :---: |
| Indirect labor | \$2,400 | \$0.40 |
| Supplies | 200 | 0.40 |
| M aintenance | 1,600 | 0.20 |
| Depreciation | 1,200 | 0.00 |
| M iscellaneous | 700 | 0.10 |
| Total | \$6,100 | \$110 |

Suppose further that 1,000 direct labor hours are budgeted for the coming month. The budget allowance for each cost element for the month is computed using the following formula.


The formula for a flexible budget allowance is the same as the cost prediction formula introduced in Chapter 3. The original budget allowance for each cost element in the example is based on 1,000 budgeted labor hours. For example, the original budget amount for indirect labor is $\$ 2,800$ [ $\$ 2,400+(1,000 \times \$ 0.40)]$. The total budget allowance is $\$ 7,200[\$ 6,100+(1,000 \times \$ 1.10)]$. The previous amounts are the basis for planning, but for evaluating the manager's performance in controlling costs we need a revised budget allowance, the flexible budget allowance based on the actual leyel of the cost-driving activity. Suppose direct laborers actually work 1,300 hours. The flexible budget allowance for indirect labor becomes $\$ 2,920[\$ 2,400+(1,300$ hours $\times \$ 0.40)]$, and so on. The revised budget allowances represent goals for the manager's performance.

Exhibit 6 -2 shows the flexible budget allowances for the actual level of activity. Wealsø insert some assumed actual costs, and compute a variance between the revised budget and the actual costs. When actual costs are less than the budget allowance, the variance is favorable; when the reverse is true, the variance is unfavorable. Hence, the variances for supplies, maintenance, and total costs are favorable. In Chapter 11 we introduce methods for analyzing variances.

The activities driving many costs are not related directly to sales, labor hours, or production volume. As we showed in Chapter 3, activities such as the number of vendors from whom the company buys materials and components, the number of employees in a department, or the number of different types of products manufactured often generate significant costs. The analytical methods introduced in Chapter 3 help managers identify activities that are useful for budgeting purposes.

## Exhibit 6-2 Production Performance Report



## Budgeting Discretionary Costs

As stated earlier, discretionary cost allowances are generally set by managerial policies. The major problem with budgeting discretionary costs is determining the optimal level of expenditures. What is optimal spending for employee development? for improving current products? for research on potential products? for the legal department? No one really knows, but managers must nonetheless set budget allowances for such costs.

Part of the problem of deciding how much to spend on discretionary items is that expenditures seldom produce immediately measurable output or benefits. Activities such as basic research and management training might not show results for several years, if ever. In some cases, budgets for discretionary items are related to some variable input factor, such as the number of employees given training. But, note that the variable factor (e.g., number of employees to be trained) is a measure of input, not output. That is, training more employees probably increases future benefits, but the training itself is not the desired result: The desired result is better, more productive employees.

Managers can sometimes specify what benefits could come from a particular level of spending on a discretionary item. For example, the data processing manager might say that a new software package would speed customer billing by one or two days. (Getting bills out quicker means that payments come in sooner.) Managers might then compare the benefit of faster collections-a reduction of funds tied up in accounts receivable-with the cost of the software.

Discretionary costs are often the first cut when companies face financial problems, but short-sighted cutting can be harmful to the company. Linux software vendor Red Hat showed positive results early in 2001, beating expectations of most investors. However, investors viewed Red Hat as a high-growth company, but it had made some moves that increased short-term earnings, possibly at the expense of the future. One principal concern was research and development, which had dropped to 14 percent of revenues from 27 percent a year and a half earlier " . . potentially jeopardizing future growth. R\&D is an investment that
helps companies develop new technologies that maintain competitive advantage. This is particularly important in high-tech industries, where the rapid pace of technological change breeds product obsolescence." ${ }^{1}$

On the other hand, Campbell Soup increased its advertising in a recent quarter to boost sales in the longer term, even though the move hurt that quarter's results. "We are committed to win, and win first with the consumer," David Johnson, Campbell's president and chief executive, stated on a conference call following the release of the quarterly results.

## BUDGETING AND BEHAVIOR

Budgeting necessarily involves people, and their behavior. Behavioral problems arise when managers' interests conflict, when budgets are imposed from above, when stretch goals are used, and when budgets are viewed as checkup devices or ends in themselves. For both managers and management accountants, budgets and the budgeting process can also raise ethical conflicts. Moreover, cultural differences can reduce the effectiveness of budgeting, especially for companies operating in several countries.

## Conflicts

We can illustrate the problem of conflicts in budgeting by looking at likely disagreements among managers when a company establishes an inventory policy. An inventory policy prescribes the level of inventory the company plans to have on hand. The sales manager of a retailer wants high inventory levels because it's easier to make sales if the goods are available for the customer to see and purchase immediately. The sales manager at a manufacturing company also prefers to have inventory ready for immediate delivery. A financial manager prefers low inventories because of their costs (storage, insurance, taxes, interest, and so on). The production manager at manufacturer wants low inventory for all of the rea- sons described in Chapter 1 and throughout this book, and is also concerned with maintaining steady production-no interruptions for rush orders, no unplanned overtime-and other conditions that minimize production costs. Thus, three managers have different views on the desirable level of inventory. They will be evaluated by reference to how well they do their job, so each has an interest in the company's inventory policy.

In a conventional manufacturing environment, the conflict can be serious and the managerial accountant might be called in to help negotiate the final policy. A manufacturing company committed to the JIT philosophy already has established an inventory policy for the level of its materials and finished products: little or none. The company-wide commitment to this common goal not only drops the financial manager's concerns from the conflict, but also encourages the other managers to work together to achieve the maximum sales at the minimum cost. Inventory management is especially critical in industries undergoing price declines, as is the case with many high-tech industries. The accompanying Insight describes how one company gains strategic advantages.

## Inventory and Strategy

## INSIGHT

Dell Computer has long been known for its build-to-order, direct-selling business model that enables it to ship a machine the day after it is ordered. Dell accomplishes this despite having the lowest inventories of any major manufacturer. Dell attracted attention in mid-2001, a time of slumping demand for PCs, by reducing its prices to increase its market share. The company stresses increasing market share ("footprint" in its president's word) because it has found that it usually keeps new customers.

The president of Dell characterized its move as " not a price war, . . . a cost war." Prices of the components Dell buys were then falling at 1 percent per week. Dell's minimal inventories mean that it buys components as little as three days before it makes and sells the finished product, while its competitors often buy components 60 days in advance of sales. Thus Dell is selling computers with components bought only three days ago, while its competitors' machines contain components bought two months ago. Dell's components cost 6-9 percent less than its competitors, allowing Dell to eam higher margins than its competitors, even at reduced selling prices.

Source: Published reports, especially J eff Franks," Dell Declares Price War, May Make Acquisition," Reuters, May 22, 2001

Budgeting discretionary costs also presents opportunities for conflicts if for no other reason than that no one knows the "right" answer. For example, the manager of human resources probably favors more employee training programs than do the managers of the employees receiving the training. Some managers do not want workers spending time away from their jobs.

## Imposed Budgets

An imposed budget is one set by upper-level managers with no participation by those responsible for meeting its goals. Serious behavioral problems can arise depending on the attitudes of the managers imposing the performance goals.

Some managers who impose budgets believe the performance goals they set should be very high (budgeted costs very low) -so high that almost no one could be expected to meet them. Such managers justify their position on the grounds that it "keeps people on their toes" and believe that people will be lax in their performance if they can easily meet a budget. Other managers who impose budgets say that budgets should be achievable given a good, but not exceptional, performance.

Sooner or later, imposing unachievable budgets produces problems. Managers will become discouraged and feel no commitment to meeting budgeted goals. Or perhaps managers will take actions that seem to help achieve goals (such as scrimping on preventive maintenance to achieve lower costs in the short run) but are actually harmful in the longer run (when machinery breaks down and production must be halted altogether).

A major problem with imposed budgets is that, if unrealistic, they are not useful for planning, which is one of a budget's primary purposes. Consider the implications of setting unrealistically high sales goals. The unrealistic sales budget will
be the basis for production plans, including perhaps commitments for materials and components and the hiring and training of factory workers. Based on the sales budget, the company also will have planned cash receipts and estimated its needs for short-term financing. If the sales goals are not realized, the company will have excessive inventories, higher costs than necessary, and other serious problems.

Even imposed budgets that "imposing" managers believe to reflect achievable, realistic performance goals can produce less-than-optimal performance. The prevailing attitude today is that managers should participate in setting the performance goals in their budgets. First, these managers are the most knowledgeable about the costs to perform their assigned tasks as are the people who perform them. Second, a considerable body of empirical evidence suggests that allowing these workers a say in their expected levels of performance is conducive to better performance than when those individuals are not consulted.

## Stretch Goals

A recent development in the area of setting performance goals is the use of stretch goals, or more accurately, stretch targets. Stretch goals are exceptionally ambitious goals not likely to be achieved without making fundamental changes in the way a job is done. Some companies use them successfully, some do not.

## Meeting Stretch Goals

## INSIGHT

One expression of a stretch goal is Six-Sigma quality. The concept was developed at Motorola, and is now in use at, among other companies, AlliedSignal, General Electric, and Caterpillar. Literally, Six-Sigma quality means about 3.4 defects per million units. (Those of you who have already taken statistics recognize that six sigmas from the mean takes in virtually the entire distribution. A man standing seven feet, two inches tall is about six sigmas above the mean height of men.)

Caterpillar includes Six-Sigma as a major component of its strategy. The company maintains a commitment to the "institutionalization of our 6 Sigma culture. . . . " The company applies Six-Sigma programs to all of its processes, not just manufacturing. One goal is to reduce costs by $\$ 1$ billion over a four-year period. The company characterizes Six-Sigma as "the disciplined use of fact-based, data-driven decisionmaking." GE devotes a significant portion of its annual report to Six-Sigma. In its 2000 annual report, the managers of 13 major units describe how Six-Sigma has helped their part of the business. For example, one plant reduced cycle time by 29 percent, enabling a 200 percent increase in output. The Medical Systems unit introduced a product line called Designed for Six-Sigma, and expects 50 percent of its sales to come from this line. Even the Global Consumer Finance unit, which does no manufacturing, used SixSigma in its "product design, distribution, and fulfillment processes."

AlliedSignal expects to use Six-Sigma to achieve a growth of 12 percent and a productivity improvement of 7 percent. The company has already saved $\$ 150$ billion through Six-Sigma. "Six-Sigma is crucial for us," says Lawrence Bossidy, the CEO of AlliedSignal. "We're trying to broaden it outside manufacturing, and we're off to a good start. You've got to have growth and productivity in business these days."

Sources: Annual reports, SEC filings.

## Budgets as "Checkup" Devices

Behavioral problems also arise when managers compare budgeted and actual results and subsequently evaluate the performance of their subordinates. Ideally, managers use actual results to evaluate their own performance, to evaluate the performance of others, and to correct elements of operations that seem to be out of control. That is, the budget serves as a feedback device, letting managers know the results of their actions. Having seen that something is wrong, they can take steps to correct it. The accompanying Insight describes how people in two companies experienced severe pressure to meet goals, and also presents an alternative view.

Unfortunately, budgets often are used more for checking up on managers than for providing feedback. Where this is the case, managers are constantly trying to think of ways to explain unfavorable results. The time spent thinking of ways to defend the results could be used more profitably to plan and control operations. Some evaluation of performance is necessary, but the budget ought not to be perceived as a club to be held over the heads of managers. More attention is

## "Spend It Or Lose It"

Expense budgets set limits on levels of cost to be incyrred, allowances managers are not supposed to exceed. If managers view their budget allowances as strict limits on spending, they may spend either too little or too much.

Exceeding a budget might benefit the company. Suppose a sales manager believes that an out-of-town trip to visit several important customers or potential customers will lead to greatly increased sales. The sales manager will be reluctant to authorize the trip if it will result in exceeding the travel budget. At the other extreme, a manager who has kept costs well under budget might be tempted to spend frivolously so that expenditures will reach the budgeted level. The manager may fear a cut in the budget for the following year if costs incurred during the current year are lower than budgeted. The manager might take an undesirable action-for example, authorize an unnecessary trip-so as not to be given a lower budget next year. Your instructor might be aware of memos encouraging faculty to order library books, or software, or anything else for which funds remained available at the end of the fiscal year.

