LEARNING OBJECTIVES

When you have finished studying this chapter, you should be able to:

1. Define decentralization and identify its expected benefits and costs.
2. Distinguish between responsibility centers and decentralization.
3. Explain how the linking of rewards to responsibility-center performance metrics affects incentives and risk.
4. Compute return on investment (ROI), economic profit, and economic value added (EVA).
5. Compare the incentives created by income, ROI, and economic profit (or EVA) performance measures.
6. Define transfer prices and identify their purpose.
7. State the general rule for transfer pricing and use it to assess alternative transfer prices based on total costs, variable costs, or market prices.
8. Identify the factors affecting multinational transfer prices.
9. Explain how controllability and management by objectives (MBO) aid the implementation of management control systems.

NIKE

In a little more than 30 years, Nike has become the largest sports and fitness company in the world. It has grown from a small Beaverton, Oregon, company into a global giant with a presence in many different sports. For example, in the world of soccer, Nike was only a minor factor 10 years ago. Now Nike has placed itself at the center of attention for soccer fans worldwide. Nike has endorsement arrangements with the Italian and French national teams, as well as Manchester United, FC Barcelona, Inter Milan, and PSV Eindhoven. Further, its visibility continues to grow. Nike was the official sponsor and supplier for Chinese athletes for the 2008 Beijing Olympic Games.

From 1986 to 2011, Nike’s revenues increased from $1 billion to almost $21 billion. During this same period, the percentage of non-U.S. revenues increased from 25% to 57%. Nike now has more stores outside the United States than inside. While footwear still accounts for more than half of Nike’s sales, apparel sales now account for nearly one-third. A sampling of endorsements (promotional contracts with famous sports teams, individuals, and organizations) in addition to the soccer teams previously listed gives another perspective on the company’s global presence. Tennis stars Roger Federer, Rafael Nadal, Maria Sharapova, Serena Williams; basketball stars Kobe Bryant, LeBron James, and Kevin Durant; and golf’s Trevor Immelman, Anthony Kim, and Paul Casey all have endorsement deals with Nike. Watch almost any sports event on television, and you are likely to see the Nike “swoosh” logo.
Nike made a conscious decision to go global—a process that has generated substantial financial rewards. What are some of the keys to success when a company like Nike decides to significantly expand its operations abroad? To manage and coordinate widely dispersed operations, Nike needs information. Increasing sophistication of communications—Internet, e-mail, and worldwide cellular phone coverage—means that geographical separation no longer implies lack of access to information. While communications technology can help Nike and others get information quickly, the information they receive is determined by their management control system.

This chapter focuses on the role of management control systems in decentralized organizations such as Nike. We discuss how companies use performance metrics to motivate managers of separate units, including various ways of measuring performance to encourage actions by managers that are in the company's best interests. Finally, we address the special problems created when one segment of an organization charges another for providing goods or services.

Centralization Versus Decentralization

As organizations grow and undertake more diverse and complex activities, they face decisions about how much decision-making authority to delegate to lower levels of the organization. Concentration of decision-making authority only at the highest levels of the organization is centralization. Delegation of decision-making authority to lower levels is decentralization. Note that centralization or decentralization is a matter of degree, depicted as a choice along the continuum shown in Exhibit 10-1. The lower in the organization that authority is delegated, the greater the decentralization.

Nike has delegated a great deal of decision-making authority to the local-market level. For example, local Nike managers in Germany made the decision to sign an endorsement contract with world-champion racecar driver Michael Schumacher. According to CEO Philip Knight, "[Previously] it would have taken a move from within the company headquarters to strike such a deal. . . But this time it was a decision made in country." The local German manager knew that Schumacher was extremely relevant to the German market and that this would be a "profit-driven, culturally significant, and brand enhancing move." Knight credits this move toward decentralization for Nike's rapid increase in international sales: "It is a great example of what we are trying to do: Make decisions on the ground in faraway places."

The best choice along the continuum between centralization and decentralization is seldom obvious. In fact, organizations and industries seem to cycle from increasing decentralization to increasing centralization, and back again. For example, a decade or so ago most airlines, such as South China Airlines, Iberia Airlines, and Air France, decentralized. In contrast, at the same time, Sabena, Belgium's state-owned airline until its bankruptcy in 2001, undertook a centralization effort. In the insurance industry, Aetna decentralized at the same time AXA Equitable was centralizing. Let's take a look at some of the factors companies consider as they choose their position along the centralization/decentralization continuum.

Nike is a globally decentralized company. Customers throughout the world recognize its "swoosh" trademark. Achieving the appropriate balance between autonomy at the local level and efficiencies at the corporate level is a challenge when designing Nike's management control system.

Objective 1

Define decentralization and identify its expected benefits and costs.

centralization
Concentration of decision-making authority only at the highest levels of an organization.

decentralization
The delegation of decision-making authority to lower levels of the organization. The lower in the organization that authority is delegated, the greater the decentralization.

Exhibit 10-1
Centralization Versus Decentralization
Costs and Benefits of Decentralization

Most organizations realize benefits from some level of decentralization. Managers of lower-level units (which we will refer to as “local” managers), often have the best information concerning local conditions and, therefore, are able to make faster and better decisions on local issues than higher-level managers (which we will refer to as “central” managers). By delegating decision-making authority to local managers, central managers free up time to deal with larger issues and fundamental strategy. In addition, decentralization gives local managers an opportunity to develop their decision-making ability and other management skills, ensuring that the organization develops future leaders. Finally, local managers who are given more authority often have greater motivation and job satisfaction.

Decentralization also has its costs. Local managers may make decisions that are not in the organization’s best interests. Why? Either because they act to improve their own segment’s performance at the expense of the organization or because they do not fully understand the effects of their decisions on other segments and the organization as a whole. In a decentralized organization, innovative ideas to improve performance are less likely to be shared across units. Local managers in decentralized organizations also tend to duplicate services that might be less expensive if centralized (e.g., accounting, advertising, and personnel). Furthermore, costs of accumulating and processing information frequently rise under decentralization because top management needs additional accounting reports to learn about and evaluate decentralized units and their managers. Finally, managers in decentralized units may waste time negotiating with other units about goods or services that are being transferred between units. You can see some of the benefits of decentralization in the Business First box on page 411.

Decentralization is more popular in profit-seeking organizations (where accountants can more easily measure outputs and inputs) than in nonprofit organizations (where it is more difficult to find reliable performance measures, so granting managers freedom is more risky). Central management can give local managers more freedom when it can more easily measure the results of their decisions and thereby hold local managers accountable for the results. In a profit-seeking firm, poor decisions become apparent from the inadequate profit generated.

Middle Ground

The optimal choice along the centralization/decentralization continuum is likely to differ from one company to the next. For every Nike that finds the benefits of increased decentralization exceeding the costs, another company finds the costs exceeding the benefits. In fact, the optimal choice for one part of the organization may differ from the optimal choice for another part. For example, many companies decentralize much of the controller’s problem-solving and attention-directing functions and handle them at lower levels. In contrast, they generally centralize income tax planning and mass scorekeeping functions such as accounting for payroll.

Decentralization is more successful when an organization’s segments are relatively independent of one another—that is, when the decisions of a manager in one segment will not affect other segments. When segments do much internal buying or selling, much buying from the same outside suppliers, or much selling to the same outside markets, they are candidates for more centralization.

In Chapter 9, we stressed that managers should consider cost-benefit tests, goal congruence, and managerial effort when designing a management control system. If management has decided in favor of heavy decentralization, then segment autonomy—the delegation of decision-making power to managers of segments of an organization—is also crucial. For decentralization to work, however, this autonomy must be real, not just “lip service.” Top managers must be willing to abide by decisions made by segment managers in most circumstances.

Responsibility Centers and Decentralization

Design of a management control system should consider two separate dimensions of control: (1) the responsibilities of managers and (2) the amount of autonomy they possess. Some managers confuse these two dimensions by assuming that profit-center managers always have more decentralized decision-making authority than cost-center managers. This is not necessarily the case. Some profit-center managers, such as those at General Electric, possess vast freedom to make decisions concerning labor contracts, supplier choices, equipment purchases, personnel decisions, and so on. In contrast, profit-center managers at other companies need top-management
Decentralization and Teamwork Across Campuses

Alfred P. Sloan developed the concept of decentralization; modern writers tout "teamwork." Many corporate models exist for the delegation of decision-making for charities, for non-profit organizations, and for educational establishments like the Higher Colleges of Technology (HCT) in the United Arab Emirates.

HCT decentralizes decision making. Operating on 17 campuses located across the seven countries in the United Arab Emirates (UAE), this university has more than 20,000 students and over 2,000 faculty and staff. HCT provides 92 academic programs for students, and 44,000 UAE nationals have graduated since the establishment of the first four campuses in 1987. Consistency in the provision of educational services to students is essential in order to contribute to national development through the education of the youth.

In the UAE, in the cities of Abu Dhabi, Madinat Zayed, Al Ain, Dubai, Ras Al Khaimah, Ruwais, Sharjah, and Fujairah, HCT Colleges are providing a diversity of programs in modern, technologically equipped campuses. The chancellor of HCT appoints a director for each college. The director is responsible for finances and organization. So each college operates like the national division of a multinational corporation. The colleges have a great deal of independence in addition to the highest quality in all programs. HCT has put a rigorous program of quality assurance system (PQAS) in place for this purpose. HCT places a strong emphasis on international accreditation and benchmarking, and each college also has its own separate budget. Both nonfinancial and financial goals are consistent with the HCT philosophy of education, "the lantern that lights your way in a dark alley," and HCT's commitment is to keep the lantern shining brightly.

Since each college of HCT is responsible for its own revenues and expenses, the issues that arise day-to-day are similar to the issues faced by for-profit corporations. Like the corporate board of a multinational organization, the board of HCT oversees the directors who are responsible for day-to-day operations. The board provides a vital resource; the opportunity for directors to share the issues that arise. This process is encouraged at every level so that the best solutions from the decentralized campuses are employed. Information from each of the campuses is generated to provide solution resources, but the board (quite intentionally) does not directly make decisions for each of the colleges—that is left to the directors.

In turn, the colleges share information within their organizations, developing proprietary programs and "ownership" at each college location. So although independent of one another, the decentralized colleges work well together. As with multinational corporations, difficulties can arise between local manager decisions and the actions central management seeks. For example, a plant may seem to be a "natural" cost center because the plant manager has no influence over decisions concerning the marketing of its products. Nevertheless, some companies insist on evaluating a plant manager by the plant's profitability. Why? Because they believe this broader evaluation base will positively affect the plant manager's behavior. Instead of being concerned solely with running an efficient cost center, the system motivates the plant manager to consider quality control more carefully and react to customers' special requests more sympathetically. In designing accounting control systems, top managers must consider the system's impact on behavior desired by the organization.

Performance Metrics and Management Control

A major factor in designing decentralized management control systems is how the system's performance metrics affect managers' incentives. Incentives are the rewards, both implicit and explicit, for managerial effort and actions. A performance metric is a specific measure of management accomplishment. Organizations should choose performance metrics that improve the alignment of manager incentives with organizational objectives. The organization wants managers to use decision-making autonomy to meet the company's objectives, not to pursue approval for almost all the decisions just mentioned. Similarly, cost centers may be more heavily decentralized than profit centers. The fundamental question in deciding between using a cost center or a profit center for a given segment is not whether heavy decentralization exists. Instead, the fundamental question is, for whatever level of decentralization that exists, "Will a profit center or a cost center better solve the problems of goal congruence and management effort?"

The management control system should be designed to achieve the best possible alignment between local manager decisions and the actions central management seeks. For example, a plant may seem to be a "natural" cost center because the plant manager has no influence over decisions concerning the marketing of its products. Nevertheless, some companies insist on evaluating a plant manager by the plant's profitability. Why? Because they believe this broader evaluation base will positively affect the plant manager's behavior. Instead of being concerned solely with running an efficient cost center, the system motivates the plant manager to consider quality control more carefully and react to customers' special requests more sympathetically. In designing accounting control systems, top managers must consider the system's impact on behavior desired by the organization.

Objective 3

Explain how the linking of rewards to responsibility-center performance metrics affects incentives and risk.
other goals. For example, Nike executives wanted the company’s manager of German operations to sign auto-racer Michael Schumacher to a contract only if it would create additional profits for Nike, not to provide an entree for the manager into the inner circles of auto racing.

**Agency Theory, Performance, and Rewards**

Agency theory provides a model to analyze relationships where one party (the principal) delegates decision-making authority to another party (the agent). Agency theory is useful to analyze situations where there is imperfect alignment between the principal’s and agent’s 1) information and 2) objectives. As discussed earlier, it is common for local managers to have better information about their units than do higher-level central managers. Because the local managers have different information than central managers, they make different decisions. Similarly, as discussed in Chapter 9, it is common for the objectives of local managers to differ from central organizational objectives. Agency theory provides a framework to analyze these differences in designing a management control system.

Exhibit 10-2 shows how the design of a management control system affects the actions of managers. Managers have beliefs about how alternative action choices will lead to outcomes for their unit, and the management control system specifies how outcomes translate into unit performance metrics and into both explicit and implicit rewards. Managers’ preferences motivate them to select actions that generate outcomes measured and rewarded by a company’s management control system. The manager’s understanding of how the control system links outcomes, performance metrics, and rewards influences the manager’s choice of actions. Thus, the right metrics and rewards motivate actions that are in the company’s best interests.

The links between outcomes and performance metrics and rewards are critical features of the management control system. While the importance of explicit links is clear, implicit links may also be important. For example, the management control system might include an explicit link that specifies the amount of bonus that will be paid for different levels of profit, but there may be an additional implicit link between performance and promotions. Similarly, it is important to recognize that rewards may be monetary or nonmonetary. Examples of monetary rewards include pay raises and bonuses. Examples of nonmonetary rewards include praise, better offices, and other perquisites. Thus, while we often focus on explicit monetary rewards, remember that implicit and nonmonetary rewards associated with outcomes and metrics play important roles in the management control system.

One important rule for performance measurement is clear: *You get what you measure.* Managers focus on areas where an organization measures managerial performance, even when the management control system does not include explicit rewards tied to the measures. Therefore, it is important to choose accounting measures that provide objective and easy-to-understand evaluations of performance, where managers believe there is a clear connection between their action choices and the performance metric.

**Agency Theory and Risk**

Ideally, companies should reward managers based on their individual performance, but often an organization cannot directly measure a manager’s performance. For example, a company may not be able to separate the manager’s effect on responsibility-center results from the effect of other factors beyond a manager’s control. The greater the influence of noncontrollable factors

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**Exhibit 10-2**

Design of a Management Control System

![Design of a Management Control System Diagram](image-url)
on responsibility-center results, the more problems there are in using the results to measure and reward a manager’s performance.

Consider a particular Niketown store. Suppose its profits increased dramatically. The following factors all contributed to the increase in profits:

- A lengthy strike by employees of a competitor resulted in many customers switching to Nike.
- The store implemented a new cost management system resulting in a significant reduction in the costs of handling merchandise.
- Overall population growth in the store’s region has been much higher than in other Niketown locations.
- Labor costs in the region have not increased as much as in most Niketown locations.
- Employee turnover is lower than the system average. Employees cite their excellent relationship with fellow employees and management as the reason for their high level of job satisfaction.

From the factors listed, it is likely that a significant portion of the store’s profit increase was due to factors the store manager could not control (the competitor’s strike, population growth, and regional labor costs). Nonetheless, it is also likely that a portion of the profit increase was due to factors the manager could control (adopting the cost-management system and creating a productive working environment for all employees). How should Nike evaluate the performance of the store manager? Should it measure the manager’s performance by comparing profit across other Niketown stores? What other measures could Nike use?

An ideal performance metric would measure and reward the manager for controllable factors and neither reward nor punish the manager for uncontrollable factors. Although this ideal is hard to achieve, agency theory can guide the design of a system to link performance metrics and rewards. When an organization hires a manager, the employment contract details performance metrics and how they will affect rewards. However, not all rewards are explicitly specified. For example, a company can reward a manager with a promotion, but the contract will probably not explicitly specify the requirements for promotion.

According to agency theory, employment contracts must balance three factors:

1. Incentive: The more a manager’s reward depends on a performance metric, the more incentive the manager has to take actions that maximize that measure. Top management should define the performance metric to promote goal congruence and base enough reward on it to achieve managerial effort.

2. Risk: The more uncontrollable factors affect a manager’s reward, the more risk the manager bears. People generally avoid risk, so a company must pay managers more if it expects them to bear more risk. Creating incentive by linking rewards to responsibility-center results, which is generally desirable, has the undesirable side effect of imposing risk on managers if noncontrollable factors affect some part of the center’s results.

3. Cost of measuring performance: The incentive versus risk trade-off is not necessary if a manager’s controllable performance can be perfectly measured. Why? Because managers completely control their own performance, perfect measurement of controllable performance would eliminate risk to the manager. With perfect performance measurement, a manager could be paid a fixed amount if he or she performs as agreed, and nothing otherwise. But perfectly measuring controllable performance is usually inordinately expensive if not outright impossible. The cost-benefit criterion therefore leads companies to rely on imperfect but low-cost measures. Unfortunately, these measures frequently confound the manager’s controllable performance with uncontrollable factors.

Consider the example of a promoter hired by a group of investors to promote and administer an outdoor concert. Suppose the investors offer the promoter a contract with part guaranteed pay and part bonus based on total attendance. A larger bonus portion compared with the guaranteed portion creates more incentive, but it also creates more risk for the promoter. For example, what happens if it rains? The promoter could do an outstanding job promoting the concert but the weather might keep fans away. To compensate the promoter for added risk, the expected total payment to the promoter will have to be higher for a contract where a higher portion of the total payment is based on attendance. The investors must decide on the optimal trade-off between the benefit from the added incentive created by a larger bonus and the extra total payment.
necessary to compensate for the added risk. Note that these contracting issues would not arise if the investors could directly measure the promoter’s effort and judgment, rather than basing the bonus on attendance at the concert, a low-cost and readily-available measure that unfortunately is also influenced by factors outside the control of the promoter.

**Measures of Segment Performance**

It is hard to find a company that does not include some measure of profitability among its segment performance metrics. For example, companies that use performance measurement systems such as the balanced scorecard (discussed in Chapter 9) almost always include a profitability measure among their multiple metrics. The trouble is that there are many ways to measure profitability, and it is not clear which is the best measure. Is it income? Is it income before after interest and taxes? Is it an absolute amount? A percentage? If a percentage, is it a percentage of revenue or of investment? In this section, we consider how alternative profitability measures affect managers’ incentives.

**Income Measures**

Measures of income are readily available from the financial reporting system at any level of the organization for which a company can identify revenues and expenses, such as a subsidiary, a division, or a business unit. Moreover, accountants can easily customize income measures to exclude factors that the company considers to be outside the control of the manager. For example, earnings before interest and taxes (EBIT) excludes the effects of interest and taxes, while earnings before interest, taxes, depreciation, and amortization (EBITDA) also excludes the effects of depreciation and amortization.

However, income measures can create incentives to focus too narrowly on income without considering the resources required to generate income. For example, suppose a manager is considering an investment that will generate $1,000 of income. If the manager is evaluated only on income, the incentive is to make this investment, whether the required investment is $5,000 or $500,000. Thus, performance evaluation based on income measures can lead managers to focus only on income and ignore the investment required to generate that income.

Similarly, income measures can provide misleading performance comparisons. Suppose a company has two divisions, A, with operating income of $200,000, and B, with operating income of $150,000. Further suppose the investment in division A is $20 million while the investment in division B is $1 million. The operating income measure obviously provides an incomplete comparison of the performance of the two divisions. Although division A is generating slightly higher operating income than division B, division A requires a far larger investment. Division B is generating much higher income relative to the resources used to generate the income—$150,000 of income using $1 million of investment is far better performance than $200,000 of income using $20 million of investment.

**Return on Investment (ROI)**

A more comprehensive measure of profitability that takes into account the investment required to generate income is the return on investment (ROI). ROI is income divided by the investment required to generate that income. For a given amount of investment (and holding risk constant), the investor wants the maximum income.

ROI facilitates the comparison of a unit’s performance with other segments within the company or with similar units outside the company. Why? Because, unlike income alone, ROI takes into account the investment required to generate the income. Further, ROI is a return per unit of investment and does not depend on the size of the segments being compared. In the preceding example, division A has a much lower ROI than division B:

\[
\text{ROI} = \frac{\text{income}}{\text{investment}}
\]

ROI division A = \( \frac{200,000}{20,000,000} = 1\% \)

ROI division B = \( \frac{150,000}{1,000,000} = 15\% \)


## ROI as the Product of Return on Sales and Investment Turnover

As shown in the following equations, we can write ROI as the product of two items: return on sales (income divided by revenue) and capital turnover (revenue divided by invested capital).

\[
\text{return on investment} = \frac{\text{income}}{\text{invested capital}} = \frac{\text{income}}{\text{revenue}} \times \frac{\text{revenue}}{\text{invested capital}} = \text{return on sales} \times \text{capital turnover}
\]

This expression shows that increasing either return on sales or capital turnover will increase ROI. Exhibit 10-3 shows an example where either of two alternatives could increase ROI to 25% from its current value of 20%. Alternative 1 improves return on sales by decreasing expenses relative to sales without increasing investment. Alternative 2 increases capital turnover by decreasing investment without reducing sales. Increasing capital turnover by decreasing investment means using fewer assets, such as cash, receivables, inventories, or equipment, for each dollar of revenue generated.

Increasing turnover is one of the advantages of implementing the just-in-time (JIT) philosophy (see Chapter 1). Many companies implementing JIT purchasing and production systems are able to lower inventory levels while maintaining the return on sales, resulting in dramatic improvements in ROI.

## Measuring Investment

To understand what an ROI measure implies for a particular company, you must first determine how the company defines its components: income and investment. We discussed alternative definitions of segment income in Chapter 9, pages 378–381, so we will not repeat them here. In this section, we discuss alternative definitions of investment.