Managerial actions influenced by budget concerns in one area are likely to affect the actions taken by managers in other areas. A realistic example involves a manufacturing supervisor who was running a machine at 50 percent of its rated capacity. Asked why, the supervisor said that the machine needed new bearings and would produce only scrap if run faster. A request for maintenance had been ignored for several months because the maintenance supervisor had been controlling costs by not replacing employees who left.

## Budgeting and Ethics

For both operating managers and management accountants, budgeting is a fertile field for behavioral problems involving ethical issues. Each of the items we've already discussed offers opportunity for questionable practices.

## Pressure to Meet Goals

In the summer of 2000, Nina Aversano, head of North American sales at Lucent Technologies, informed the CEO, Richard McGinn, that her unit would probably miss its budgeted, and publicly announced, revenue target. The CEO's reaction was severe and executives were told to "redouble our efforts." The result was that salespeople made any deals they could, sacrificing the future to meet a single quarter goal. Salespeople promised customers deep discounts, large credits, and other incentives. The company recorded as revenue the prices of goods put into distribution channels but not yet bought by outside customers, a practice known as "channel-stuffing." One estimate was that the practices ate up 20 percent of the next year's probable sales.

Ms. Aversano later alleged that McGinn imposed unrealistic sales goals and fostered an atmosphere in which frantic end-of-quarter activity was commonplace. One customer said that at the ends of quarters, Lucent salespeople would offer "screaming deals." Lucent managers stated that the pressure to meet revenue goals was strong, unrelenting, and constant. They stated that targets were always imposed from the top, though McGinn himself said that they were " $100 \%$ bottom-up."

One sale that was made just before the end of the quarter involved BellSouth. Lucent was trying hard to close a deal with BellSouth, which was wavering. The clincher was that Lucent offered $\$ 95$ million in software to be selected by BellSouth within one year. Lucent thus booked $\$ 95$ million without delivering anything, and moved the $\$ 95$ million back from the subsequent year. The total loss in 2001 revenues from similar deals and practices was estimated at $\$ 18$ billion.

The publisher of the San J ose Mercury News resigned because of pressure to meet profit targets. J ay T. Harris said that the layoffs and other measures needed to meet the parent company's financial goals would devastate the paper. The goals included raising profit as a percentage of revenues. Knight-Ridder, owner of the paper, told employees that they hoped to avoid layoffs. Haris contended that meeting short-term financial targets compromised the core values of the newspaper. All parties agreed that the economic slowdown that was taking place in the San J ose area (Silicon Valley) made some accommodation necessary. The paper was losing advertising revenue and circulation.

In contrast, General Electric states that integrity is its first and most important value. Integrity includes the trust that ". . . employees can take risks and believe us when we say a 'miss' doesn't mean career damage." GE believes that people can set stretch goals without worrying that failing to meet them is a punishable offense.

Sources: Dennis K. Berman and Rebecca Blumenstein, "Behind Lucent's Woes: All-Out Revenue Goal and Pressure to Meet It," The Wall Street J ournal, March 29, 2001, p. 1A ff. Justin Pritchard, "San J ose Mercury News Publisher Resigns Over Targeted Profit Margins," Seneca Daily J ournal, March 21, 2001, p. 22; GE 2000 Annual Report.

Managers in some areas might consider preparing-and ask management accountants to help them in doing so-budgets with a great deal of slack so that the managers will be able to meet them with minimum effort. Top-level managers who impose budgets on subordinates could ask management accountants to develop budgets so tight that there is little chance of achieving them. Knowing the
problems such budgets are likely to create, the management accountants could believe that responding to the managers' requests would be an ethical problem.

Ethical issues also arise about the reporting of actual results for a budget period. When budgets are viewed as checkup devices and budget allowances as strict limits, a manager might be inclined to misclassify some expenditure or to ask the management accountant to delay recording some costs until the next budget period. Actual results also are influenced by revenue-recognition practices, and evidence exists of some managers accelerating recognition of revenues so as to meet sales budgets.

Management accountants are particularly uncomfortable if their role appears to be to act as enforcers for upper-level management, because they recognize that necessary requests for explanations are likely to generate distrust (and perhaps misleading information). Some management accountants might believe that continued pursuit of explanations would reduce managers' inclination to seek assistance needed in the future with resultant harm to the firm as a whole. The accompanying Insight describes another type of behavioral problem and a suggested solution.

## INTERNATIONAL ASPECTS OF BUDGETING

Multinational companies face problems that their domestics do not. One technical problem is translating budgets and actual results from the local currency to the currency of the company's home country. (Chapter 10 addresses this issue.) Both legal and cultural differences among countries affect the effectiveness of budgets and the budgeting process. The differences in laws among countries are too nu-

## Budgeting and Behavior

## INSIGHT

Colleges and universities have historically ignored depreciation, reporting their results of operations on a modified-cash basis. They have also used capital budgets to fund new construction. One observer believes that these practices have harmed institutions. Administrators tend to spend more money on operations because the money seems to be available. For example, if revenues are $\$ 10.0$ million, cash expenditures are likely to be close to $\$ 10.0$ million because the money is available. New or replacement construction comes from one-time sources such as major gifts. Part of the motivation to spend the operating budget is that colleges and universities are not profit-seeking enterprises, and should therefore not pile up "surpluses," but rather spend money to achieve their educational objectives. One consequence is "deferred maintenance," which is major work postponed on buildings and equipment.

Showing depreciation (called cost of capital use by some institutions) would draw recognition to the fact that assets are deteriorating. It would, according to Ken W. Brown, provide "an intemally generated incentive for curtailing and reducing cash operating expenses" and would also incorporate major renovation and maintenance into the annual budget, rather than postpone them until large sources of financing are available.

Source: Ken W. Brown, "How Colleges Can Profit Through Depreciation," Management Accounting, J anuary 1998, pp. 18-22.
merous and complex to present here. We will point out, however, that the legal environment of a country affects the flexibility of managers to achieve their goals. For example, the fringe benefits mandated by many countries in Western Europe and elsewhere reduce managers' willingness (or ability) to adjust the work force. Of equal or greater importance are the beliefs and behavior of the people of different countries.

Both profit and participation in setting goals are still relatively new ideas in the formerly communist countries in Europe and Asia. Managers in such countries had long been accustomed to doing what a central authority said-produce so much of this, so many of that. To many of those managers, thinking in terms of profit is still a formidable task, and many find it difficult to make the transition to responding to the market.

Some cultures foster deterministic attitudes, and their members see little reason to plan anything. After all, if things are going to happen no matter what you do, why bother? In such cultures it is difficult to motivate managers to budget at all. Increased contact with foreigners usually reduces some of the opposition to budgeting, but the change might come about slowly.

The prevailing economic system aside, people in some cultures are inclined to accept authority uncritically. Here, the problem is that anything upper-level managers say is fine with lower-level managers. Lower-leyel managers will not question their supervisors, nor will they take active roles in developing budgets. Instead, they will wait for clues as to what their managers are looking for and respond only then (and only in line with what they perceive is expected). Homeoffice managers might also receive the same deferential treatment. As a result, the company loses the benefit of the insights and understanding of its lower-level managers, and those insights might be critical to the company's success.

## ILLUSTRATION OF A COMPREHENSNE BUDGET FOR A MERCHANDISER

We illustrate the preparation of a comprehensive budget by working with Home Effects, a retailer whose managers have prepared the needed sales forecasts and developed a sales budget. (That is, we do not illustrate the sales forecasting process that produced the sales budget.) We first prepare the budgeted income statement and a purchases budget, then proceed to the cash budget, which requires some of the data in the budgets developed here. We shall then see how the operating and financial budgets are related, especially how the results in a cash budget could prompt managers to look again at the operating budgets and possibly change them.

The managers at Home Effects are developing a comprehensive budget for the first three months of 20X6. Exhibit 6-3 contains the relevant information.

Sales are seasonal; they increase through March, then drop off. As we'll see, such seasonality can create liquidity problems.

## Budgeted Income Statement

First, we develop a budgeted, or pro forma, income statement. To do so, we use the information in Exhibit 6-3 regarding the company's sales forecast and cost structure. You have already prepared such statements, as we show in Exhibit 6-4.

## Exhibit 6-3 Home Effects-Data for Illustration

| Month | Sales Budget |
| :--- | :---: |
| J anuary | $\$ 400$ |
| February | $\$ 500$ |
| March | $\$ 800$ |
| April | $\$ 700$ |
| May | $\$ 600$ |

## Other data:

- Cost of goods sold is $\mathbf{6 0 \%}$ of sales.
- Total monthly fixed costs are $\$ 150$, of which $\$ 15$ is depreciation expense.
- The company maintains inventory at a two-month supply.
- Home Effects pays for its purchases $\mathbf{6 0 \%}$ in the month of purchase, $\mathbf{4 0 \%}$ in the following month.
- The company collects $\mathbf{7 0 \%}$ of its sales in the month of sale, $\mathbf{3 0 \%}$ in the following month.
- Home Effects pays all other expenses requining cash disbursements as incurred.
- Home Effects tries to keep at least \$50 cash as abuffer against unexpected cash needs.

Balance Sheet at December 31, 20X5

| Assets |  | Equities |  |
| :--- | ---: | ---: | ---: | ---: |
| Cash | $\$ 80$ | Accounts payable | $\$ 195$ |
| Accounts receivable | 310 |  |  |
| Inventory | 540 |  |  |
| Fixed assets, net | 1,580 | Stockholders' equity | $\underline{2,315}$ |
| Total | $\underline{\$ 2,510}$ | Total | $\underline{\$ 2,510}$ |
|  |  |  |  |

## Purchases Budget

A purchases budget shows how much merchandise the company must buy. That amount depends on how much it expects to sell, how much is on hand, and how much its managers want to have on hand to start the next period.

Retailers must have some merchandise on hand, though the optimal amount depends on such things as the products carried and normal delivery times. To develop Home Effects's purchases budget we refer to its policy (Exhibit 6-3) that, at the end of each month, the company should have merchandise on hand to cover the sales expected in the following two months. (Such a policy does not mean that everything Home Effects sells has been on hand for two months. Home Effects might purchase fast-moving items more than once a month and slow-moving items only three or four times a year.) We chose the specific relationship (two months' sales) so that our illustration would emphasize the importance of expectations in determining purchases.

Moving from budgeting sales to budgeting purchases and inventory, you must also move from using selling prices to using costs. (Remember that mer-

chandise is purchased at cost and carried in inventory at cost until it is sold.) To determine purchasing requirements for any period, we can use the general formula for cost of goods sold (from financial accounting)

$$
\begin{gathered}
\text { Cost of } \\
\text { goods sold }
\end{gathered}=\begin{aligned}
& \text { beginning } \\
& \text { inventory }
\end{aligned}+\text { purchases, }-\begin{gathered}
\text { ending } \\
\text { inventory }
\end{gathered}
$$

Purchases is the unknown, so we restate the formula to obtain

$$
\text { Purchases }=\begin{gathered}
\text { cost of } \\
\text { goods sold }
\end{gathered}+\begin{aligned}
& \text { ending } \\
& \text { inventory }
\end{aligned}-\begin{aligned}
& \text { beginning } \\
& \text { inventory }
\end{aligned}
$$

A purchases budget follows the revised formula, as you can see in Exhibit 6-5, Home Effects's purchases budget for the three months. Amounts for cost of sales come from the pro forma income statements in Exhibit 6-4. The sum of the cost of sales for two consecutive months is the amount shown as "budgeted ending inventory" at the beginning of that two-month period. For example, the inventory required at the end of January ( $\$ 780$ ) is the sum of the cost of sales for February (\$300) and March (\$480). The circled items show the derivations of the ending inventory for January. Note that the $\$ 540$ beginning inventory for January is from the balance sheet at December 31 (Exhibit 6-3).