### Definitions of Investment

Consider the following balance sheet:

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current assets</td>
<td>$400,000</td>
</tr>
<tr>
<td>Property, plant, and</td>
<td>$900,000</td>
</tr>
<tr>
<td>equipment, net</td>
<td></td>
</tr>
<tr>
<td>Total assets</td>
<td>$1,300,000</td>
</tr>
<tr>
<td>Current liabilities</td>
<td>$200,000</td>
</tr>
<tr>
<td>Long-term liabilities</td>
<td>$400,000</td>
</tr>
<tr>
<td>Stockholders' equity</td>
<td>$700,000</td>
</tr>
<tr>
<td>Total liabilities and stockholders' equity</td>
<td>$1,300,000</td>
</tr>
</tbody>
</table>

---

**Exhibit 10-3**

Return on Investment as the Product of Return on Sales and Capital Turnover

Every dollar invested in division B is generating income of $1.15, compared to the $0.01 generated by every dollar invested in division A.
Possible definitions of investment in this example are as follows:

1. **Stockholders’ equity**: This definition considers only the investment by the stockholders, $700,000.

2. **Stockholders’ equity and long-term liabilities**, $700,000 + $400,000 = $1,100,000. This definition encompasses not only the investment by stockholders but also the investment by debt investors. The combination of stockholders’ equity and long-term liabilities is sometimes described as long-term invested capital. Note that because of the accounting identity total assets = short-term liabilities + long-term liabilities + stockholders’ equity, this can alternatively be computed as total assets less short-term liabilities, $1,300,000 − $200,000 = $1,100,000.

3. **Stockholders’ equity, long-term liabilities, and current liabilities**, $1,300,000: This definition encompasses all sources of financing for the firm. Because of the accounting identity, this is also equal to total assets.

Each of these alternative measures of investment paired with a measure of income yields a specific ROI measure. For example, net income divided by the first measure, investment by stockholders, is return on equity (ROE) while net income divided by the third measure, total assets, is return on assets (ROA).

For measuring segment performance, firms usually rely on ROA because it is impossible to measure investment by stockholders separately for segments. Further, ROA focuses on how well the division manager is using assets without regard to how they were financed.

**Valuation of Assets**

When firms use ROA measures, two additional issues arise related to the valuation of total assets. First, companies could value assets contained in the investment base at either **gross book value** (the original cost of an asset) or **net book value** (the original cost of an asset less any accumulated depreciation). Second, they could value assets at either historical cost or some version of current cost. Practice is overwhelmingly in favor of using net book value based on historical costs, which are measures consistent with the numbers reported in the financial statements. However, the following three sections explain when gross book value or current cost might provide a better measure of performance to achieve desired incentives, and how to decide whether to measure assets at beginning-of-the-period values, end-of-the-period values, or at the average value during the period.

**HISTORICAL OR CURRENT COST?** Most companies favor historical cost over any measure of current cost such as replacement cost or liquidation values. Yet, critics maintain that historical cost provides a faulty basis for decision making and performance evaluation. Historical costs may be far from what a company might pay to purchase the asset today or the amount it could get from selling it—the values relevant to decisions affecting the asset. Despite these criticisms, managers have been slow to depart from historical cost.

Why is historical cost so widely used? Some critics would say that sheer ignorance is the explanation. But a more persuasive answer comes from cost-benefit analysis. Accounting systems are costly. Companies must keep historical records for many legal purposes, so historical records are already in place. A company spends no additional money evaluating performance based on historical costs. Many top managers believe that improvements in collective operating decisions that would result from using current cost are not large enough to warrant the added expense.

**PLANT AND EQUIPMENT: GROSS OR NET?** In valuing assets, we need to distinguish between net and gross book values. Most companies use net book value in calculating their investment base. However, a significant minority uses gross book value. The proponents of gross book value maintain that it facilitates comparisons between years and between plants or divisions. Under gross values, performance evaluations depend only on what assets are in use, not on the depreciation assumptions or how old the assets are.

Consider an example of a $600,000 piece of equipment with a 3-year life and no residual value.
Notice that operating income does not change in the example, yet the rate of return on net book value increases as the equipment ages. In contrast, the rate of return on gross book value is unchanged. Proponents of using gross book value for performance evaluation maintain that a performance metric should not improve simply because assets are getting older. On the other hand, advocates maintain that using net book value is less confusing because it is consistent with the assets shown on the conventional balance sheet and with net income computations.

When choosing between net and gross book value, companies should focus on the effect on managers' incentives. Managers evaluating using gross book value will tend to replace assets sooner than will managers in firms using net book value. Consider a division of Nike that has a 4-year-old machine with an original cost of $1,000 and net book value of $200. The division can replace the machine with a new one that also costs $1,000. The choice of net or gross book value does not affect net income. However, if Nike uses the net book value for measuring the investment base, replacement will increase the investment base from $200 to $1,000. In contrast, if Nike uses gross book value, the base is $1,000 irrespective of whether the asset is replaced. In summary, to maximize ROI, managers in firms using net book value have incentives to keep old assets with their low book value because the lower book value implies a lower measured investment. Managers in firms using gross book value have less incentive to keep old assets. Therefore, using gross book value will motivate managers to use more state-of-the-art production technology.

**ASSET VALUES: BEGINNING, ENDING, OR AVERAGE?** If investment does not change throughout the year, it will not matter whether we measure assets at the beginning, the end, or average for the year. However, if investment changes throughout the year, we should measure invested capital as an average for the period. Why? Because income is a flow of resources over a period of time, and we should measure the effect of the flow on the average amount invested. The most accurate measures of average investment take into account the amount invested month-by-month, or even day-by-day. However, a simple average of the beginning and ending balances often provides nearly the same result without going to the trouble required to produce greater accuracy. Suppose division B had $800,000 of investment at the beginning of the year and the flow of income gradually increased it to $1,200,000 by the end of the year. The average of the beginning and ending investment amounts is ($800,000 + $1,200,000) ÷ 2 = $1,000,000.

**SUMMARY** There are no universally correct answers with respect to such controversial issues as historical values versus current values, or gross versus net asset values, or beginning versus average versus ending values. Each organization must design its management control system to achieve the best possible decision making, taking into account the cost-benefit trade-offs. This approach is not concerned with "truth" or "perfection" by itself. Instead, the design should ask questions such as the following: Will improvements in the system be worth the added cost? Will a different system achieve better goal congruence and managerial effort? Or, will our existing imperfect system provide about the same set of decisions at lower cost?

**Incentives from ROI**

Although evaluation based on ROI causes managers to consider both income and investment in their decisions, it still may not align the incentives for the manager with the goals of the firm. ROI-based performance evaluation may provide inappropriate incentives for managers to reject profitable investment opportunities or accept unprofitable investment opportunities. Consider a company with two divisions A and B, where currently division A has an

<table>
<thead>
<tr>
<th>Year</th>
<th>Operating Income Before Depreciation</th>
<th>Depreciation</th>
<th>Operating Income</th>
<th>Average Net Book Value*</th>
<th>Net BV Rate of Return</th>
<th>Gross Book Value</th>
<th>Gross BV Rate of Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$260,000</td>
<td>$200,000</td>
<td>$60,000</td>
<td>$500,000</td>
<td>12%</td>
<td>$600,000</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>260,000</td>
<td>200,000</td>
<td>60,000</td>
<td>300,000</td>
<td>20</td>
<td>600,000</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>260,000</td>
<td>200,000</td>
<td>60,000</td>
<td>100,000</td>
<td>60</td>
<td>600,000</td>
<td>10</td>
</tr>
</tbody>
</table>

*(\$600,000 + \$400,000) ÷ 2; (\$400,000 + \$200,000) ÷ 2; and so on.*
ROI of 5% and division B has an ROI of 15%. Suppose that the target return on investments is 10%—the corporate goal is to make investments where the return is 10% or more and reject investments where the return is less than 10%. If the company evaluates division managers based on ROI, their incentives will not be aligned with this corporate goal. For example, the division A manager has an incentive to adopt any investment that increases the division A return above its current value of 5%, including investments with returns between 5% and 10%, below the corporate target of 10%. Similarly, the division B manager has an incentive to reject any investment that decreases the division B return below its current value of 15%, including investments with returns between 10% and 15%, which are above the corporate target of 10%. The following sections explain how this issue is addressed by performance measures such as economic profit.

**Economic Profit and Economic Value Added (EVA)**

Economic profit, also called residual income, is defined as net operating profit after-tax (NOPAT) less a capital charge. Net operating profit after-tax (NOPAT) is income before interest expense but after tax. The capital charge is the company’s weighted-average cost of capital multiplied by the average invested capital, where the cost of capital is the after-tax cost of long-term liabilities and stockholders’ equity weighted by their relative size. For example, a division with net operating profit after-tax of $250,000, average invested capital for the year of $1,000,000, and after-tax cost of capital of 10% has economic profit of $150,000:

| Divisional net operating profit after-tax | $250,000 |
| Minus charge for average invested capital (.10 x $1,000,000) | 100,000 |
| **Equals economic profit (or residual income)** | **$150,000** |

Economic profit tells you the amount by which after-tax operating income exceeds the cost of the capital employed to generate that income. In the example, divisional income exceeds the cost of capital by $150,000.

Suppose a corporation has a goal to earn a return on investment greater than the cost of capital. Economic profit aligns incentives for individual managers with this corporate goal. Investments that earn a return in excess of the cost of capital will have positive economic profit while investments that earn a return below the cost of capital will have negative economic profit. Therefore, managers evaluated based on economic profit have incentives to make an investment if, and only if, its return exceeds the corporate cost of capital.

There are different ways to calculate measures of economic profit, depending on exactly how a company chooses to define the terms used. One popular variant developed and marketed by the consulting firm Stern Stewart & Co. is economic value added (EVA). In formula form, Stern Stewart defines EVA as

\[
EVA = \text{adjusted NOPAT} - (\text{weighted-average cost of capital} \times \text{adjusted average invested capital})
\]

Stern Stewart’s EVA measure incorporates adjustments to NOPAT and to invested capital. These adjustments are designed to convert after-tax operating income into a closer approximation of cash income and invested capital into a closer approximation of the cash invested in the economic resources the company uses to create value. Examples of these adjustments include the following:

- Use taxes paid rather than tax expense.
- Capitalize (rather than expense) research and development costs as an asset.
- Use FIFO for inventory valuation (thus companies using LIFO must add back the LIFO reserve to invested capital and add the increase or deduct the decrease in the LIFO reserve to after-tax operating income).
- If a company deducts interest expense in computing operating income, it must add back after-tax interest expense to find NOPAT.
Exhibit 10-4: Comparison of Economic Profit (EP) and Economic Value Added (EVA)

Exhibit 10-4 compares economic profit and EVA for an example where EVA incorporates an adjustment for research and development (R&D). Assume a division of Nike starts with invested capital of $42 (all amounts in this example are in millions of dollars) and ends each year with invested capital equal to beginning invested capital plus the income for the year. Further, to simplify the average capital calculations, assume that income flows do not increase invested capital during the year but instead are added to capital at the very end of the year. Under this assumption, average capital is simply the beginning capital. Finally, assume the division’s operating income before accounting for R&D is $12 each year and that Nike’s cost of capital is 10%. For simplicity, we ignore income taxes in our example, but remember that EVA uses after-tax numbers.