The total requirement for any one month is the amount needed to cover that month's sales plus what the company has determined must be on hand at the end of that month. The total requirement can be met from two sources: goods already on hand-beginning inventory-and purchases during the month. Of course, the beginning inventory for any month is the ending inventory in the previous month. Thus, required purchases are total requirements less beginning inventory. Work through Exhibit 6-5 to be sure you understand the calculations.

We now proceed to the cash budget for the period and the pro forma balance sheet (budgeted balance sheet) at March 31, $20 X 6$.

## Cash Budget

A cash budget shows total cash receipts, total cash disbursements, and expected cash balances at various dates, and incorporates loans needed to cover temporary

| Exhibit 6-5 Purchases Budgets |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | J anuary | February | March | Three-month Total |
| Cost of goods sold | \$ 240 | \$ 300 | \$ 480 | \$1,020 |
| Budgeted ending inventory | $780$ | 900 | 780 | 780 |
| Total requirements | \$1,020 | \$1,200 | \$1,260 | \$1,800 |
| Beginning inventory | 540 | 780 | 900 | 540 |
| Purchases | \$ 480 | \$ 420 | \$ 360 | \$1,260 |

cash deficits. We begin preparing Home Effects's cash budget by looking at cash receipts.

Exhibit 6-3 shows Home Effects's balance sheet at December 31, 20X5, the beginning of the three months the managers are planning for. The balance sheet at the beginning of the budget period shows (1) the resources (assets) already available for use during the budget period and (2) the existing liabilities that require payment during the budget period. For example we used the inventory figure at December 31 when preparing the purchases budget. We ll also use the beginning accounts receivable to determine cash receipts in fanuary.

## Cash Receipts

Exhibit 6-3 tells us that Home Effects normally collects 70 percent of its sales in the month of sale, the other 30 percent in the month after sale. It is worthwhile to note that this collection pattern indicates that Home Effects allows its customers nine days, on average, to pay their accounts. (Because Home Effects collects 70 percent of sales in the month of sale, it collects 21 days worth of current month sales. Twenty-one days is 70 percent of a 30 -day month. Or, Home Effects has uncollected at month-end 30 percent of a month's sales, or nine days worth.) People developing budgets usually have information about credit terms, or days sales in accounts receivable, which they must translate into percentages of monthly sales collected.

We now can determine cash inflows for the three months. Exhibit 6-6 is a good general format for budgeting cash receipts. The first line, budgeted sales, comes from the pro forma income statements (Exhibit 6-4). The total collections of January sales is given below the schedule. The uncollected portion of sales from March will appear as an asset (accounts receivable) on Home Effects's balance sheet as of March 31, 20X6. Notice that cash receipts are less than sales in February; in March this is a consequence of rising sales.

If, as is usually the case, a company pays cash to stock goods in advance of sales, but collects cash well after the point of sale, it can run out of cash while sales are rapidly increasing. That situation, which is commonly experienced by growth companies, will be more obvious when we examine cash disbursements.

a $\$ 400=$ total J anuary sales, collected in J anuary and February $(\$ 120+\$ 280=\$ 400)$.

## Cash Disbursements-Purchases

Home Effects's major cash disbursement is for purchases. To determine cash disbursements for purchases, we need more than the purchases budget; we must know the timing of disbursements for purchases. In the unlikely event that a company pays for goods on delivery, cash disbursements for purchases equal purchases in each month. We know from Exhibit 6-3 that Home Effects takes advantage of credit terms extended by its suppliers. These terms average 12 days, so that Home Effects pays for 60 percent of its purchases in the month of purchase and 40 percent in the month after purchase. (At month-end, Home Effects has not paid for its purchases of the previous 12 days, which is 40 percent of a 30 -day month. So at month-end Home Effects has paid for 18 days worth of purchases, which is 60 percent of a 30 -day month. If Home Effects had 30 days of credit, it would pay in the month after purchase, and so on.)

To derive cash disbursements for purchases, we need only apply the stated percentages, as in Exhibit 6-7. The January payment is for December purchases, which are accounts payable at December 31, $20 \times 5$ (from Exhibit 6-3). The other amounts come from the purehases budget.

## Other Cash Bisborsements

Exhibit 6-3 tells us that Home Effects pays all of its other expenses requiring cash as incurred. Those expenses are fixed costs requiring cash. Home Effects's fixed

## Exhibit 6-7 Cash Disbursements for Purchases

|  | J anuary | February | March | Three-month Total |
| :---: | :---: | :---: | :---: | :---: |
| From prior month, 40\% | \$195* | \$192 | \$168 | \$ 555 |
| From current month, 60\% | 288 | 252 | 216 | 756 |
| Total | \$483 | \$444 | \$384 | \$1,311 |

[^2]costs of $\$ 150$ per month include $\$ 15$ depreciation, which does not require cash payments, so Home Effects's fixed costs requiring cash disbursement are $\$ 135$ per month. Exhibit 6-8 shows all cash disbursements.

The data developed thus far are combined in the cash budget, shown in Exhibit 6-9. This budget shows a decline in cash in January, and a cash shortage in February. It also shows the borrowings that Home Effects must make to overcome the shortfall and keep a minimum balance of $\$ 50$. (Exhibit 6-3 states that Home Effects wants to hold at least \$50.) Exhibit 6-9 also shows that Home Effects can repay the loan (ignoring interest) comfortably at the end of March. Home Effects's seasonal pattern of sales creates this short-term cash squeeze. Unless Home Effects can borrow, or otherwise raise additional cash, it cannot achieve its objectives for the three months.

So what will Home Effects's managers do now? They might borrow cash to tide the company over February and early March. They might reconsider their inventory policy, delaying purchases and consequently delaying the need for cash payments. They could also consider giving customers less time to pay their accounts, thus accelerating cash collections. But both policy changes would probably reduce sales.

The cash budget benefits the company because its managers know in advance that they will need additional cash. So the managers are more likely to be able to

## Exhibit 6-8 Cash Disbursements Budget


a From December 31, 20X5, balance sheet (Exhibit 6-3)
find financing to carry the company over. The managers will be able to explain to potential lenders both (1) why the company needs the money and (2) how it will repay the loan. A company that doesn't seek a loan until its cash balance is precariously low will have to pay a higher interest rate-or might not get a loan on any terms.

Lenders want information to help decide whether a company's managers have plausible plans for repayment. A lender will want to see cash budgets and perhaps other pro forma statements at least each quarter. Later, managers (and lenders) can compare the actual balance sheets at March 31 with the pro forma ones to see whether operations are proceeding as planned. For example, suppose the sales forecast proves accurate but accounts receivable at March 31 are higher than budgeted. If customers are paying later than anticipated, Home Effects could still have a cash shortage. Increasing receivables might also be a sign that the company is extending credit to less worthy customers to meet its sales goals. In that case, bad debts might result, and the need for financing might increase as well.

At the end of March, Home Effects has a different concern. Cash will be much higher than the minimum required amount and the managers will want to find profitable uses for the cash. If budgets for subsequent periods show steady increases in cash, the company might invest in new fixed assets, pay dividends to stockholders, or invest in short-term securities. Having excess cash is not as serious a problem as having a cash deficiency, but idle cash earns little or no return and hoarding cash is poor financial policy.

## Pro Forma Balance Sheet

A pro forma balance sheet for March 31 appears in Exhibit 6-10. As we've already explained, the amounts shown for cash in the balance sheet comes from the cash budget; the balance for inventory comes from the purchases budgets. The balances for accounts receivable and accounts payable are derived from the cash receipts budget and the cash disbursements budget, respectively. The balances for fixed assets and stockholders' equity are derived from the pro forma income statements and the balance sheet at December 31, 20X5 (Exhibit 6-3). Overall, then, developing and understanding a pro forma balance sheet requires a thorough understanding of the accrual basis of accounting. The pro forma balance sheet serves as a snapshot of where the company is headed. It also serves as the basis for planning for the period after the balance sheet date. Very often, looking at a pro forma balance sheet provides information not readily apparent from a set of budgets, such as budgeted levels of receivables and inventories in relation to total current assets.

## Goncluding Comments

We've now seen that comprehensive budgeting combines basic ideas from both financial and managerial accounting. From financial accounting come the basic financial statements; from managerial accounting come the emphasis on the future and the need to understand cost behavior. The result is an integrated set of schedules that reflects the expected outcomes of decisions. Budgeting has some other advantages as well, and some important items are missing from our illustration.

Our example is much simpler than real life. The most obvious item is that Home Effects will have to pay interest on the short-term loans it uses to finance

## Exhibit 6-10 Home Effects, Pro Forma Balance Sheet, as of March 31, 20X6

| Assets |  |
| :---: | :---: |
| Cash (from cash budget, Exhibit 6-9) | \$ 134 |
| Accounts receivable (March sales $\times 30 \%$ ) | 240 |
| Inventory (from purchases budget, Exhibit 6-5) | 780 |
| Fixed assets (beginning balance less $\$ 45$ depreciation for 3 months) | 1,535 |
| Total assets | \$ 2,689 |
| Equities |  |
| Accounts payable (March purchases $\times$ 40\%) | \$ 144 |
| Stockholder's equity* | 2,545 |
| Total equities | \$2,689 |

* Beginning balance of $\$ 2,315$ (Exhibit 6-3) plus income for three months of $\$ 230$
operations. Home Effects will also have to pay income taxes. We ignored interest and income taxes because they do not change the fundamentals of cash budgeting, only the details. Most companies experience some bad debts, and their receipts budgets will reflect only the expected collections. A company could have other receipts, such as for interest or dividends on investments. Other cash disbursements are also likely, such as interest payments, repayments of outstanding debt, and dividend payments.

For our illustration of budgeting cash for Home Effects we assumed a minimum cash balance of $\$ 50$. Most companies maintain minimum cash balances, perhaps based on expected disbursements or sales. Financial managers devote considerable attention to determining minimum levels of cash. Dell Computer uses 5 percent of sales as the minimum cash it should carry. As with most decisions, a trade-off exists between two conflicting objectives. On the one hand, a company certainly doesn't want to run out of cash. The lower the minimum required balance, the higher the probability of that happening if customers pay more slowly than expected or cash outflows are higher. On the other hand, idle cash earns little or no return. The company could invest the cash elsewhere to earn additional income, save, interest costs by retiring outstanding debt, or raise dividends. Whatever the policy, companies pay close attention to their cash needs. Consider the following excerpts from two annual reports. First is Microsoft, whose management "believes existing cash and short-term investments together with funds generated from operations will be sufficient to meet operating requirements. The Company's cash and short-term investments are available for strategic investments, mergers and acquisitions, and other potential large-scale cash needs that may arise." Carrier Access states that "We believe that our existing cash, investment balances, and our line of credit are adequate to fund our projected working capital and capital expenditure requirements for at least the next 12 months. Although operating activities may provide cash in certain periods, to the extent we experience growth in the future, our investing activities may require addi-
tional cash; however, there can be no assurance that additional funds or capital will be available in adequate amounts and on terms reasonably acceptable to us."

## BUDGETING IN NOT-FOR-PROFIT ENTITIES

Not-for-profit (NFP) entities, especially governmental units, use budgets in different ways from profit-seeking companies. First, NFPs are likely to budget only for cash flows (receipts and expenditures), not for revenues and expenses. Second, the process is more likely to begin with expenditures rather than receipts. Many NFPs determine what receipts are required only after they've budgeted expenditures.

Budgeting cash receipts for NFPs can be relatively simple or quite complex. Property taxes are the chief source of receipts for school districts and many towns and cities. Such taxes are levied on the basis of the assessed valuation of real property (land and buildings) in the area. Once the total assessed valuation is known, the district can set the tax rate simply by dividing the desired tax revenues by the assessed valuation. If a school district needs $\$ 4,580,000$ intax receipts and the assessed valuation of property in the district is $\$ 54,000,000$, the rate is 0.08482 ( $\$ 4,580,000 / \$ 54,000,000$ ), which is usually expressed as $\$ 84.82$ per $\$ 1,000$ of assessed value. Because budgeted receipts are determined on the basis of the budgeted expenditures, careful planning and monitoring of budgeted expenditures is especially important in NFPs.

For government units that depend heavily on income and sales taxes, as do most states, determining required tax rates, is more complex because estimating receipts requires estimates of total incomes subject to the income tax and of transactions subject to the sales tax. Forecasting methods such as those described earlier are often useful.

To budget cash receipts, some NFPs use one or more of the methods already discussed to budget revenues. A not-for-profit private school might use forecasts of contributions and enrollments as a basis for setting tuition rates to cover budgeted costs. A not-for-profit hospital might forecast utilization of its various services to set charges that cover the costs of those services. Many NFPs also engage in activities similar to those of for-profit enterprises. For example, hospitals operate fitness centers for a profit, museums often operate on-site restaurants or gift shops, and cities operate gas, electric, and water companies. NFPs might use any of the method's introduced earlier to forecast revenues from such enterprises. (Profit-making activities of an NFP are taxable if such activities are not related to the entity's principal purpose and paying income taxes will reduce the funds deroted to fulfilling the entity's purpose.)

Budget allowances for some cost categories at NFPs can be determined by activity analysis. For example, a university might budget faculty positions by applying some formula based on student enrollment and number of courses offered. Thus, an academic department might be given one position for each 300 credit hours of expected enrollment.

Budgets of government units such as towns, states, school districts, and the federal government usually require voter or legislative approval. Once adopted, such a budget must be strictly adhered to. (In some cases, overspending may even be illegal.) In addition, government units tend to practice line-by-line approval
when authorizing budgets. That is, specific dollar amounts are authorized for specific categories of expenditures, such as salaries, equipment, supplies, travel, and postage. (The detail in such budgets can be overwhelming, with specified amounts for categories such as Grade II Data Entry Clerks and Grade IV Carpenters.) A budgeting process that includes a line-by-line approval procedure has two major disadvantages.

One problem is that a manager often has no discretion to shift funds from one line to another to achieve objectives. For example, suppose that an accounting instructor is invited to a seminar on a contemporary accounting topic. The dean and faculty are in favor of the trip, but the travel budget is inadequate to cover the cost. Even if funds remain in the budget allowances for other items such as supplies or secretarial help, the trip can't be authorized.

Another problem with line-by-line approval is that it encourages the setting of current budget allowances based on the prior year's (or an average of prior years') budget allowances or actual expenditures for each item. This approach is called incremental budgeting. Under this approach, each budget unit might be given a 5 percent increase (or decrease) in one or more of its line items. In a broader application of incremental budgeting, each budget unit might be given a 5 percent increase (or decrease) and allowed to spread the total increase (or decrease) over whatever line items are in the budget. Either variation implies that increases or decreases in various units all have the same overall effect. This abrogates managerial responsibility for allocating funds where they will do the most good. Further, when the current budget allowance is based on prior expenditures, managers are inclined to spend the full allowance to avoid a reduction in the budget for the next period. With some regularity, the media have reported particularly interesting examples of such respenses to incremental budgeting, as when some segment of government makes an end-of-year purchase of a five-year supply of toilet tissue or wastebaskets. We hasten to point out that neither line-item budgeting nor incremental budgeting is unique to NFPs. Many businesses also use these techniques, especially for discretionary spending.

The variety of nongovernmental NFPs rivals that of for-profit entities, with NFPs ranging from a local church or the PTA at a local school, through the local and national units of the YMCA and YWCA, to the American Association of Retired Persons and the national Muscular Dystrophy Association. Recent years have seen increasing attention focused on the activities of government and other NFPs. The next section discusses two alternative budgeting approaches, zerobased budgeting and program budgeting, which are possible means of alleviating some of the problems.

## Zero-Based Budgeting

Strictly interpreted, zero-based budgeting means that managers must justify eyery dollar they request in a budget proposal for a given year. Past budget allowances are considered irrelevant, and managers must start from scratch to convince higher-level managers that the current request is necessary. In a strict but practical application of the zero-based concept, each budget unit develops its budget request as a series of decision packages. The most basic of the unit's services constitutes the first package, and incremental packages represent higher levels of service and/or additional services. A critical aspect of decision packages is that each is associated with a definable level or quantity of services.

For example, the basic package of the parks department for a city might cover an irreducible level of maintenance, just enough to keep existing parks open. A higher-level package might include a higher level of maintenance, with grass cut once a week and sporadic tree trimming. At an even higher level, the department might propose a package for providing blooming plants throughout the year.

To evaluate and rank the packages from all units, managers perform costbenefit analysis and exercise judgment about the unit's needs. The final budget might include the basic packages from all budget units, plus some incremental packages. This approach helps to circumvent one of the flaws of incremental bud-geting-the assumption that increased (or decreased) expenditures in all units are equally beneficial (or harmful) to the entire organization. Moreover, forced managerial review of even the most basic functions of each budget unit might reveal that some budget units have outlived their usefulness.

Because a full review of each and every budget request every year is exceedingly time-consuming, most organizations require such reviews only every few years. But the goals of these periodic reviews are the same as under the more strict application of the zero-based concept: to make sure of the need to spend money for a particular service. State-level sunset laws, which require that each program or regulatory agency created by the legislature receive a full, regular review and be dropped if it has served its purpose, are a variation of this second approach.

## Program Budgeting

Program budgeting requires that a budget indicate not only how the requested funds are to be spent, but also why the funds are to be spent in those ways. A program budget emphasizes the results of the unit's efforts and normally provides the unit's manager with considerablediscretion in shifting expenditures from one category to another as long as the shift will increase the likelihood of achieving the desired results. For instance, a traditional budget for a school district shows the objects of the expenditures, such as teachers' salaries, textbooks, and supplies. A program budget for the district shows expenditures by such categories as reading, mathematics, remedial work, student activities, and support services. Similarly, a programbudget for a police department might show amounts requested for crime prevention, juvenile work, and detection.

One beneficial feature of program budgeting, when implemented properly, is that managers, making budget requests are expected to be able to state clearly what would happen if their requests were cut by, for example, 10 percent. Thus, the director of parks and recreation for a city should be in a position to say that such a cut would reduce the hours of operation of a swimming pool or require that grass be cut every ten days instead of once a week. This feature of program budgeting is similar to what can be accomplished with zero-based budgeting, in that different levels of service are associated with each level of requested funding.

The interest in and use of both program and zero-based budgeting probably owes much to the continually increasing public demand for accountability from NFPs. Taxpayers appear to have become dissatisfied with the performance of some government units, and donors to charitable causes have expressed concern about the proportion of contributed funds devoted to fund-raising and other costs not directly related to fulfilling the charitable objectives of the organization. Program budgets that specify goals allow people to see where their money is
going and, eventually, to see whether it was spent effectively. (If a school district requests money "to raise the average reading levels of its pupils," board members can later see whether the levels rose.)

Both program and zero-based budgeting are applicable to business entities as well as NFPs. Corporate executives have, for example, adopted variations of these alternative budgeting approaches for all or some portions of their organizations because of an increasing concern with the productivity of research and development, general administration, and other such activities.

## SUMMARY

Comprehensive budgeting is vital to effective planning and control. The comprehensive budget is the major near-term planning document that a company develops and consists of a set of financial statements and other schedules showing the expected results for a future period. Developing a comprehensive budget formalizes management objectives and helps coordinate the many activities performed within a single firm. Comprehensive budgeting brings together and coordinates the plans of many managers and many levels of management. A comprehensive budget is the most conspicuous process of communication within a firm, and facilitates the coordination of major functional areas-production, sales, finance, and administration.

Sales forecasting is critical to budgeting because the sales budget drives all other budgets. Several approaches are used for forecasting sales. The approach adopted depends on the reliability of available data, the nature of the product, and the experience and sophistication of the managers. A company must have an inventory policy and information about the behavior of its costs in order to prepare the purchases, production, and expense budgets and a pro forma income statement (called operating budgets).

Flexible budget allowances are appropriate for variable and mixed costs, and occasionally for discretionary fixed costs, because such allowances are useful for identifying problems that require managerial action and for evaluating performance. The production budget for a manufacturer is the equivalent of the purchases budget for a retailer. A manufacturer also needs a purchases budget, but the production budget is the basis for developing the purchases budget of a manufacturer.

Budgeting entails numerous behavioral problems, which can be particularly severe if managers do not participate in the development of the budget for their areas or if budget goals are perceived as unachievable. Budgeting is less effective if the concepts of planning, profit, or participation are inconsistent in some way with the prevailing culture. Like operating budgets, financial budgets use forecasts and assumptions about the behavior of the various factors incorporated in them. Financial budgeting involves developing detailed budgets of cash receipts and cash disbursements and a pro forma balance sheet. Cash budgets use data from purchases and expense budgets and from the pro forma income statement. Hence, effective financial budgeting depends on good operational budgeting.

Completion of the tentative cash budget might reveal a need for additional financing and/or reconsideration of established policies. Knowing these needs in advance allows managers time to consider alternatives for meeting the needs.

Not-for-profit entities, as well as for-profit businesses, budget. Although many of the same principles apply, there are some differences. The most significant difference is that not-for-profit entities normally budget receipts based on budgeted expenditures, while business entities budget expenditures based on budgeted receipts.

Two additional budgeting approaches, program and zero-based budgeting, have been introduced for government units to help offset the tendency in not-for-profit budgeting to concentrate on detailed expenditures rather than on objectives. Businesses also use variations of these approaches.

## KEY TERMS

capital budget (231)
cash budget (249)
comprehensive or master budget (230)
continuous budget (232)
expense budget (235)
flexible budget allowance (238)
pro forma balance sheet (249)
program budgeting (257)
purchases budget (248)
sales forecast (233)
static budget (235)
stretch goals (243)
zero-based budgeting (256)

## KEY FORMULAS

Purchases $=\begin{gathered}\text { cost of } \\ \text { goods sold }\end{gathered}+\begin{gathered}\text { ending } \\ \text { inventory }\end{gathered}-\begin{gathered}\text { beginning } \\ \text { inventory }\end{gathered}$

REVIEW PROBLEM

The following information is available for Crestmont Stores.

| Budgeted sales for J anuary, 20X4 | $\$ 200,000$ |
| :--- | ---: |
| Budgeted sales for February, 20X4 | $\$ 240,000$ |
| Cost data: |  |
| Purchase price of product | $60 \%$ of selling price |
| Commission to salespeople | $10 \%$ of sales |
| Depreciation | $\$ 2,000$ per month |
| Other operating expenses | $\$ 42,000$ per month, including $\$ 2,000$ depreciation |


| Crestmont Stores, Balance Sheet at December 31, 20X3 |  |  |  |  |
| :--- | ---: | :--- | ---: | :---: |
| Assets |  |  | Equities |  |
| Cash | $\$ 20,000$ |  | Accounts payable (for |  |
| Accounts receivable | 110,000 | merchandise) | $\$ 80,000$ |  |
| Inventory | 150,000 | Common stock | 300,000 |  |
| Building and equipment, net | 200,000 | Retained earnings | 100,000 |  |
| Total | $\underline{\$ 480,000}$ | Total | $\underline{\$ 480,000}$ |  |

(a) Crestmont maintains inventory at $150 \%$ of the coming month's sales requirements.
(b) Sales are collected $40 \%$ in the month of sale, $60 \%$ in the following month.
(c) Purchases are paid $30 \%$ in the month of purchase, $70 \%$ in the following month.
(d) All other expenses requiring cash are paid in the month incurred.
(e) The board of directors plans to declare a $\$ 3,000$ dividend on J anuary 10, payable on J anuary 25.

## Required:

1. Prepare a budgeted income statement for J anuary.
2. Prepare a purchases budget for J anuary.
3. Prepare a cash receipts budget for J anuary.
4. Prepare a cash disbursements budget for J anuary.
5. Prepare a cash budget for J anuary.
6. Prepare a pro forma balance sheet as of J anuary 31.

## ANSWER TO REVIEW PROBLEM

1. Crestmont Stores, Budgeted Income Statement for J anuary 20X4

| Sales | $\$ 200,000$ |  |
| :--- | ---: | ---: |
| Cost of sales | 120,000 |  |
| Gross profit | 80,000 |  |
| Other variable costs, commissions $(10 \% \times \$ 200,000)$ | 20,000 |  |
| Contribution margin | 60,000 |  |
| Fixed costs: | $\$ 2,000$ |  |
| $\quad$ Depreciation | 40,000 | $\underline{42,000}$ |
| $\quad$ Other operating expenses |  | $\underline{\$ 18,000}$ |
| Income |  |  |

2. 