Suppose the division spent $4 during year 1 for R&D of a new shoe with a product life cycle of 4 years and there are no subsequent expenditures for R&D. Economic profit calculated according to U.S. financial reporting rules would show an expense equal to the entire $4 of R&D in the first year, and no subsequent expense for R&D, resulting in income after R&D for the 4 years of $8, $12, $12, and $12. Invested capital would grow by corresponding amounts from $42 at the beginning of year 1 to $50, $62, $74, and finally to $86 at the end of year 4. In contrast, EVA companies look upon R&D as a capital investment. For purposes of calculating EVA, Nike’s division capitalizes R&D expenditures and expenses the $4 total cost as $1 of expense each year of the product’s 4-year life cycle, resulting in income after R&D of $11, $11, $11, and $11. Invested capital would grow from $42 to $53, $64, $75, and $86 at the end of year 4. Thus, total operating income across the 4 years is $44 for either economic profit or EVA, and invested capital amounts at the beginning and at the end of the four-year example are the same under either economic profit or EVA. However, the timing of the recognition of income and the corresponding timing of the increases in capital during the four years of the example differ between EP and EVA, and therefore the capital charge differs between EP and EVA.

Economic profit over the 4 years is $21.2, or $44 less a capital charge of $22.8. EVA reflects the fact that capital is adjusted upward by $3 at the beginning of the second year (4% investment in R&D less the $1 amortized in year 1) to reflect the capitalized investment in R&D and then declines by $1 per year as the company amortizes the remaining R&D. These adjustments in EVA imply a larger capital charge of $3 in the second year, $2 in the third year, and $1 in the fourth year, so over the 4 years EVA deducts an additional $.6 capital charge for the capital invested in R&D and EVA = $44 - $22.8 = $21.2. After learning about present value in Chapter 11, you will also be able to show that although total EP and total EVA differ, the present value of the streams of EP and EVA discounted at the cost of capital are the same.

Stem Stewart has identified more than 160 different adjustments such as the adjustment illustrated for R&D but usually recommends only a few for a specific client. Many companies using economic profit for performance evaluation develop their own set of adjustments to income and capital, but all companies use the basic concept of net operating profit after-tax less a capital charge.

Economic profit and EVA have received much attention recently as scores of companies are adopting them as financial performance metrics. AT&T, Coca-Cola, CSX, FMC, and Quaker Oats claim that using EVA motivated managers to make decisions that increased shareholder value. Because EVA explicitly recognizes the cost of the capital deployed, it helps managers in these companies make better capital allocation decisions. Further, some investment companies,
such as Manhattan-based broker-dealer Matrix USA, use economic profit to rate stocks for their investment clients.

Many companies are convinced that EVA has played a large role in their success. James M. Cornelius, chairman of Guidant Corporation—a medical device company, owned by Boston Scientific, that is focused on cardiovascular disease—paid tribute to EVA on Stern Stewart’s Web site:

*From day one at Guidant, we linked management bonuses to EVA performance targets. . . . If a target acquisition isn’t EVA positive here, we don’t do it. We pay EVA performance bonuses to Guidant technologists who develop new products within specified time frames, and we are seeing product innovation here that we’ve never seen before. All of our employees . . . are performing at levels we’ve never before experienced. I’m convinced these results are largely because of EVA. [Employees] keep looking for ways to improve our business because at the end of the day a significant share of their annual cash bonuses are tied to EVA improvement . . . All that they have accomplished couldn’t have been done without EVA.*

**Siemens Corporation**, Europe’s largest electronics and electrical engineering firm and Stern Stewart’s first EVA client in Europe, reported in its annual report that “Siemens focuses on EVA as the yardstick by which we measure the success of our efforts. The EVA performance standard encourages our people to be efficient, productive and proactive in thinking about our customers and their customers. These attributes translate into profitable growth and higher returns.” Examples of actions taken by Siemens to improve EVA include the sale of Siecor, the fiber-optic cable business, to Corning, and the sale of its retail and banking business. As stated by Siemens, “Divesting selected businesses has generated funds for more strategic investments.”

### Making Managerial Decisions

One company that improved its EVA performance dramatically over the past two decades is **IBM**. In 1993, its EVA was a negative $13 billion. By 2000, the company improved its EVA to $2.2 billion. Like most companies, the economic downturn in the early 2000s hurt its EVA, dropping it into the negative range by 2002. By 2005, IBM again had a positive EVA at just under $1 billion, and it remained positive through 2010.

Compute the EVA for IBM for 2011 using the following data (in billions of dollars) without any of the specific adjustments recommended by Stern Stewart. As a manager, how would you explain the past history of EVA and the current EVA to investors?

<table>
<thead>
<tr>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net operating profit after tax</td>
</tr>
<tr>
<td>Invested capital</td>
</tr>
<tr>
<td>Cost of capital (assumed)</td>
</tr>
</tbody>
</table>

**Answer**

Amounts are in billions as follows:

\[
EVA = \text{Net operating profit after tax} - \text{cost-of-capital percentage} \times \text{capital invested}
\]

\[
= 16.3 - 0.10 \times 74
\]

\[
= 16.3 - 7.4 = 8.9 \text{ Billion}
\]

The improvement from 1993 to 2000 was dramatic as IBM moved from large negative EVA to positive EVA of $2.2 billion. The company continued to show strong improvements as EVA rose to $8.9 billion by 2011.

### Incentives from Income, ROI, or Economic Profit

We have already discussed the main advantage of **ROI** relative to income measures—ROI provides incentives for segment managers to take into account the cost of resources used to generate income. But why do some companies prefer economic profit (or EVA) to ROI? After all, both take into account the cost of resources used to generate income. As explained
on p. 414, ROI can motivate segment managers to make investment decisions that are not in the best interests of the company as a whole. In contrast, when a company uses economic profit (or EVA) as a performance metric, managers have incentive to invest only in projects earning more than the cost of capital because only those projects increase the division's economic profit.

Consider two divisions of a company, division X with operating income of $200,000 and division Y with operating income of $40,000. Division X has average invested capital of $1 million and division Y has average invested capital of $800,000. Assume that the company's cost of capital is 10%, and, for simplicity, ignore taxes. Suppose each division is considering a new proposed project. Division X is considering Project A that will earn 15% annually on a $500,000 investment, or $75,000 a year. Division Y is considering Project B that will earn 7% annually on an $800,000 investment, or $56,000 a year. Exhibit 10-5 shows ROI and economic profit with and without the project for the two divisions.

Suppose performance evaluation is based on ROI. Would the manager of division X invest in Project A? No. Even though Project A earns a return of 15% (which is above the 10% cost of capital), it would decrease ROI for division X from 20% to 18.3%. Would the manager of division Y invest in Project B? Yes. Even though Project B earns a return of 7% (below the 10% cost of capital), it would increase ROI for division Y from 5% to 6%. In general, the ROI profitability metric provides an incentive for divisions to invest in new projects that earn a return in excess of their current return, rather than an incentive to invest in new projects with a return in excess of the cost of capital. Thus, performance evaluation based on ROI leads division X to reject a project with a 15% return and division Y to accept a project with a 7% return.

Now suppose performance evaluation is based on economic profit. For division X, investing in Project A would change economic profit from $100,000 to $125,000. This $25,000 increase in economic profit is the $75,000 annual return from the new project less the $50,000 annual cost of capital for the new project. In contrast to the decision under ROI, the manager of division X would accept Project A. For division Y, investing in Project B would change economic profit from $40,000 to $64,000. This $24,000 decrease is the $56,000 annual return from the new project less the $80,000 annual cost of capital for the new project. Thus, the manager of division Y would reject Project B. Evaluation based on economic profit motivates both managers to invest only in projects that earn a return in excess of the cost of capital, whereas evaluation based on ROI leads both managers to incorrect decisions—division A rejecting a desirable project and division B accepting an undesirable one. In general, use of economic profit or EVA will promote goal congruence and lead to better decisions than using ROI.

Despite the success of economic profit and EVA, many companies still use ROI. Why? Perhaps because it is simpler to compute, more readily understandable by managers, and easier to compare across divisions. Furthermore, in some cases, top management minimizes the dysfunctional incentives from ROI by emphasizing that managers should compare project ROI to the cost of capital, rather than to their existing ROI. Remember that companies try to choose a profitability measure to use in performance evaluation that aligns managers' incentives with organizational goals without being overly complex or too expensive to apply.
Summary Problem for Your Review

PROBLEM
Suppose a division of Google has assets of $2,000,000, invested capital of $1,800,000, and net operating income of $600,000. Ignore taxes.

1. What is the division’s ROI?
2. If the weighted-average cost of capital is 14%, what is the EVA?
3. Suppose management uses ROI as a performance metric. What effects on management behavior do you expect?
4. Suppose management uses economic profit as a performance metric. What effects on management behavior do you expect?

SOLUTION
1. ROI = $600,000 / $1,800,000 = 33%.
2. EVA = $600,000 - .14 ($1,800,000) = $600,000 - $252,000 = $348,000.
3. If the company uses ROI, the division manager has an incentive to reject new projects that do not earn an ROI of at least 33%, the division’s current ROI. From the viewpoint of the organization as a whole, this is undesirable if the cost of capital is only 14%. If a division is enjoying a high ROI, it is less likely to expand if top management evaluates performance using ROI than if it evaluates performance using EVA.
4. If the company uses EVA, the manager is inclined to accept all projects whose expected rate of return exceeds the weighted-average cost of capital. The manager is more likely to expand the division because his or her goal is to maximize a dollar amount rather than a rate.

Transfer Pricing

When all the segments of a decentralized organization are independent of one another, segment managers can focus only on their own segments because what is best for their segment is generally best for the organization as a whole. In contrast, when segments interact, such as buying or selling in the same markets, there is a possibility that what helps one segment hurts another segment badly enough to have a negative net effect on the entire organization. For example, two Nike sales divisions may compete for the same customer by cutting prices, thereby reducing the company’s overall margin on sales to the customer. The more customers (and suppliers) two segments have in common, the more a company should consider combining the two segments into one to minimize dysfunctional incentives for one segment to gain at the expense of the other.

Other potential interactions between segment and organizational interests occur when one segment sells products or services to another segment of the same organization for a price called the transfer price. For example, when one segment produces a component and sells it to another segment that then incorporates the component in a final product, a transfer price is required. Transfer prices also apply to services, such as when a product manager buys advertising services from the marketing support segment. The transfer price for the component or service is revenue to the producing segment and a cost to the acquiring segment. Thus, transfer prices allocate profit among segments—a change in the transfer price increases the computed profit for one segment and decreases the profit for the other segment—without affecting profit for the firm as a whole.

Transfer pricing policies are especially important in decentralized companies where top management believes that segment autonomy has important benefits. In such companies, segment managers decide how many products or services will be transferred from one segment to another. Delegating these decisions to segment managers creates benefits when the segment managers, being “closer to the action,” have better information than top management about...
the items being transferred. The challenge to such companies is to design a transfer pricing policy that motivates segment managers to transfer the quantity of products and services that both maximizes the segment's profitability metric and is also in the best interests of the company as a whole. There is seldom a perfect transfer pricing policy, so decentralization inevitably leads to some dysfunctional transfer decisions. But companies that adhere to a decentralization philosophy believe that the benefits of decentralization and the preservation of segment autonomy exceed the costs of occasional dysfunctional decisions.

When there is little information advantage at the segment level, companies generally centralize decisions and have top management dictate the quantity and price of products and services transferred between segments. This ensures that segment managers cannot make a decision to transfer an amount of a product or service that is not in the company's best interests.