Crestmont Stores, Purchases Budget for J anuary 20X4
Cost of sales (\$200,000 $\times 60 \%$ )
Desired ending inventory ( $\$ 240,000 \times 60 \% \times 150 \%$ ) 216,000
Total requirements
336,000
Beginning inventory, from beginning balance sheet $\quad 150,000$
Purchases $\quad \$ 186,000$
3. Crestmont Stores, Cash Receipts Budget for J anuary 20X4
$\begin{array}{lr}\text { Collections from December sales, December } 31 \text { receivables } & \$ 110,000 \\ \text { Collections from J anuary sales }(\$ 200,000 \times 40 \%) & \underline{80,000} \\ \text { Total } & \underline{\$ 190,000}\end{array}$
Because sales are collected in full by the end of the month following sale, all accounts receivable at the end of a month are expected to be collected in the coming month.
4. Crestmont Stores, Cash Disbursements Budget for J anuary $20 \times 4$

| Merchandise $[(\$ 186,000 \times 30 \%)+\$ 80,000]$ | $\$ 135,800$ |
| :--- | ---: |
| Commissions $(\$ 200,000 \times 10 \%)$ | 20,000 |
| Fixed operating expenses | 40,000 |
| Dividend | 3,000 |
| Total | $\underline{\$ 198,800}$ |

Notice that depreciation is not a cash disbursement.

| 5. Crestmont Stores, Cash Budget for J anuary 20X4 |  |
| :--- | ---: |
| Beginning balance | $\$ 20,000$ |
| Receipts (see above) | $\mathbf{1 9 0 , 0 0 0}$ |
| Cash available | $\mathbf{2 1 0 , 0 0 0}$ |
| Disbursements | $\underline{198,800}$ |
| Ending balance | $\underline{\$ 11,200}$ |

6. Crestmont Stores, Pro Forma Balance Sheet as of J anuary 31, 20X4

| Assets |  | Equities |  |
| :---: | :---: | :---: | :---: |
| Cash (cash budget) | \$ 11,200 | Accounts payable ${ }^{\text {c }}$ | \$130,200 |
| Accounts receivable ${ }^{\text {a }}$ | 120,000 | Common stock | 300,000 |
| Inventory (purchases budget) | 216,000 | Retained earnings ${ }^{\text {d }}$ | 115,000 |
| Building and equipment ${ }^{\text {b }}$ | 198,000 |  |  |
| Total | \$545,200 | Total | \$545,200 |

a $60 \%$ of J anuary sales of $\$ 200,000$ ( $40 \%$ was collected in J anuary).
b $\$ 200,000$ beginning balance less $\$ 2,000$ depreciation expense.
c $70 \%$ of J anuary purchases of $\$ 186,000$ ( $30 \%$ was paid in J anuary).
d Beginning balance of $\$ 100,000$ plus budgeted income of $\$ 18,000$ minus dividend of $\$ 3,000$.
Notice that cash declined by $\$ 8,800$ (from $\$ 20,000$ to $\$ 11,200$ ) even though income was $\$ 18,000$. If Crestmont's managers believe the budgeted cash balance of $\$ 11,200$ is too low, they might begin to seek ways to increase that balance (e.g., a short-term bank loan).

## APPENDIX: BUDGETS FOR MANUFACTURERS

Because manufacturers produce goods prior to sale, they need production budgets, which are virtually the same as purchases budgets for merchandisers, but are typically expressed in units, not dollars. To produce goods, manufacturers must purchase materials and components, and therefore need budgets for these purchases. Inventory policy for materials and components depends on production, not directly on sales, so purchases budgets for manufacturers are based on production budgets. (Of course, production budgets are based on sales budgets, so that budgets for material purchases are indirectly linked to sales budgets.)

Suppose that Walston Mills maintains inventory of finished product equal to twice budgeted sales for the following month. Walston's managers have gathered the following budgeted data for 20X8.

| Units of product on hand at December 31, 20X7 | 47,000 units |
| :--- | ---: |
| Material on hand, December 31, 20X7 | 130,000 pounds, $\$ 390,000$ |
| Budgeted sales for the next four months, in units: | 25,000 |
| J anuary | 30,000 |
| February | 35,000 |
| March | 40,000 |
| April | $\$ 6.00$ |
| Variable manufacturing costs per unit produced: | 3.00 |
| Materials (2 Ibs. at \$3.00) | $\underline{100}$ |
| Direct labor | $\underline{\underline{\$ 10.00}}$ |
| Variable overhead | $\$ 22,000$ including $\$ 3,000$ depreciation |
| Total |  |

Walston's variable manufacturing costs vary with the number of units produced, not with the number of units sold. So the production budget must show the number of units that must be produced each period to meet sales and inventory requirements.

The following schedule shows Walston's completed production budget for January, February, and March. This budget is similar to Home Effects's purchases budget, except that it is in units.

## Walston Mills Production Budget

| Walston Mills Production Budget |  |  |  |
| :---: | :---: | :---: | :---: |
|  | J anuary | February | March |
| Sales | 25,000 | 30,000 | 35,000 |
| Desired ending inventory* | 60,000 | 70,000 | 80,000 |
| Total requirements | 85,000 | 100,000 | 115,000 |
| Beginning inventory | 47,000 | 60,000 | 70,000 |
| Production | 38,000 | 40,000 | 45,000 |

* Next month's unit sales $\times 2$

Manufacturers operating under less than ideal JIT conditions must maintain some inventory of materials as a buffer. Let us assume that Walston's managers keep materials inventory equal to 150 percent of the coming month's budgeted production needs. (Again, inventory policy for materials is based on production, not on sales, because materials are needed when the product is made, not when it is sold.)

The following schedule shows completed budgets for materials purchases in January and February.

## Walston Mills Purchases Budget, in pounds

|  | $\frac{\text { J anuary }}{}$ | $\underline{\text { February }}$ |
| :--- | ---: | ---: |
| Used in production $^{\text {a }}$ | $\underline{76,000}$ | 80,000 |
| Desired ending inventory $^{\mathrm{b}}$ | $\underline{120,000}$ | $\underline{135,000}$ |
| Total requirements | $\underline{196,000}$ | $\underline{215,000}$ |
| Beginning inventory | $\underline{\underline{66,000}}$ | $\underline{\underline{120,000}}$ |
| Purchases | $\underline{95,000}$ |  |

a Unit production $\times 2$ pounds; $38,000 \times 2=76,000 ; 40,000 \times 2=80,000$.
b Next month production $\times 2$ pounds $\times 15$ supply; $40,000 \times 2 \times 15=120,000 ; 45,000 \times 2 \times 15=135,000$.
Purchases budgets in dollars are as follows.

|  | J anuary | February |
| :--- | ---: | ---: |
| Used in production | $\$ 228,000$ | $\$ 240,000$ |
| Desired ending inventory | $\underline{360,000}$ | $\underline{405,000}$ |
| Total requirements | $\$ 588,000$ | $\$ 645,000$ |
| Beginning inventory | $\underline{390,000}$ | $\underline{360,000}$ |
| Purchases | $\underline{\$ 198,000}$ | $\underline{\$ 285,000}$ |

All amounts are $\$ 3$ per pound $\times$ the numbers of pounds.
Cash requirements for production costs are a bit more complicated than are cash payments for purchases for a merchandiser. Let us assume that Walston pays
for its material purchases in the month after purchase, and for all other production costs in the month incurred. December purchases were $\$ 175,000$, to be paid in January. We therefore have the following budgets of production cost payments.

|  | J anuary | February |
| :--- | ---: | ---: |
| Direct labor at $\$ 3 \times 38,000,40,000$ | $\$ 114,000$ | $\$ 120,000$ |
| Variable overhead at $\$ 1$ | 38,000 | 40,000 |
| Fixed costs (\$22,000 - $\$ 3,000$ ) | 19,000 | 19,000 |
| Payments for materials, prior month purchases | $\underline{175,000}$ | $\underline{198,000}$ |
| Total | $\underline{\$ 346,000}$ | $\underline{\$ 377,000}$ |

From here we could prepare a cash budget just as we do for a merchandiser.

## ASSIGNMENTMATERIAL

## INTERNET ACTIVITY

Most annual reports describe how the companies expect to reach their objectives. Read several of these and relate them to the principles discussed in the chapter. For example, suppose a company follows a strategy of developing brand loyalty. How will it do so? High advertising and promotion? Increasing quality? What steps will the company take to reach its objectives?

## QUESTIONS FOR DISCUSSION

6-1 What do you think are the most important factors in forecasting sales for the follow-
Sales ing companies?
forecasting (a) A marketer of high-fashion clothing.
(b) A manufacturer of carpeting.
(c) A grocery chain.
(d) A television station (advertising revenues).

6-2 You have just finished your sales forecast. Indicate what effect each of the following Sales forecasting-
effects of external events events is likely to have on that sales forecast. Explain your reasoning.
(a) Your company makes appliances. The federal government just announced a cutback in its program to assist low-income families in buying their own homes.
(b) Your company distributes jewelry. The government announces that personal income is increasing and unemployment decreasing.
(c) You make parts for the computer industry. Computer makers are announcing price decreases on their products.
(d) You make heating and air conditioning equipment. The prices of electricity, heating oil, and natural gas are expected to rise rapidly.
(e) You make insulation for houses and other buildings. The prices of electricity, heating oil, and natural gas are expected to rise rapidly.
(f) You publish college textbooks. Recent statistics show that the numbers of high school seniors and juniors have fallen off from previous years.

6-3 J ack Rolland, the assistant to the controller of Dayton Company, was looking at the

What's happening
here? following report for the marketing department. Dayton's fiscal year ends December 31.

|  |  | Expenditures Through |  |  |
| :--- | :---: | :---: | :---: | ---: |
| Cost Category |  | Annual Budget |  | November |
| Salaries | $\$ 360,000$ |  | December |  |
| Travel | 45,000 |  | $\$ 330,000$ | $\$ 360,000$ |
| Other | 110,000 |  | 32,000 | 45,000 |
|  |  | 100,000 | 110,000 |  |

Rolland said to you: "I wonder why Cal, the marketing department manager, waited so long to spend his travel money. Maybe a lot of his business is concentrated in December?"

Required:
Why else might Cal be spending so much on travel in December?
6-4 You are the controller of a large manufacturer and have recently completed the cash
Cash budgetingeffects of new information budget for the coming year. Knowledgeable managers have now given you new information. Considering each item independently, indicate (1) whether you expect it to influence your budgets for cash receipts, cash disbursements, or both and (2) in which direction each budget would be affected. Explain your answers.
(a) The credit manager informs you that customers are not paying their bills as quickly as usual because of high interest rates.
(b) The sales manager informs you that sales should be higher than budgeted because of a strike at the factory of a major competitor.
(c) The purchasing manager informs you that suppliers who have been giving your company 45 days of credit are now requiring payment in 30 days.
(d) The vice presidents of production and marketing inform you that inventory policy is being changed from the carrying of the next two months' requirements to $80 \%$ of the next month's requirements because the company's J IT initiative appears to be working better than expected.

6-5
Relationships of profit and cash

The financial vice presidents of two companies were talking about the performances of their respective companies in recent months.

AceHigh Co.'s vice president: We're making profits hand over fist because of rapid increases in monthly sales. We expected growth and have been keeping our inventories up to meet the increasing demand. But our cash balances have been a problem, and we've borrowed a lot of money lately.
Tympanum's vice president: Things haven't been going as well for us. We have entered our slow season, so sales have been falling. Of course, we knew this would happen and planned accordingly. We aren't making much profit, but do we have cash. Our balance has gone up every month.

## Required:

Explain why cash and profits are going in opposite directions for both of these companies.

6-6
Are budgets bad at GE?

J ack Welch, the former CEO of General Electric, has long been known for distrust of budgets. GE does not operate under the typical budgeting system. Welch has argued that participation by managers in the budgeting process is unlikely to produce good results and that stretch goals are the best motivators.

Welch says that budgets can be very deceptive, noting that, while GE's plastics business was up over $10 \%$ in 1994, it should have been up over $30 \%$. The business was caught in a price squeeze and failed to respond in time. He reduced bonuses to the plastics managers. On the other hand, GE's aircraft engine business dropped about $10 \%$, but those managers received significant bonuses. The aircraft business was more successful than its competitors and responded better to the severe drop in military purchases that hurt companies all over the world. Had GE operated under a budget system, the plastics business would have appeared very successful and the aircraft business very unsuccessful, when the opposite was the case.

Required:
Should budgeting as described in this chapter produce the results Welch deplores? What is wrong with budgeting that yields the described results?

## EXERCISES

6-7
Budgeted income
statements and purchases budget
(continued in 6-8)

6-8
Cash budget (continuation of 6-7)

Budgeted income

## statement and

purchases
budget
(continued in 6-10)

ShoeWorld has budgeted May sales at $\$ 250,000$ and J une sales at $\$ 220,000$. Cost of sales is $60 \%$ of sales. ShoeWorld's variable costs other than cost of sales are $10 \%$ of sales, and its monthly fixed costs are $\$ 22,000$, including $\$ 3,000$ depreciation. ShoeWorld's policy is to have inventory equal to budgeted sales needs for the following month. ShoeWorld began May with inventory of $\$ 95,000$.

## Required:

Prepare budgeted income statements for May and for J une, and a purchases budget for May.

ShoeWorld collects $60 \%$ of its sales in the month of sale, $40 \%$ in the following month. At the end of April, receivables were $\$ 122,000$. ShoeWorld pays for its purchases the month after purchase. Payables at April 30 were $\$ 180,000$. All costs requiring cash payment, other than cost of sales, are paid as incurred. The cash balance at April 30 is $\$ 30,000$.

## Required:

Prepare budgets of cash receipts and disbursements and a cash budget for May and for J une.

Olson Sporting Goods has the following sales forecast for the first four months of $20 \times 9$.

| J anuary | $\$ 70,000$ |
| :--- | ---: |
| February | 70,000 |
| March | 90,000 |
| April | 80,000 |

Olson's cost of sales is $60 \%$ of sales. Fixed costs are $\$ 12,000$ per month. Olson maintains inventory at $150 \%$ of the coming month's budgeted sales requirements and has $\$ 55,000$ inventory at J anuary 1.

## Required:

1. Prepare a budgeted income statement for the first three months of 20x9, in total, not by month.
2. Prepare a purchases budget for the first three months of 20X9 by month.

6-10
Cash budget and pro forma balance sheet (continuation
of 6-9)

| Assets |  |  |  |  |
| :--- | ---: | :--- | :--- | ---: |
|  | Equities |  |  |  |
| Cash | $\$ 20,000$ |  | Accounts payable | $\$ 18,000$ |
| Receivables | 30,000 |  |  |  |
| Inventory | $\underline{55,000}$ |  | Stockholders' equity | $\underline{87,000}$ |
| Total | $\underline{\$ 105,000}$ | Total | $\underline{\underline{\$ 105,000}}$ |  |

Olson pays for its purchases $40 \%$ in the month of purchase, $60 \%$ in the following month. Olson collects $60 \%$ of its sales in the month of sale, $40 \%$ in the following month. All fixed costs require cash disbursements. Olson's balance sheet at December 31, 20X8 appears below.

Required:

1. Prepare a cash receipts budget for each of the first three months of $20 \times 9$ and for the quarter as a whole.
2. Prepare a cash disbursements budget for each of the first three months of 20X9 and for the quarter as a whole.
3. Prepare a cash budget for each of the first three months of $20 \times 9$ and for the quarter as a whole.
4. Prepare a pro forma balance sheet as of March 31, 20X9.

6-11 Norton Stationery, a large retailer of cards and gifts, has developed the following inBudgeted income

## statement and

 purchasesbudget
(continued
in 6-12)
formation.
Sales Forecast 20X4

| January | $\$ 100,000$ |
| :--- | ---: |
| February | 130,000 |
| March | 160,000 |
| April | 150,000 |

Cost of sales is $40 \%$ of sales. Other variable costs, principally commissions, are $30 \%$ of sales. Fixed costs are $\$ 22,000$ per month. Norton maintains inventory at twice the budgeted sales requirements for the following month. The beginning inventory is \$50,000.

## Required:

1. Prepare budgeted income statements for the first three months of 20X4 and for the quarter as a whole.
2. Prepare a purchases budget, by month, for the first quarter.

6-12
Cash budget and pro forma balance sheet (continuation of 6-11)

Norton Stationery pays for its purchases in the month after purchase. It collects 20\% of its sales in the month of sale and $80 \%$ in the following month. Depreciation, which is included in the $\$ 22,000$ monthly fixed costs, is $\$ 4,000$ per month. All other costs require cash disbursements and are paid as incurred. The balance sheet for Norton at December 31, 20X3 is as follows.

| Assets |  | Equities |  |  |
| :--- | ---: | :--- | :--- | ---: |
| Cash | $\$ 50,000$ |  | Accounts payable | $\$ 60,000$ |
| Receivables | 90,000 |  |  |  |
| Inventory | 50,000 |  |  |  |
| Fixed assets, net | $\underline{150,000}$ | Stockholders' equity | $\underline{280,000}$ |  |
| Total | $\underline{\$ 340,000}$ | Total | $\underline{\$ 340,000}$ |  |

Required:

1. Prepare a cash receipts budget for each of the first three months of $20 \times 4$ and for the quarter as a whole.
2. Prepare a cash disbursements budget for each of the first three months of 20X4 and for the quarter as a whole.
3. Prepare a cash budget for each of the first three months of $20 \times 4$ and for the quarter as a whole.
4. Prepare a pro forma balance sheet as of March 31, 20X4.

6-13 Deborah Davis owns and operates Davis Design, an interior design company. Ms.
Budget for service company Davis has been having problems with the business side of the operation and has asked for your help. One of the first steps you suggest is the preparation of a budget. Davis Design sells furniture and accessories to its clients as well as charging design fees. Ms. Davis provides the following estimates for the next quarter.

|  | Sales of Merchandise | Design Fees |
| :--- | :---: | :---: |
| April | $\$ 14,000$ | $\$ 6,000$ |
| May | 17,000 | 9,500 |
| June | 13,000 | 7,500 |

Davis Design buys furniture and accessories at $90 \%$ of the price it charges. All other costs are fixed at \$4,100 per month.

Required:
Prepare budgeted income statements for each of the three months.
6-14
Purchases
budget-units
and dollars
Nash, Inc. expects the following unit sales over the next few months.

| Month | Unit Sales |
| :--- | :---: |
| February | 1,900 |
| March | 2,200 |
| April | 2,300 |
| May | 2,100 |
| J une | 1,700 |

Nash's policy is to maintain inventory equal to $50 \%$ of budgeted sales needs for the following month. The beginning inventory is 1,000 units. Each unit costs $\$ 4$.

## Required:

1. Prepare purchases budgets for as many months as you can in (a) units and (b) dollars.
2. Explain why you had to stop where you did.

6-15 Odell Company manufactures a small cabinet for cassette tapes. Its sales budget for
Budgets for a manufacturer (Appendix, continued in 6-16 and 6-17) the first three months of 20X0 is as follows.

| J anuary | $\$ 2,000$ (50 units) |
| :--- | :--- |
| February | $\$ 2,200$ (55 units) |
| March | $\$ 1,800$ (45 units) |

Variable manufacturing costs are $\$ 26$ per unit, of which $\$ 12$ is for materials. Odell's fixed manufacturing costs are $\$ 150$ per month, including $\$ 40$ of depreciation. Its only
variable selling cost is a $15 \%$ sales commission. Fixed selling and administrative costs are $\$ 70$ per month. Odell maintains no inventory of finished cabinets.

## Required:

Prepare a budgeted income statement for Odell for J anuary.
6-16 Because Odell carries no inventory of finished cabinets, its production, in units, is the

Production budget for a manufacturer (continuation of 6-15) same as its sales. Odell's $\$ 12$-per-unit materials cost is for 4 pounds of materials at a price of $\$ 3$ per pound.

Required:
Prepare a budget of production costs for J anuary showing as much detail as the facts permit.

6-17 Odell's policy is to maintain an inventory of material at $20 \%$ of production in the up-

Purchases
budget for a
manufacturer
(continuation
of 6-15
and 6-16)
6-18 Expense
budgets and variances coming month. At December 31, 20X9, Odell had 34 pounds of material that cost \$102.

Required:
Prepare a materials purchases budget for Odell for J anuary, in units and dollars.

Pendleton Company has found the following formula useful in predicting the monthly cost of utilities for its factory:

$$
\text { Total utilities cost }=\$ 22,700+\$ 1.815 \times \text { machine hours }
$$

Budgeted production for J uly was 45,000 units. Each unit requires 20 minutes of machine time, so Pendleton budgeted the use of 15,000 machine hours and utilities of $\$ 49,925$. Actual production in J uly was 42,000 units, using 14,000 machine hours. Actual utilities were $\$ 48,550$. The production manager said that he had controlled utilities well, because actual cost was $\$ 1,375$ less than budgeted ( $\$ 49,925-\$ 48,550$ ).

## Required:

Determine the amount and direction of the July budget variance for utilities using a flexible budget for utilities.

6-19 Home Builders operates a chain of building supply stores in a large metropolitan Budgeted income statements area. The sales manager has retained an economist to develop sales forecasting methods to enable the company to plan better. The economist reports that the following equation fit historical sales quite well and should predict future sales well if past patterns of behavior continue.

$$
\text { Monthly sales in dollars }=\$ 136,000+\$ 0.052 \times \underset{\begin{array}{c}
\text { dollar value of building } \\
\text { permits issued in } \\
\text { prior month }
\end{array}}{\substack{\text { prer }}}
$$

The sales manager shows you the following data regarding building permits. The forecasts were developed by the local Builders' Association, whose previous forecasts have been reasonably accurate.

| March | $\$ 3,000,000$ (actual) |
| :--- | ---: |
| April | $4,750,000$ (forecast) |
| May | $6,900,000$ (forecast) |
| J une | $7,100,000$ (forecast) |

It is now April 3, and the sales manager would like forecasts of sales and income for as many months as you can prepare. She tells you that cost of goods sold, which is all variable, is $45 \%$ of sales, other variable costs are $8 \%$ of sales, and fixed costs are \$140,000 per month.

## Required:

Prepare budgeted income statements for as many months as you can, given the data available. Round to the nearest $\$ 100$.

6-20 Aviary, Inc. makes various birdhouses. One popular model is for purple martins.
Flexible
budget and variances

Materials for a unit of the birdhouse cost $\$ 4$, direct labor is $\$ 3$, and manufacturing overhead is $\$ 70,000$ per month fixed, plus $\$ 5$ per unit variable (with production). In one month, production was 18,000 units and actual costs were as follows: materials, $\$ 71,800$; direct labor, $\$ 56,100$; variable overhead, $\$ 89,000$; and fixed overhead, \$70,000.

## Required:

1. Prepare a flexible expense budget formula for total production cost.
2. What should costs have been to produce 18,000 units? (Consider each element of cost separately.)
3. What were the variances between actual and budgeted costs for each element of cost?

6-21 The managers of Kidstuff, a retailer of various children's materials, have developed Income statement and purchases budget

| Selling price per unit | $\$ 20$ |
| :--- | :---: |
| Purchase cost per unit | $\$ 8$ |
| Sales commission | $20 \%$ of selling price |
| Fixed costs per month | $\$ 14,000$ |

The managers plan to maintain inventory equal to twice the budgeted sales needs of the following month. Budgeted unit sales for March, April, and May are 4,000, 4,500, and 3,750 , respectively.

## Required:

1. Prepare budgeted income statements for March and April.
2. Prepare a purchases budget for April, in units.
3. If sales for J une are expected to be $\$ 100,000$, how many units should the company plan to purchase in May?