**Purposes of Transfer Pricing**
What does a decentralized company want from its transfer pricing system? Ideally, it wants to ensure that managers who make decisions to improve their segment's performance also increase the performance of the company as a whole. Therefore, a company wants profitability metrics that reward the segment manager for decisions that increase the profitability of the entire company. For example, transfer prices should guide managers to make the best possible decisions regarding whether to buy or sell products and services inside or outside the total organization. Decisions by the buying and selling segment managers, acting without top-management intervention, should be the best decisions for their segment and for the entire organization. In other words, decisions that increase a segment's profitability metric should lead to increased profitability for the company as a whole.

Organizations use a variety of transfer prices. They use cost-based prices for some transfers, market-based prices for other transfers, and negotiated prices for others. Therefore, do not expect to find a single, universally applicable answer to the problem of transfer pricing. There is no perfect transfer-pricing system. Almost every manager in a decentralized organization has had experience with transfer-pricing systems that seem less than ideal. For example, a manager at *Weyerhaeuser*, a large wood-products firm, called transfer pricing his firm's most troublesome management control issue.

**A General Rule for Transfer Pricing**
Although no single rule always meets the goals of transfer pricing, a general rule can provide guidance:

\[
\text{transfer price} = \text{outlay cost} + \text{opportunity cost}
\]

As described earlier on page 422, outlay costs require a cash disbursement. They are essentially the additional amount the producing segment must pay to produce the product or service. Opportunity cost is the contribution to profit that the producing segment forgoes by transferring the item internally. For example, if capacity constraints prevent a segment from producing enough to meet both external demand and internal demand from the other segment, the opportunity cost is the contribution margin the producing segment could have received from selling in the external market rather than transferring internally.

Why does this rule provide incentives for segment decisions that also maximize profitability for the firm as a whole? Consider the following example of two hypothetical Nike divisions. The fabric division (the producing division) is considering transferring the fabric required for a golf shirt to the sportswear division (the buying division), as shown in Exhibit 10-6.

**Objective 7**
State the general rule for transfer pricing and use it to assess transfer prices based on total costs, variable costs, and market prices.

**Exhibit 10-6**
Transfer Pricing Example
Suppose the fabric division’s $4 opportunity cost arises because it can get $10 by selling the fabric to a buyer outside the company. Thus, the foregone contribution by not selling to the outside buyer is $10 – $6 = $4. At any transfer price less than $10, the producing division is better off selling the fabrics to the outside buyer rather than transferring it. Thus, the minimum transfer price the fabric division would accept is $6 + $4 = $10.

Now consider how much the item is worth to the sportswear division. For the fabric to be profitable to the sportswear division, it must be able to sell the final product for more than the transfer price plus the other costs it must incur to finish and sell the product. Because it can sell the golf shirt for $25 and its other costs are $12, the maximum price the sportswear division would be willing to pay is $25 – $12 = $13. At any higher price, the sportswear division would choose not to produce the shirt at all. But there is a second constraint: The sportswear division will not pay more to the fabric division than it would have to pay an outside supplier. Thus, the largest transfer price acceptable to the sportswear division is the lesser of (1) $13 or (2) the cost charged by an outside supplier.

Now consider the transfer decision from the company’s point of view. Transfer is desirable whenever (1) the total cost to the company for producing the fabric internally ($10, including opportunity cost, as determined by the fabric division) is less than its value to the company ($13 as determined by the sportswear division), and (2) the fabric division’s costs (again including opportunity costs) are less than the price the sportswear division would have to pay to an outside supplier. The first criterion guarantees that the company does not decide to produce a product where the total cost to produce exceeds the final selling price to the end user. The second guarantees that it does not pay more to produce the fabric internally than it would have to pay to buy it in the marketplace. The only transfer price that will always meet these criteria is $10, the fabric division’s outlay cost plus opportunity cost. Why? Any price between $10 and $13 meets the first criterion. However, only $10 meets the second because any transfer price above $10 opens the possibility that the sportswear division will buy the fabric externally when the company would be better off producing and transferring it from the fabric division.

Exhibit 10-7 summarizes the division’s decision and the effect on Nike as a whole when an outside supplier offers the fabric at either greater than $10 or less than $10. At a $10 transfer price, regardless of what price outside suppliers offer, the division managers, acting independently, make the decision that is most profitable for the company as a whole. Any other transfer price creates a possibility of a manager making the decision that is best for his or her segment but not for the company as a whole. The fabric division would reject the transfer at less than $10 regardless of how much profit it creates for the sportswear division. The sportswear division would reject the transfer whenever the transfer price is greater than the price from alternative sources.

Note that any transfer price greater than the $10 price specified by the general rule runs the risk of the sportswear division purchasing outside the company even when the internal cost is lower. For example, with a transfer price of $12 and an outside purchase cost of $11, the sportswear division would pay $11 to the outside supplier when the company could have spent only $10 (including opportunity cost) to produce the fabric in the fabric division.

This general rule doesn’t always provide a unique transfer price. For example, suppose there is no outside supplier for the fabric (but continue to assume there is an outside customer that will buy from the producing division for $10). Then the general rule tells us only that the transfer

<table>
<thead>
<tr>
<th>Outside Supplier Price</th>
<th>Best Decision for Division</th>
<th>Best Decision for Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $10</td>
<td>Do not transfer—buying division rejects transfer because buying internally will reduce its profits</td>
<td>Do not transfer—buy from outside supplier because it is cheaper for the company as a whole</td>
</tr>
<tr>
<td>Greater than $10</td>
<td>If value to buying division is greater than $10: Transfer at $10—both divisions benefit</td>
<td>Transfer—cost of internal production is less than cost of buying externally</td>
</tr>
<tr>
<td></td>
<td>If value to buying division is less than $10: Do not transfer—buying division rejects transfer</td>
<td>Do not transfer—value of the fabric to the company is less than its cost</td>
</tr>
</tbody>
</table>

Exhibit 10-7
Effects of a $10 Transfer Price on Decisions
price must be greater than $10 (the outlay cost plus opportunity cost for the producing division) and less than $13 (the final selling price minus the outlay costs for the sportswear division). Thus, the rule does not specify a specific price within this range. As another example, suppose that when selling the fabric to the outside buyer, there is a $.75 shipping and handling cost that is saved if the fabric is transferred internally. The general rule does not tell us how to allocate the $.75 savings between the two divisions.

Because transfer-pricing systems have multiple goals, there is no universally optimal transfer price. Nonetheless, the general rule provides a good benchmark by which to judge transfer-pricing systems. We analyze the following transfer-pricing systems, the most popular systems in practice, by examining how close the transfer price comes to the benchmark of outlay cost plus opportunity cost:

1. Market-based transfer prices
2. Cost-based transfer prices
   a. Variable cost
   b. Full cost (possibly plus profit)
3. Negotiated transfer prices

In addressing these transfer-pricing systems, we will assume that a company has multiple divisions that transfer items to one another, and that the company wants to preserve segment autonomy in a decentralized operation.

**Market-Based Transfer Prices**

When there is a ready market for an item or service transferred from one segment to another, transfer pricing policies are straightforward. The common maxim is "if a market price exists, use it." The more competitive the market, the better the maxim applies.

If there is a competitive market for the product or service being transferred internally, using the market price as a transfer price will generally lead to goal congruence. Why? Because the market price equals the variable cost plus opportunity cost:

\[
\text{transfer price} = \text{variable cost} + \text{opportunity cost} = \text{variable cost} + (\text{market price} - \text{variable cost}) = \text{market price} + \text{variable cost} - \text{variable cost} = \text{market price}
\]

If the selling division avoids some marketing and delivery costs when selling internally, many companies deduct these costs from the market price when computing the transfer price. That is, the transfer price is the net amount the selling division would receive selling the item on the market after deducting marketing and delivery costs.

To illustrate market-based transfer prices, reconsider the two hypothetical divisions of Nike. The fabric division makes fabrics it sells directly to external customers as well as to other Nike divisions, such as the sportswear division. The fabric division makes a particular fabric for an outlay cost of $6 and can sell it to external customers for $10. The sportswear division can buy that same fabric on the market for $10 and use it to make a golf shirt, spending an extra $12 in production costs. The golf shirt sells for $25. Should the sportswear division obtain the fabric from the fabric division of Nike or purchase it from an external supplier?

Assume for the moment that the fabric division can sell its entire production to external customers without incurring any marketing or shipping costs. The manager of the fabric division will not sell the fabric for less than $10. Why? Because he or she can sell it on the market for $10, so any price less than $10 will reduce the manager's division's profit. Furthermore, the sportswear division manager will refuse to pay a transfer price greater than $10 for the fabric for each golf shirt. Why? Because if the transfer price is greater than $10, he or she will purchase the fabric from the external supplier for the lower price of $10 in order to maximize his or her division's profit. The only transfer price that allows both managers to maximize their division's profit is $10, the market price. If the managers had autonomy to make decisions, at any transfer price other than $10 one of the managers would decline the internal transfer of the fabric.

Now suppose the fabric division incurs a $.75 per square yard marketing and shipping cost that it can avoid by transferring the fabric to the sportswear division instead of marketing it to outside customers. Most companies would then use a transfer price of $9.25, often called a
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"market-price-minus" transfer price. The fabric division would get the same net amount from the transfer ($9.25 with no marketing or shipping costs) as from an external sale ($10 less $.75 marketing and shipping costs), whereas the sportswear division saves $.75 per shirt. The fabric division will produce and transfer the fabric only if the transfer price is at least $9.25, and the sportswear division will buy the fabric internally only if it costs less than $10 and is worth at least $9.25 to the division. These criteria drive a decision to transfer only if it is in Nike’s overall best interests.

While market-based transfer prices generally provide the correct incentives, market prices are not always available. Therefore, we next discuss some other systems commonly used in the absence of market-based prices.

Transfers at Cost

When market prices don’t exist, most companies resort to cost-based transfer prices. In fact, about half the major companies in the world use a cost-based transfer-pricing system. However, there are many possible definitions of cost. Some companies use only variable cost, others use full cost, and still others use full cost plus a profit markup. Some use standard costs, and some use actual costs. Cost-based transfer prices are easy to understand and use, but they can easily lead to dysfunctional decisions—decisions in conflict with the company’s goals. The key to successful cost-based transfer prices is to minimize such dysfunctional decisions. Let’s examine some of these cost-based transfer-pricing systems.

TRANSFERS AT VARIABLE COST Companies that transfer items at variable cost implicitly assume that the selling division has no opportunity cost. Why? Because the variable cost is generally equal to variable cost: transfer price = outlay (variable) cost + $. Therefore, a variable-cost transfer-pricing system is most appropriate when the selling division forgoes no opportunities when it transfers the item internally, for example when there is plenty of excess capacity in the selling division.

Variable-cost transfer prices cause dysfunctional decisions when the selling segment has significant opportunity costs. In our fabric division–sportswear division example, there are two ways this could happen. First, if there are positive opportunity costs, the fabric division manager would turn down any transfer, preferring to pursue the alternative opportunities, perhaps selling the fabric on the open market or using facilities to make a different, more profitable, fabric. This would be dysfunctional if the sportswear division could make more profit from its golf shirt than the fabric division makes from pursuing its alternative opportunities. Second, realizing the lack of incentive for the fabric division to transfer the fabric, top management might insist that the fabric division produce and transfer the fabric. This would be against the company’s interests if the fabric division passes up opportunities that yield more profit than the sportswear division’s golf shirt. In addition, this policy violates segment autonomy.

TRANSFERS AT FULL COST OR FULL COST PLUS PROFIT Full-cost transfer prices include not only variable cost but also an allocation of fixed costs. In addition, some companies also add a markup for profit. This implicitly assumes that the allocating fixed costs (and, if included, the profit markup) is a good approximation of the opportunity cost. In cases of constrained capacity, where the selling division cannot satisfy all internal and external demand for its products, the opportunity cost is positive. As explained in the previous section, when the opportunity cost is positive, variable-cost transfer prices are problematic. While there is no guarantee that adding an allocation of fixed cost is a good approximation of the opportunity cost, it may be a better approximation than assuming a zero opportunity cost. Some companies believe that using activity-based costing improves cost-based transfer prices, as described in the Business First box on page 429.

Dysfunctional decisions arise with full-cost transfer prices when the selling segment has opportunity costs that differ significantly from the allocation of fixed costs and profit. In our example, suppose the fabric division has excess capacity so that opportunity cost is zero. Nevertheless, it has large fixed costs so that the full cost of the transferred fabric includes $8 of fixed cost in addition to the $6 variable cost. At a transfer price of $14, and assuming an external supplier either doesn’t exist or would also charge at least $14, the sportswear division would refuse the transfer unless it could sell the golf shirt for at least $14 + $12 = $26. Therefore, because the shirt sells for $25, the sportswear division would decide not to produce it.
But this decision costs Nike a contribution margin of $25 – ($6 + $12) = $7. The decision not to produce the shirt is dysfunctional—that is, it conflicts with Nike’s goal of generating additional profit.

Cost-based transfer prices can create problems when a company uses actual cost rather than standard cost as a transfer price. Because the buying division will not know its actual cost in advance, it will not be able to accurately plan its costs. More importantly, a transfer price based on actual costs merely passes cost inefficiencies in the selling division along to the buying division. Therefore, the selling division lacks incentive to control its costs. Thus, we recommend using budgeted or standard costs instead of actual costs for cost-based transfer prices.

Finally, cost-based transfer prices can undercut segment autonomy and sometimes lead to conflicts between segment and organizational goals. Suppose managers believe it is best for the company to transfer an item internally rather than purchasing it externally but also believe that the transfer price is unfair to their segment. They may either do what they think top management wants but resent its negative effect on their segment, or they may do what is best for their segment, ignoring its negative impact on the organization as a whole. Neither alternative is desirable.

Supporters point out that cost-based transfer prices are easy to understand and inexpensive to implement. However, any cost-based transfer price can lead to dysfunctional decisions. Companies transferring goods or services in the absence of market prices must decide whether the effects of dysfunctional decisions are great enough to abandon cost-based transfer prices. One alternative is to give up decentralized decision making—essentially have top management dictate whether to transfer items internally or purchase them from external suppliers—but this also sacrifices the benefits of decentralization. Another alternative is negotiated transfer prices, which we discuss next.

**Making Managerial Decisions**

Consider the following data concerning a subassembly that Willamette Manufacturing Company produces in its fabricating division and uses in products assembled in its assembly division.

<table>
<thead>
<tr>
<th>Fabricating Division</th>
<th>Assembly Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable cost of subassembly</td>
<td>Market price for buying the subassembly</td>
</tr>
<tr>
<td></td>
<td>from external sources</td>
</tr>
<tr>
<td>$35</td>
<td>$50</td>
</tr>
<tr>
<td>Excess capacity (in units)</td>
<td>Number of units needed</td>
</tr>
<tr>
<td>1,000</td>
<td>900</td>
</tr>
</tbody>
</table>

If you were the manager of the fabricating division, what is the lowest transfer price you would accept for the subassembly? If you were the manager of the assembly division, what is the most you would be willing to pay for the subassembly? Is there a transfer price that would motivate production and transfer of the subassembly? If so, what is the price?

**Answer**

The fabricating division has excess capacity, so its manager would be willing to accept any price above the variable cost of $35. The assembly division can buy the subassembly for $35 on the external market, so its manager would be willing to pay no more than $50 to buy it from the fabricating division. The transfer would take place at some price between $35 and $50.

**Negotiated Transfer Prices**

Companies heavily committed to segment autonomy often allow managers to negotiate transfer prices. The managers may consider both costs and market prices in their negotiations, though they are not required to do so. Supporters of negotiated transfer prices maintain that the managers involved have the best knowledge of what the company will gain or lose by producing and transferring the product or service, so open negotiation allows the managers to make optimal decisions. Critics of negotiated prices focus on the time and effort spent negotiating, an activity that adds nothing directly to the profits of the company.

Let’s look at how our fabric division and sportswear division managers might approach a negotiation of a transfer price. The sportswear division manager might look at the selling price of the golf shirt, $25, less the additional cost the division incurs in making it, $12, and decide to purchase fabric at any transfer price less than $25 – $12 = $13. The sportswear division will add to its profit by making and selling the shirt if the transfer price is below $13. At a transfer price above $13, the sportswear division will choose to not make and sell the shirt, assuming there is no other supplier of fabric at a price below $13.
Similarly, the fabric division manager will look at what it costs to produce and transfer the fabric. If there is excess capacity and thus no opportunity cost, any transfer price above $6 will increase the fabric division’s profit. Negotiation will result in a transfer if the maximum transfer price the sportswear division is willing to pay is greater than the minimum transfer price the fabric division is willing to accept. The fabric division manager is willing to accept any price above $6 and the sportswear division manager will pay up to $13. The exact transfer price will depend on the negotiating ability and power of the two division managers.

Now suppose there is no excess capacity in the fabric division and an outside customer is willing to pay $10 for the fabric. Transferring the fabric internally causes the division to give up a contribution of $4 as well as paying variable costs of $6, so the minimum transfer price acceptable to the fabric division is now $10. A transfer will take place at a price between $10 and $13.

If the opportunity cost had been more than $7, a transfer would not occur. Why? Because the fabric division’s minimum price of $6 variable costs plus opportunity cost would now be greater than $13 and the sportswear division’s maximum price would be just $13. This decision is exactly what Nike would prefer. When the fabric division’s opportunity cost is less than $7, the golf shirt is more profitable than the fabric division’s other business, and the transfer should occur. When the fabric division’s opportunity cost is greater than $7, the additional contribution from the fabric division’s other business will be greater than the sportswear division’s contribution on the shirt, and the transfer should not occur. Therefore, the manager’s decisions are congruent with the company’s best interests.

What should top management of a decentralized organization do if it sees segment managers making dysfunctional decisions through their negotiations? As usual, the answer is, “It depends.” Top management can step in and force the “correct” decision, but doing so undermines segment managers’ autonomy and the overall notion of decentralization. It also assumes top management has the information necessary to determine the correct decision. Most important, frequent intervention results in centralization. Indeed, if more centralization is desired, the organization might want to reorganize by combining segments.

Top managers who wish to encourage decentralization will often make sure that both producing and purchasing division managers understand all the facts and then allow the managers to negotiate a transfer price. Even when top managers suspect that the segments might make a dysfunctional decision, they may swallow hard and accept the segment manager’s judgment as a cost of decentralization. (Repeated dysfunctional decision making may be a reason to change the organizational design or to change managers.)

Well-trained and informed segment managers who understand opportunity costs and the behavior of fixed and variable costs will often make better decisions than will top managers. The producing division manager knows best the various uses of its capacity, and the purchasing division manager knows best what profit can be made on the items to be transferred. In addition, negotiation allows segments to respond flexibly to changing market conditions when setting transfer prices. One transfer price may be appropriate in a time of idle capacity and another when demand increases and operations approach full capacity.

**Objective 8**

**Identify the factors affecting multinational transfer prices.**

**Multinational Transfer Pricing**

So far, we have focused on how transfer-pricing policies affect the motivation of managers. However, in multinational companies, other factors may dominate. For example, multinational companies use transfer prices to minimize worldwide income taxes, import duties, and tariffs. For example, Nike might prefer to make its profits in Singapore, where the marginal corporate tax rate is less than half the rate in the United States.

Suppose a division in a high-income-tax-rate country produces a component for another division in a low-income-tax-rate country. By setting a low transfer price, the company can recognize most of the profit from the production in the low-income-tax-rate country, thereby minimizing taxes. Likewise, items produced by divisions in a low-income-tax-rate country and transferred to a division in a high-income-tax-rate country should have a high transfer price to minimize taxes.

Sometimes import duties offset income tax effects. Most countries base import duties on the price paid for an item, whether bought from an outside company or transferred from another division. Therefore, low transfer prices generally lead to low import duties.
Activity-Based Costing and Transfer Pricing

Teva Pharmaceutical Industries Ltd. is a global healthcare company specializing in pharmaceuticals. It is headquartered in Israel and had 2011 sales of $18.3 billion. Teva entered the lucrative generic drug market in the mid-1980s. Each of the marketing divisions purchases generic drugs from the manufacturing division. As part of its strategy, the company decentralized its pharmaceutical business into cost and profit centers. Prior to decentralization, each marketing division was a revenue center. With the new organizational structure, management had to decide how to measure marketing division costs because profits were now the key financial performance metric.

A key cost to the marketing divisions is the transfer price paid for drugs purchased from the manufacturing division. Management considered several alternative bases for the company's transfer prices. Market price was not a feasible basis for transfer pricing because there was no competitive market. Negotiated prices were rejected because management believed the resulting debates over the proper price would be lengthy and disruptive. Teva adopted variable cost (raw material and packaging costs) transfer pricing for a short time but eventually rejected it because it did not lead to congruent decisions—managers did not differentiate products using many scarce resources from those using few. Further, when a local source for the drug did exist, the market price was always above the variable-cost transfer price. Thus, managers in Teva's manufacturing division had little incentive to keep costs low.

Management also rejected traditional full cost that did not capture the actual cost structure of the manufacturing division. Specifically, the traditional full-cost system underestimated the low-volume products and overcosted the large-volume products. The system traced only raw materials directly to products. It divided the remaining manufacturing costs into two cost pools and allocated them based on labor hours and machine hours. One problem with the traditional system was its inability to capture and correctly allocate the non-value-added cost of setup activity. Management did not know the size of the errors in product cost, but the lack of confidence in the traditional cost system led to rejection of full cost as the transfer-pricing base.

Then Teva's management adopted an activity-based-costing (ABC) system to improve the accuracy of its product costs. The ABC system has five activity centers and related cost pools: receiving, manufacturing, packaging, quality assurance, and shipping. Because of the dramatic increase in costing accuracy, management was able to adopt full activity-based cost as the transfer price.

Teva's managers are pleased with their transfer-pricing system. The benefits include increased confidence that the costs being transferred are closely aligned with the actual short- and long-run costs being incurred, increased communication between divisions, and an increased awareness of the costs of low-volume products and the costs of capacity required to support these products. They believe their activity-based costs are the best approximation to outlay plus opportunity costs because the allocation of the fixed costs is a good measure of the value (opportunity cost) of the resources being consumed.


Tax authorities also recognize the incentive to set transfer prices to minimize taxes and import duties. Therefore, most countries have restrictions on allowable transfer prices. U.S. multinationals must follow an Internal Revenue Code rule specifying that transfers be priced at "arm's-length" market values, or at the price one division would pay another if they were independent companies. Even with this rule, companies have some latitude in deciding an appropriate "arm's-length" price.