6-22 Walton Company expects the following quarterly results in 20X4, in thousands of dollars.
the following data about their main product.

|  | $\mathbf{1}$ |  |  | $\mathbf{2}$ |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
|  |  | $\$ 3,600$ |  | $\$ 4,200$ |  |

The beginning balance in accounts receivable is $\$ 1,700$ thousand. Cash on hand at the beginning of the year is $\$ 200$ thousand, which is also the desired minimum
balance. Accounts receivable at the end of each quarter are two-thirds of sales for the quarter. Any borrowings are made in $\$ 10$ thousand multiples and are repaid at the ends of quarters. Ignore interest.

## Required:

1. Prepare a cash budget by quarters for the year.
2. What is the outstanding loan at the end of the year?

## PROBLEMS

6-23
Flexible and
static
budgetsservice department

You recently became the supervisor of the Claims Processing department of GQK Insurance. The financial vice president, Carl Mintz, has expressed concern to you about the use of supplies in your department and has, after discussions with you, come up with the following monthly budget formula:

$$
\text { Budgeted supplies expense }=\$ 12,400+(\$ 1.43 \times \text { claims processed })
$$

Budgeted output of processed claims for April was 100,000, giving a budget allowance of $\$ 155,400$. Your department actually processed 112,500 claims and used supplies costing $\$ 169,340$. Mintz attached a note to your monthly report saying that you needed to get better control of supplies because you exceeded the budget by \$13,940.

Required:
Using the guidelines in Appendix A, write a memorandum to Mr. Mintz about your use of supplies in April.

6-24
Production
budget
(Appendix, continued in 6-25 and 6-26)

6-25
Purchases
budget
(continuation of 6-24)

6-26
J IT
manufacturing (continuation
of 6-24
and 6-25)
Sonora Pottery manufactures various products. It has the following sales budget, in sets, for its Mexacali line of dishes: April, 18,000; May, 24,000; J une, 25,000. Sonora keeps its inventory at twice the coming month's budgeted sales. At April 1, Sonora expects inventory to be 41,000 sets.

## Required:

Prepare production budgets for April and May.
Each set of Mexacali dishes requires 12 pounds of materials that cost $\$ 2.50$ per pound. Sonora keeps its inventory of materials at $150 \%$ of the coming month's budgeted production. At the beginning of April, Sonora expects to have 540,000 pounds of materials on hand.

## Required:

Prepare a materials purchases budget for April in (a) pounds and (b) dollars.
Sonora's managers are considering adopting just-in-time and flexible manufacturing principles. Some of the managers believe the company could cut finished goods inventory to a constant 800 sets of Mexacali dishes and materials inventory to a twoday supply (1/15 of a month).

## Required:

1. Prepare production budgets for April and May, and a purchases budget for April. Assume that April's beginning inventories conform to the new policies.
2. Using the guidelines in Appendix A, write a memorandum to the factory manager about the advantages you see in reducing inventory as indicated here.

6-27 Southcliff Community Church operates a nursery school from September through Cash budgetnursery school May. Parents can enroll a child for a morning or an afternoon class, with each class limited to 24 children. The church's Board of Trustees sets the school's fees with the intention of breaking even.

The Board has the following report of cash receipts and disbursements for the school for the nine months ended May 31, $20 \times 7$.

| Receipts |  | $\$ 34,880$ |
| :--- | ---: | ---: |
| Disbursements: | $\$ 21,000$ |  |
| $\quad$ Teacher's salary | 4,000 |  |
| Teacher's assistant | 2,144 |  |
| Payroll-related costs | 3,240 |  |
| Supplies | 2,162 |  |
| Food | 1,456 |  |
| Equipment repair and replacement | 285 |  |
| Licenses | 1,226 |  |
| Miscellaneous |  | $\underline{35,513}$ |
| Total | $\underline{\underline{\$(633)}}$ |  |

For the period covered by the report, the monthly fee was $\$ 100$ per child and average enrollment per month was about 38 children.

In a letter accompanying the report, the teacher in charge of the school made the following comments about operations for the coming year.
(a) Costs for food and supplies are likely to increase 5\%.
(b) Licensing fees will increase by $\$ 50$.
(c) The need for a teacher's assistant continues because enrollment reaches 20 in one or both classes in several months.
(d) Payroll-related costs should continue at about the same percentage of payroll costs.
(e) Miscellaneous operating costs are likely to be about the same, but equipmentrelated costs will probably be about $\$ 1,650$.

Based on the multitude of positive comments received about the school's teacher, the Board voted to increase the teacher's salary 15\% and to accept the teacher's opinions about costs for the coming year.

## Required:

1. Prepare a cash disbursements budget for the coming year.
2. Determine what monthly fee per child the Board must set for the coming year to break even. Assume an average enrollment of 40 children per month.

6-28 Preparing flexible budgets

As a new assistant to the controller of Gloire Company, you have been assigned the task of preparing a set of flexible budget allowances for overhead costs. You have the following data available.

| Cost | Variable Amount per <br> Direct Labor Hour | Fixed Amount |
| :--- | :---: | :---: | :---: |
| Supplies | $\$ 0.40$ | $\$ 24,000$ |
| Repairs | 0.08 | 11,500 |
| Power | 1.20 | 15,600 |
| Depreciation | 0 | 14,700 |

Supervision, the only other overhead item, is a step-variable cost. Gloire budgets supervision as $\$ 8,000$ at 10,000 direct labor hours, rising by $\$ 1,500$ for each additional 1,000 direct labor hours.

## Required:

Prepare a schedule showing the budgeted amount of each cost element and of total budgeted overhead cost at 10,000, 12,000, and 14,000 direct labor hours.

6-29 Following is the pro forma income statement for Habib Company for April. The comRelationships pany has budgeted no change in inventories.

| Sales (900 units at \$60) |  | $\$ 54,000$ |
| :--- | ---: | ---: |
| Variable costs: | $\$ 5,400$ |  |
| $\quad$ Materials (\$6 per unit) | 6,300 |  |
| Direct labor (\$7 per unit) | 3,600 |  |
| Overhead-manufacturing (\$4 per unit) | 900 | 16,200 |
| $\quad$ Selling expenses (\$1 per unit) |  | $\$ 37,800$ |
| Contribution margin | $\$ 9,000$ |  |
| Fixed costs: | $\underline{9,100}$ | $\underline{18,100}$ |
| $\quad$ Manufacturing |  | $\underline{\$ 19,700}$ |
| $\quad$ Selling and administrative |  |  |
| Income |  |  |

## Required:

Fill in the blanks.

1. Budgeted production for April is $\qquad$ units.
2. Total variable manufacturing costs for April are \$ $\qquad$ .
3. The sale of an additional 10 units would increase income by $\$$ $\qquad$ .
4. Total costs and expenses if 910 units were sold would be $\$$ $\qquad$ .
5. Break-even volume in units is $\qquad$ .
6. If variable manufacturing costs increased by $\$ 2$ per unit, income at 900 units sold would be \$ $\qquad$ -
7. If fixed costs increased by $\$ 4,800$ and the firm wanted income of $\$ 19,700$, sales in units would have to be $\qquad$ .
8. If ending inventory were to be 30 units higher than beginning inventory, manufacturing costs incurred during the period would be \$ $\qquad$ -.

6-30 Following are partially completed sales and production budgets for Firmin Company. Relationships among sales
and production budgets Firmin maintains an inventory equal to $150 \%$ of the budgeted sales for the coming month.

| Sales Budget (in units) |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| J an. | Feb. | Mar. | Apr. | May | J une | J uly |
| 3,000 | 3,400 |  |  |  |  |  |

## Production Budget (in units)

|  | J an. | Feb. | Mar. | Apr. | May | J une |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ending inventory |  | 6,300 |  |  | 8,700 |  |
| Sales | 3,000 |  |  |  |  | 5,800 |
| Total requirements |  |  |  | 13,900 |  |  |
| Beginning inventory |  | 5,100 |  | 6,900 |  |  |
| Production | 3,600 |  |  | 7,000 |  | 5,200 |

## Required:

Fill in the blanks.

6-31 Stony Acres Department Store makes about 20\% of its sales for cash. Credit sales are One-month cash budgetdiscounts collected $20 \%, 30 \%$, and $45 \%$ in the month of sale, month after sale, and second month after sale, respectively. The remaining 5\% become bad debts. The store tries to purchase enough goods each month to maintain its inventory at 2.5 times the following month's budgeted sales needs. All purchases are subject to a $2 \%$ discount if paid within ten days and the store takes all discounts. Accounts payable are then equal to one-third of that month's net purchases. Cost of goods sold, without considering the $2 \%$ discount, is $60 \%$ of selling prices. The store records inventory net of the discount.

The general manager of the store has asked you to prepare a cash budget for August and you have gathered the following data.

| Sales: |  |
| :--- | ---: |
| May (actual) | $\$ 220,000$ |
| J une (actual) | 260,000 |
| July (actual) | 300,000 |
| August (budgeted) | 340,000 |
| September (budgeted) | 300,000 |
| Inventory at J uly 31, net of discount | 455,700 |
| Cash at J uly 31 | 73,000 |
| Purchases in J uly (gross) | 210,000 |
| Selling, general, and administrative expenses | 102,000 |

The store pays all of its expenses, other than for merchandise, in the month incurred.

## Required:

Prepare a cash budget for August.

6-32

## Budgeting in

 a CPA firmLaKerra Watson is a certified public accountant practicing in a large city. She employs two staff accountants and two clerical workers, paying them a total of $\$ 10,800$ per month. Her other expenses, all fixed, for such items as rent, utilities, subscriptions, stationery, and postage, are \$5,300 per month.

Public accounting is, for most firms, highly seasonal, with about four months (J anuary through April) that are extremely busy and eight months that have less activity.

The most relevant measure of volume in a CPA firm is charged hours-the hours worked on client business for which the clients are charged. Ms. Watson expects her two staff accountants to work an average of 120 charged hours each month during the eight slower months, and 200 hours each per month during the J anuary-April busy season. Clerical personnel work about 600 charged hours each per year, and Ms. Watson works about 1,400. For both the clerical personnel and Ms. Watson, approximately $40 \%$ of their charged hours fall in the four-month busy season.

Ms. Watson charges her clients $\$ 100$ per hour for her time, $\$ 50$ for the time of a staff accountant, and $\$ 15$ for the time of clerical personnel.

## Required:

Prepare a budget of revenues and expenses for a year for Ms. Watson's firm. Separate the budgets for the periods J anuary-April and May-December.
6-33
Sales
forecasting-
scatter
diagram and
regression
Year
20X1

20X2
20X3
20X4
20X5
$20 \times 6$

| Housing Units Built <br> (in thousands) |
| :---: |
| 1,300 |
| 1,400 |
| 1,900 |
| 1,500 |
| 2,000 |
| 1,600 |


| Sales of Seneca Company <br> (in thousands) |
| :---: |
| $\$ 2,440$ |
| 2,610 |
| 3,380 |
| 2,760 |
| 3,520 |
| 2,875 |

## Required:

1. Develop an equation to forecast sales for Seneca. Use a scatter diagram and regression analysis.
2. Mr. Ridley has learned that the forecast for housing units to be built in $20 X 7$ is 1.8 million. What is your forecast for Seneca's sales? Are you relatively confident about your forecast? Why or why not?

6-34 The controller of Ames Industries has analyzed the costs of the Linden Plant. She Flexible budget, multiple drivers comes up with the following cost drivers. Data are quarterly.

|  | Fixed <br> Component | Variable <br> Component |  | Cost Driver |
| :--- | ---: | :---: | :--- | :--- |
| Inspection | $\$ 72,500$ |  | $\$ 120.00$ |  |
| Shipments |  |  |  |  |
| Maintenance | 61,200 |  | 2.40 |  |
| Dachine hours |  |  |  |  |
| Data processing | 9,700 | 0.25 |  | Transactions |
| Purchasing | 63,600 | 180.00 |  | Number of vendors |
| Other | 278,800 | 2.20 | Labor hours |  |

Some of these costs are step-variable, so the variable components do not apply to small changes in activity, but only to relatively large movements. You may assume for this assignment that all changes are large.