Consider a high-end running shoe produced by an Irish Nike division with a 12% income tax rate and transferred to a division in Germany with a 40% rate. In addition, suppose Germany imposes an import duty equal to 20% of the price of the item and that Nike cannot deduct this import duty for tax purposes. Suppose the full unit cost of a pair of the shoes (translated to U.S. dollars) is $100, and the variable cost is $60. If tax authorities allow either variable- or full-cost transfer prices, which should Nike choose? By transferring at $100 rather than at $60, the company gains $3.20 per unit:

<table>
<thead>
<tr>
<th>Effect of Transferring at $100 Instead of at $60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income of the Irish division is $40 higher; therefore, it pays 12% × $40 more income taxes</td>
</tr>
<tr>
<td>Income of the German division is $40 lower; therefore, it pays 40% × $40 less income taxes</td>
</tr>
<tr>
<td>Import duty is paid by the German division on an additional $100 − $60 = $40; therefore, it pays 20% × $40 more duty</td>
</tr>
<tr>
<td>Net savings from transferring at $100 instead of $60</td>
</tr>
</tbody>
</table>
Companies may also use transfer prices to avoid the financial restrictions imposed by some governments. For example, a country might restrict the amount of dividends paid to foreign owners. It may be easier for a company to get cash from a foreign division as payment for items transferred than as cash dividends.

In summary, transfer pricing becomes even more complex in a multinational company. Multinational companies try to achieve more objectives through transfer-pricing policies, and the objectives sometimes conflict with one another.

### Summary Problem for Your Review

#### PROBLEM

Reconsider Nike's fabric division and sportswear division described earlier on page 408. In addition to the data there, suppose the fabric division has annual fixed manufacturing costs of $\$800,000$ and expected annual production of enough fabric to make 100,000 golf shirts. The "fully-allocated cost" of the material for one golf shirt is as follows:

<table>
<thead>
<tr>
<th>Variable costs</th>
<th>$6.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed costs, $800,000 + 100,000 shirts</td>
<td>$8.00</td>
</tr>
<tr>
<td>Fully allocated cost of the material for one golf shirt</td>
<td>$14.00</td>
</tr>
</tbody>
</table>

Assume that the fabric division has idle capacity. The sportswear division is considering whether to buy enough fabric for 10,000 golf shirts. It will sell each shirt for $\$25$. The additional processing and selling costs in the sportswear division to produce and sell one shirt are $\$12$. If Nike bases its transfer prices on fully-allocated cost, would the sportswear division manager buy? Explain. Would the company as a whole benefit if the sportswear division manager decided to buy? Explain.

#### SOLUTION

The sportswear division manager would not buy. The fully-allocated cost-based transfer price of $\$14$ would make the acquisition of the fabric unattractive to the sportswear division:

<table>
<thead>
<tr>
<th>Sportswear Division:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales price of final product</td>
</tr>
<tr>
<td>Deduct costs</td>
</tr>
<tr>
<td>Transfer price paid to the fabric division (fully-allocated cost)</td>
</tr>
<tr>
<td>Additional processing and selling costs</td>
</tr>
<tr>
<td>Total costs to the sportswear division</td>
</tr>
<tr>
<td>Contribution to profit of the sportswear division</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company as a whole:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales price of final product</td>
</tr>
<tr>
<td>Deduct variable costs and opportunity costs</td>
</tr>
<tr>
<td>Fabric department</td>
</tr>
<tr>
<td>Sportswear department</td>
</tr>
<tr>
<td>Total variable and opportunity costs</td>
</tr>
<tr>
<td>Contribution to company as a whole</td>
</tr>
</tbody>
</table>

The company as a whole would benefit by $\$70,000 (10,000 shirts × $\$7)$ if the fabric division produces and transfers the fabric.

The major lesson here is that transfer prices based on fully-allocated costs may induce the wrong decisions when there is idle capacity in the supplier division. Working in his or her own best interests, the sportswear division manager has no incentive to buy from the fabric division.
Keys to Successful Management Control Systems

Like management in general, management control systems are more art than science. A company such as Nike will certainly include many subjective factors as well as more objective measures of profitability in its performance-evaluation system. Intelligent use of the available information is as important as generating the information itself. Next, we briefly explore three factors that help managers interpret and use management control information.

Focus on Controllability

As Chapter 9 explained (see Exhibit 9-5, page 380), companies should distinguish between the performance of the division manager and the performance of the division as an investment by the corporation. Top management should evaluate segment managers on the basis of their controllable performance. However, management should base decisions such as increasing or decreasing investment in a division on the economic viability of the division, not on the performance of its managers.

This distinction helps to clarify some vexing difficulties. For example, top management may use an investment base to gauge the economic performance of a retail store, but judge the store's manager by focusing on income and ignoring any investment allocations. The aim is to evaluate the manager on controllable factors, but controllability depends on what decisions managers can make. In a highly decentralized company such as Johnson & Johnson or General Electric, for instance, managers can influence investments in assets and can exercise judgment regarding the appropriate amount of short-term credit and some long-term credit. Investment decisions that managers do not influence should not affect their performance evaluations.

Management by Objectives and Setting Expectations

Management by objectives (MBO) describes the joint formulation by managers and their superiors of a set of goals and plans for achieving the goals for a forthcoming period. For our purposes here, the terms goals and objectives are synonymous. The plans often take the form of a responsibility accounting budget (together with supplementary goals, such as levels of management training and safety that managers may not incorporate into the accounting budget). The company then evaluates a manager's performance in relation to these agreed-on budgeted objectives. It is important that managers' expectations be consistent with those of their superiors.

An MBO approach tends to reduce complaints about lack of controllability because managers first agree on a reasonable budget. That is, a particular manager and his or her superior negotiate a budget for a particular period and a particular set of expected outside and inside influences. For example, by evaluating results compared to expectations, a manager may more readily accept an assignment to a less successful segment. Why? Because a manager can reasonably expect to meet goals that recognize that the segment is economically struggling. Thus, an MBO system is preferable to a system that emphasizes absolute profitability for its own sake. Unless evaluation focuses on meeting reasonable expectations, able managers will be reluctant to accept responsibility for segments that are in economic trouble. Whether using MBO or not, skillful budgeting and intelligent performance evaluation will go a long way toward overcoming the common lament, "I'm being held responsible for items beyond my control."

MBO is also especially useful in nonprofit organizations where financial goals may be less important than nonfinancial goals. Managers can set objectives that fit well with overall organizational objectives. The accompanying Business First box on page 432 illustrates how an academic institution can use decentralization to further the university's financial and nonfinancial objectives.

Budgets, Performance Targets, and Ethics

Organizations can minimize many of the troublesome motivational effects of performance evaluation systems by the astute use of budgets. We cannot overemphasize the desirability of tailoring budgets to a particular manager. For example, either an ROI or an economic profit system can promote goal congruence and managerial effort if top management gets everybody to focus on what is currently attainable in the forthcoming budget period.

Objective 9

Explain how controllability and management by objectives (MBO) aid the implementation of management control systems.
Decentralization in Academia

Corporations are not the only types of organizations that decentralize. Many nonprofit organizations, such as universities, hospitals, and churches, also decentralize by delegating decision-making authority to segments of the organization. It is important for each segment to set objectives consistent with the overall organizational goals.

An example of such an organization is Harvard University. Using a philosophy of "every tub on its own bottom," Harvard is divided into 11 academic units: (1) Faculty of Arts and Sciences, which includes Harvard College, Graduate School of Arts and Sciences, and Division of Continuing Education; (2) Business School; (3) Design School; (4) Divinity School; (5) Graduate School of Education; (6) John F. Kennedy School of Government; (7) Law School; (8) Medical School; (9) Dental School; (10) School of Public Health; and (11) Radcliffe Institute for Advanced Study. At the head of each unit is a dean appointed by the president. The dean is directly responsible for his or her unit's finances and organization. In essence, each unit functions like a division of a decentralized corporation. Although the units have a great deal of independence, they must still set financial and nonfinancial objectives that are consistent with Harvard's goals, and their accomplishments will be measured against their objectives.

Because each unit at Harvard is responsible for its own revenues and expenses, many of the issues are similar to those of a for-profit corporation. The governing board that is responsible for the day-to-day operations at Harvard—called the Harvard Corporation and known formally as the President and Fellows of Harvard College—is a seven-member board headed by the president. To effectively manage the university, the board needs information from the units, but it intentionally does not directly make decisions for the units—that is left to the deans. Only when reports indicate that something is awry does the board intervene.

To the extent that the units are independent of one another, decentralization works well. But, just as in a for-profit organization, difficulties can arise when there are real or potential interactions among units. For example, how is tuition divided among units when students admitted to one unit take classes in another? This is a classic transfer-pricing problem. Or what about two units (for example the Law School and the Business School) competing for a particular faculty member. How is the good of the entire university reflected in such hiring decisions? Or how does the university encourage cross-functional programs and research involving more than one unit? Or how does the university choose whether to invest scarce funds into the Dental School or the Divinity School? These are all issues that arise from decentralization.

Like any organization, Harvard must balance overall organizational objectives versus the advantages of local decision making and superior motivation of divisional authority. While Harvard is an example of decentralization, other universities favor a more centralized approach.


Using budgets as performance targets also has its dangers. On pages 292–294 of Chapter 7 we pointed out how misuse of budgets for performance evaluation can lead to lying and cheating. Companies that make meeting a budget too important when evaluating managers may motivate unethical behavior. Top management at companies such as WorldCom gave “making the numbers” such a high priority that when it became clear that a segment would not meet its goals, managers fabricated the accounting reports. At Enron, the consequences of poor performance evaluations were so great that managers played bookkeeping games and allegedly manipulated electricity prices to make their performance look better. The lesson is that “astute” use of budgets is good, but using budgets to put unreasonable pressure on managers can undermine the ethics of an organization.

As we said earlier in the chapter, "You get what you measure." It is important to use measures that are consistent with organizational goals. Yet, measurement is only part of the management control system. Managers should also think hard about how they use the measures to achieve the organization's objectives. Even good measures can lead to dysfunctional decisions when managers misuse them. A management control system is only as good as the managers who use it.
Highlights to Remember

1. **Define decentralization and identify its expected benefits and costs.** As companies grow, the ability of managers to effectively plan and control becomes more difficult because top managers are further removed from day-to-day operations. One approach to effective planning and control in large companies is to decentralize decision making. This means that top management gives mid- and lower-level managers the authority to make decisions that impact the subunit’s performance. The more that decision-making authority is delegated, the greater the decentralization. Often, the subunit manager is most knowledgeable of the factors that management should consider in the decision-making process.

2. **Distinguish between responsibility centers and decentralization.** Top management must design the management control system so that it motivates managers to act in the best interests of the company. This is done through the choice of responsibility centers and the appropriate performance metrics and rewards. The degree of decentralization does not depend upon the type of responsibility center chosen. For example, a cost-center manager in one company may have more decision-making authority than does a profit-center manager in a highly centralized company.

3. **Explain how the linking of rewards to responsibility-center performance metrics affects incentives and risk.** It is generally a good idea to link managers’ rewards to responsibility-center results to promote goal congruence. However, linking rewards to results creates risk for the manager. The greater the influence of uncontrollable factors on a manager’s reward, the more risk the manager bears.

4. **Compute return on investment (ROI), economic profit, and economic value added (EVA).** It is typical to measure the results of investment centers using a set of performance metrics that include financial measures, such as return on investment (ROI), economic profit, or economic value added (EVA). ROI is any income measure divided by the dollar amount invested and is expressed as a percentage. Economic profit, or economic value added, is operating income less a capital charge based on the capital invested. It is an absolute dollar amount.