## Required:

Develop flexible budget allowances for each element of cost, and for total cost, for the following two cases.

|  | Case A | Case B |
| :--- | ---: | ---: |
|  | 110 | 75 |
| Shipments | 15,000 | 22,000 |
| Machine hours | 220,000 | 360,000 |
| Transactions | 120 | 40 |
| Number of vendors | 7,000 | 11,000 |

6-35 Rydell Company sets sales budgets for its salespeople, who are evaluated by refer-

Budgeting and behavior ence to whether they achieve budgeted sales. The budget is expressed in total dollars of sales and is $\$ 200,000$ per person for the first quarter of 20x3. Rydell makes two products, for which price and cost data are as follows.

|  | $\mathbf{A - 1 3 0 3}$ | $\underline{D-165}$ |
| :--- | :---: | :---: |
| Selling price | $\$ 10$ | $\$ 15$ |
| Variable costs | $\underline{4}$ | $\underline{10}$ |
| Contribution margin | $\underline{\$ 6}$ | $\underline{\$ 5}$ |

A-1303 is a new product that Rydell's president, Sid Koleski, thinks should become a big seller. At a regular meeting with his sales manager, Mr. Koleski said that the sales staff probably would have to seek out customers for A-1303 and convince them of the high quality of the product. D-165 has been popular for some years, and Mr. Koleski believes it unlikely that customers who have been buying D-165 will buy A-1303.

The $\$ 200,000$ budgeted sales per person is a fairly high goal, but is attainable. During the first quarter of 20X3, all salespeople met the $\$ 200,000$ sales budget.

## Required:

1. Which product should Rydell's salespeople stress?
2. Under the circumstances described, which product do you think sold most?
3. If your answers to requirements 1 and 2 conflict, what changes would you suggest for the company's budgeting process?

6-36 Timmons Fashions has the following sales budget, in units, for its best-selling line of Conflicts in policy women's wear.

| J anuary | 65,000 | March | 60,000 | May | 100,000 |
| :--- | :--- | :--- | :--- | :--- | ---: |
| February | 90,000 | April | 60,000 | J une | 80,000 |

Timmons manufactures the line in a single factory. Because of union agreements and employment policies, the only feasible amounts of monthly production are 72,000 and 90,000 for a four-day week and five-day week, respectively.

Timmons's policy is to keep inventory of at least 15,000 units at the end of each month to serve as a buffer in case of slow deliveries by suppliers or other problems that could lead to lost sales. Storage space is limited, such that having inventory greater than 40,000 units results in abnormally high costs. The inventory at J anuary 1 is 20,000 units.

## Required:

Develop a production budget for the six months. If you cannot keep inventory within the limits stated, be prepared to defend the reasoning you used in making your selection.

6-37
Budgeting administrative expenses

The controller of Kaufman Company has asked you to prepare a flexible budget for costs in the purchasing department. The normal volume of work in the department is 800 purchase orders per week.

Data entry clerks in the department are paid $\$ 5$ per hour and work a 35 -hour week. The clerks can enter about 100 lines per hour and the average purchase order has 10 lines. When they are not entering orders, the clerks file and perform other work. Order clerks prepare the purchase orders for entry. They are paid $\$ 6$ per hour for a 35 -hour week and generally take 20 minutes to prepare an order. When not preparing orders, the order clerks work at other tasks, such as investigating potential vendors. The purchasing agent is paid $\$ 500$ per week. Supplies, stationery, etc., average $\$ 0.40$ per purchase order.

Required:

1. Under normal circumstances, how many clerks of each type are required and how much slack time does each type of clerk have available to perform other duties?
2. If salaries for the clerks and costs for supplies and stationery are to be budgeted as variable costs, what is the flexible budget formula for total purchasing costs for each week, and what variance would you expect for a normal week?
3. What is the per-week capacity of the purchasing department given the personnel requirement derived in requirement 1 ?
4. What is the flexible budget formula for total weekly purchasing costs if the personnel requirements in requirement 1 are treated as fixed costs?

6-38 Reporting budget variances

Wilkinson Company uses monthly budgets. At the end of each month, the accounting department prepares reports of budgeted and actual results. The reports are circulated to the managers whose operations are being reported on and to their supervisors. Following are excerpts from the reports for the latest two months on the costs in one production department.

|  | April |  |  | May |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Budget | Actual | Variance | Budget | Actual | Variance |
| Production in units | 8,000 | 7,000 | 1,000 | 10,000 | 10,500 | (500) |
| Costs: |  |  |  |  |  |  |
| M aterial | \$16,000 | \$14,600 | \$1,400 | \$20,000 | \$20,800 | \$ (800) |
| Direct labor | 24,000 | 21,600 | 2,400 | 30,000 | 31,300 | $(1,300)$ |
| Indirect labor | 4,000 | 3,900 | 100 | 5,000 | 5,300 | (300) |
| Power | 7,000 | 6,700 | 300 | 8,000 | 8,400 | (400) |
| Maintenance | 5,200 | 4,700 | 500 | 6,000 | 6,200 | (200) |
| Supplies | 4,600 | 4,580 | 20 | 5,000 | 5,050 | (50) |
| Total costs | \$60,800 | \$56,080 | \$4,720 | \$74,000 | \$77,050 | \$(3,050) |

Heated discussions between Wilkinson's production manager, Orel Rhodes, and the heads of production departments are common, and Daniel Dabich, Wilkinson's manufacturing vice president, has often asked Rhodes to explain the heated exchanges. Mr. Dabich asks you, his new assistant, to study the budget reports and write a memo for his signature to Retha J ames, the controller, about the usefulness of the reports his managers receive.

## Required:

Using the guidelines in Appendix A, comply with Mr. Dabich's request. (You will find it helpful to analyze the budgeted amounts of each cost and determine its fixed and variable components.)

6-39
Understanding budgets

Following are Blaisdel Company's balance sheet at December 31, 20X0, and information regarding Blaisdel's policies and past experiences.

Blaisdel Company
Balance Sheet at December 31, 20X0

| Assets |  | Equities |  |
| :---: | :---: | :---: | :---: |
| Cash | \$ 33,000 | Accounts payable | \$ 9,000 |
| Receivables | 31,000 | Income taxes payable | 8,000 |
| Inventory | 59,000 | Common stock | 180,000 |
| Fixed assets, net | 102,000 | Retained earnings | 28,000 |
| Total | \$225,000 | Total | \$225,000 |

## Additional information:

(a) All sales are on credit and are collected $20 \%$ in the month of sale and $80 \%$ in the month after sale.
(b) Budgeted sales for the first five months of $20 \times 1$ are $\$ 50,000, \$ 60,000, \$ 70,000$, $\$ 66,000$, and $\$ 65,000$, respectively.
(c) Inventory is maintained at budgeted sales requirements for the following two months.
(d) Purchases are all on credit and are paid $80 \%$ in the month of purchase and $20 \%$ in the month after purchase.
(e) Other variable costs are $20 \%$ of sales and are paid in the month incurred.
(f) Fixed costs are $\$ 6,000$ per month, including $\$ 1,000$ of depreciation. Cash fixed costs are paid in the month incurred.
( g ) Blaisdel's income tax rate is $25 \%$, with taxes being paid in the month after they are accrued.
(h) Cost of goods sold is expected to be 60\% of sales.

## Required:

1. What are budgeted cash receipts for J anuary $20 \times 1$ ?
2. What is the budgeted inventory at J anuary 31, 20X1?
3. What are budgeted purchases for J anuary 20X1?
4. What is budgeted net income for J anuary 20X1?
5. What is the budgeted cash balance at the end of J anuary 20X1?
6. What are budgeted accounts receivable at February $28,20 \times 1$ ?
7. What is the budgeted book value of fixed assets at March 31, 20X1?
8. What are budgeted accounts payable at March 31, 20X1?
9. If Blaisdel declared a cash dividend of $\$ 1,200$ during J anuary, payable in February, what balance would be reported for retained earnings in a pro forma balance sheet as of J anuary 31, 20X1?
10. What amount would show as the liability for income taxes as of March 31, 20X1?

6-40
Cash budget for a student

Bo Phelps is a junior majoring in mathematics at a large university. Bo wants to develop a cash budget for the fall term, which runs from September 1 through November 30. He has collected the following information.

| Cash at September 1 | $\$ 1,250$ |
| :--- | ---: |
| Tuition, due September 15 | 2,200 |
| Room rent, due September 15 (for entire term) | 800 |
| Cost of meals, per month | 300 |
| Clothing expenditures, per month | 50 |
| Textbook purchases, due September 15 | 280 |

Phelps has been awarded a scholarship of $\$ 2,000$; the check should arrive by the end of the first week of September. He estimates that expenditures for dates and miscelIaneous other items should total about $\$ 300$ for the term, spread evenly over each month. He also expects that he can get a part-time job that pays $\$ 8$ per hour. For the most part, Phelps will be able to set the hours he will work each month. His employer, a local business, must withhold 10\% of his earnings for income and social security taxes.

## Required:

Determine how many hours Phelps must work each month to be able to maintain a \$100 cash balance for emergencies.

6-41 Analysis of budgets of a manufacturing firm (Appendix)

Budgets for Simpson Company appear as follows for the first three months of 20X6.
Budgeted Income Statements
for the Three Months Ending March 31, 20X6

| Sales (10,000 units) |  | \$30,000 |
| :---: | :---: | :---: |
| Variable costs: |  |  |
| Production | \$8,000 |  |
| Selling and administrative | 7,500 | 15,500 |
| Contribution margin |  | 14,500 |
| Fixed costs: |  |  |
| Production | \$1,800 |  |
| Selling and administrative | 2,400 | 4,200 |
| Income |  | \$10,300 |

Production Budget (in units)

|  | $J$ anuary | February | March |
| :---: | :---: | :---: | :---: |
| Desired ending inventory | 4,500 | 7,500 | 6,000 |
| Units sold | 2,000 | 3,000 | 5,000 |
| Total requirements | 6,500 | 10,500 | 11,000 |
| Beginning inventory | 2,500 | 4,500 | 7,500 |
| Production | 4,000 | 6,000 | 3,500 |

Cash Receipts Budget

|  | $J$ anuary | February | March |
| :---: | :---: | :---: | :---: |
| Collections: |  |  |  |
| December sales | \$ 750 |  |  |
| J anuary sales | 1,500 | \$4,500 |  |
| February sales |  | 2,250 | \$ 6,750 |
| March sales |  |  | 3,750 |
| Total collections | \$2,250 | \$6,750 | \$10,500 |

Cash Disbursements Budget

|  | J anuary | February | March |
| :---: | :---: | :---: | :---: |
| Production costs: |  |  |  |
| Variable | \$3,200 | \$4,800 | \$2,800 |
| Fixed | 600 | 600 | 600 |
| Selling and administrative: |  |  |  |
| Variable-current month | 600 | 900 | 1,500 |
| -prior month | 150 | 900 | 1,350 |
| Fixed | 800 | 800 | 800 |
| Totals | \$5,350 | \$8,000 | \$7,050 |

Required:
Answer the following questions about the assumptions and policies used in formulating the budgets.

1. What are variable manufacturing costs per unit?
2. What are monthly fixed manufacturing costs requiring cash disbursements?
3. What are the company's expectations about cash collections from receivables? (All sales are on account.)
4. What were sales in December 20X5?
5. What are accounts receivable at March 31, 20X6?
6. What proportion of variable selling and administrative expenses is paid in the month incurred, and what proportion is paid the following month? (Hint: Variable selling costs are $25 \%$ of sales.)
7. What are accrued expenses payable for selling and administrative expenses at March 31, 20X6?
8. How much cash does Simpson expect to have at March 31, 20X6? (The balance at J anuary 1 is $\$ 1,800$.)
9. If the company could sell 2,000 additional units in the three-month period, what would income be? (Ignore interest expense.)
10. Look at the production budget. From comparisons of inventories, sales, and so on, determine Simpson's inventory policy.
11. Does the beginning inventory for J anuary reflect Simpson's policy? Show why or why not.
12. What are budgeted sales for April?

[^0]:    Source: Alix Nyberg, "Richard Kelson," CFO Magazine, October 2000, p. 65.

[^1]:    Sources: Annual reports, SEC filings.

[^2]:    * from beginning balance sheet