5. **Compare the incentives created by income, ROI, and economic profit (or EVA) performance measures.** Income performance measures create incentives to make decisions that increase income, without regard to the resources required. ROI creates incentives to adopt any and all projects with returns greater than existing ROI, rather than with returns greater than the cost of capital. EVA directly incorporates the cost of capital and provides incentives to adopt those projects with returns greater than the cost of capital.

6. **Define transfer prices and identify their purpose.** In large companies with many different segments, one segment often provides products or services to another segment. Deciding on the amount the selling division should charge the buying division for these transfers (the transfer price) is difficult. Companies use various types of transfer pricing policies. The overall purpose of transfer prices is to motivate managers to act in the best interests of the company, not just their segment.

7. **State the general rule for transfer pricing and use it to assess alternative transfer prices based on total costs, variable costs, or market prices.** As a general rule, transfer prices should approximate the outlay cost plus opportunity cost of the producing segment. Each type of transfer price has its own advantages and disadvantages. Each has a situation where it works best, and each can lead to dysfunctional decisions in some instances. When a competitive market exists for the product or service, transfer prices based on market prices usually lead to goal congruence and optimal decisions. When idle capacity exists in the segment providing the product or service, transfer prices based on variable cost usually lead to goal congruence. Cost-based transfer prices should usually be based on planned, rather than actual, costs. If a company uses actual costs, there is little incentive for the selling segment manager to minimize costs and the receiving segment manager does not know the cost in advance, which makes cost planning difficult.

8. **Identify the factors affecting multinational transfer prices.** Multinational organizations often use transfer prices as a means of minimizing worldwide income taxes, import duties, and tariffs.

9. **Explain how controllability and management by objectives (MBO) aid the implementation of management control systems.** Regardless of what measures a management control system uses, measures used to evaluate managers should focus on only the controllable aspects of performance. MBO can focus attention on performance compared to expectations, which is better than evaluations based on absolute profitability. Misuse of budgets and performance metrics can motivate managers to violate ethical standards.
**Accounting Vocabulary**

- agency theory, p. 412
- capital charge, p. 418
- capital turnover, p. 415
- centralization, p. 409
- cost of capital, p. 418
- decentralization, p. 409
- dysfunctional decisions, p. 426
- economic profit, p. 418
- economic value added (EVA), p. 418
- gross book value, p. 416
- incentives, p. 412
- management by objectives (MBO), p. 431
- net book value, p. 416
- net operating profit after-tax (NOPAT), p. 418
- performance metric, p. 412
- residual income, p. 418
- return on investment (ROI), p. 414
- return on sales, p. 415
- segment autonomy, p. 410
- transfer price, p. 422

**MyAccountingLab**

**10-A1 ROI and Economic Profit Calculations**

Consider the following data (in thousands):

<table>
<thead>
<tr>
<th>Division</th>
<th>Hubert</th>
<th>Duane</th>
<th>Louis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average invested capital</td>
<td>$2,000</td>
<td>$600</td>
<td>$1,800</td>
</tr>
<tr>
<td>Revenue</td>
<td>3,600</td>
<td>1,200</td>
<td>9,000</td>
</tr>
<tr>
<td>Income</td>
<td>180</td>
<td>84</td>
<td>216</td>
</tr>
</tbody>
</table>

1. For each division, compute the return on sales, the capital turnover, and the return on investment (ROI).
2. Which division is the best performer if evaluation is based on ROI? Explain.
3. Suppose each division is assessed a cost of capital of 10% on invested capital. Compute the economic profit for each division. Which division is the best performer based on economic profit? Explain.

**10-A2 Transfer- Pricing Dispute**

Zurich Equipment, SA, a Swiss transportation equipment manufacturer, is heavily decentralized. Each division head has full authority on all decisions regarding sales to internal or external customers. The Lucerne division has always acquired a certain equipment component from the Geneva division. The Geneva division recently acquired specialized equipment that is used primarily to make this component. The Geneva division has informed the Lucerne division that its fixed costs have increased by CHF 25 per unit because of the depreciation charges on the new equipment, so the unit price will be increased to CHF 325. However, the Lucerne division’s management has now decided to purchase the component from outside suppliers at a price of CHF 300.

The Geneva division has supplied the following production cost data for this component:

| Annual production of component (all for sale to Lucerne division) | 3,000 units |
| Geneva’s variable costs per unit | CHF 280 |
| Geneva’s fixed costs per unit | CHF 40 |

1. Suppose there are no alternative uses of the Geneva facilities and that fixed costs will continue if Geneva no longer produces the component for Lucerne. Will the company as a whole benefit if the Lucerne division buys from the outside suppliers for CHF 300 per unit? Show computations to support your answer.
2. Suppose there is an alternative use for the Geneva facilities. If the Geneva facilities are used to produce the component for the Lucerne division, the Geneva division will give up a contribution of CHF 85,000 from this alternative use. Should the Lucerne division purchase from outsiders at CHF 300 per unit?
3. Suppose that there are no alternative uses for Geneva’s internal facilities and that the outsiders’ selling price drops by CHF 50 to CHF 250. Should the Lucerne division purchase from outsiders?
4. As the president, how would you respond if the Geneva division manager requests that you require the Lucerne division to purchase the component from Geneva? Would your response differ depending on the specific situations described in numbers 1–3? Why?

10-A3 Transfer Pricing
Refer to problem 10-A2, number 1 only. Suppose the Geneva division could modify the component at an additional variable cost of CHF 25 per unit and sell the 3,000 units to other customers for CHF 330. Then, would the entire company benefit if the Lucerne division purchased the 3,000 components from outsiders at CHF 300 per unit?

10-A4 Rate of Return and Transfer Pricing
Consider the following data regarding budgeted operations for 20X7 of the Austin division of Texas Products:

<table>
<thead>
<tr>
<th>Average total assets</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Receivables</td>
<td>$220,000</td>
</tr>
<tr>
<td>Inventories</td>
<td>290,000</td>
</tr>
<tr>
<td>Plant and equipment, net</td>
<td>450,000</td>
</tr>
<tr>
<td>Total</td>
<td>$960,000</td>
</tr>
<tr>
<td>Fixed overhead</td>
<td>$300,000</td>
</tr>
<tr>
<td>Variable costs</td>
<td>$72 per unit</td>
</tr>
<tr>
<td>Desired rate of return on average total assets</td>
<td>20%</td>
</tr>
<tr>
<td>Expected volume</td>
<td>150,000 units</td>
</tr>
</tbody>
</table>

1. a. What average unit sales price does the Austin division need to obtain its desired rate of return on average total assets?
   b. What would be the expected capital turnover?
   c. What would be the return on sales?
2. a. If the selling price is as previously computed, what rate of return will the division earn on total assets if sales volume is 170,000 units?
   b. If sales volume is 130,000 units?
3. Assume that the Austin division plans to sell 45,000 units to the Galveston division of Texas Products and that it can sell only 105,000 units to outside customers at the price computed in requirement 1a. The Galveston division manager has balked at a tentative transfer price of $4. She has offered $2.25, claiming that she can manufacture the units herself for that price. The Austin division manager has examined his own data. He had decided that he could eliminate $60,000 of inventories, $90,000 of plant and equipment, and $22,500 of fixed overhead if he did not sell to the Galveston division and sold only 105,000 units to outside customers. Should the Austin division manager sell for $2.25? Show computations to support your answer.

10-B1 ROI or Economic Profit
Melbourne Co. is a large integrated Australian conglomerate with shipping, metals, and mining operations throughout Asia. Melbourne is just starting a new manufacturing division and the newly appointed general manager plans to submit a proposed capital budget for 20X8 for inclusion in the company-wide budget.

The division manager has for consideration the following projects, all of which require an outlay of capital. All projects have equal risk.

<table>
<thead>
<tr>
<th>Project</th>
<th>Investment Required</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$4,800,000</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>2</td>
<td>1,900,000</td>
<td>627,000</td>
</tr>
<tr>
<td>3</td>
<td>1,400,000</td>
<td>182,000</td>
</tr>
<tr>
<td>4</td>
<td>950,000</td>
<td>152,000</td>
</tr>
<tr>
<td>5</td>
<td>650,000</td>
<td>136,500</td>
</tr>
<tr>
<td>6</td>
<td>300,000</td>
<td>90,000</td>
</tr>
</tbody>
</table>
The division manager must decide which of the projects to take. The company has a cost of capital of 20%. An amount of $12 million is available to the division for investment purposes.

1. What will be the total investment, total return, return on capital invested, and economic profit of the rational division manager if
   a. the company has a rule that managers should accept all projects promising a return on investment of at least 15%?
   b. the company evaluates division managers on the return on capital invested (assume this is a new division so that invested capital will consist only of capital invested in new projects adopted by the manager)?
   c. the division manager is expected to maximize economic profit computed using the 20% cost of capital?

2. Which of the three approaches will induce the most effective investment policy for the company as a whole? Explain.

**10-B2 Computing EVA**

A company that uses EVA reported the following results for 20X4 and 20X5 (in millions):

<table>
<thead>
<tr>
<th></th>
<th>20X4</th>
<th>20X5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretax operating income</td>
<td>$6,105</td>
<td>$6,100</td>
</tr>
<tr>
<td>Cash taxes</td>
<td>1,686</td>
<td>1,620</td>
</tr>
</tbody>
</table>

Average adjusted invested capital was $16,125 million in 20X4 and $18,110 million in 20X5, and the cost of capital was 14% in both 20X4 and 20X5.

1. Compute the company’s EVA for 20X4 and 20X5.
2. Compare the company’s performance in creating value for its shareholders in 20X5 with that in 20X4.

**10-B3 Transfer Pricing**

Spartan Enterprises runs a chain of drive-in ice cream stands in Lansing during the summer season. Managers of all stands are told to act as if they owned the stand and are judged on their profit performance. Spartan Enterprises has rented an ice cream machine for the summer for $3,600 to supply its stands with ice cream. Spartan is not allowed to sell ice cream to other dealers because it cannot obtain a dairy license. The manager of the ice cream machine charges the stands $4 per gallon. Operating figures for the machine for the summer are as follows:

<table>
<thead>
<tr>
<th>Sales to the stands (16,000 gallons at $4)</th>
<th>$64,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable costs, at $2.00 per gallon</td>
<td>$32,000</td>
</tr>
<tr>
<td>Fixed costs</td>
<td></td>
</tr>
<tr>
<td>Rental of machine</td>
<td>3,600</td>
</tr>
<tr>
<td>Other fixed costs</td>
<td>10,000</td>
</tr>
<tr>
<td>Operating margin</td>
<td>$18,400</td>
</tr>
</tbody>
</table>

The manager of the Okemos Drive-In, one of the Spartan drive-ins, is seeking permission to sign a contract to buy ice cream from an outside supplier at $3.35 a gallon. The Okemos Drive-In uses 4,000 gallons of ice cream during the summer. Elizabeth Chuk, controller of Spartan, refers this request to you. You determine that the other fixed costs of operating the machine will decrease by $900 if the Okemos Drive-In purchases from an outside supplier. Chuk wants an analysis of the request in terms of overall company objectives and an explanation of your conclusion. What is the appropriate transfer price?

**10-B4 Rate of Return and Transfer Pricing**

The Sendai division of Shusei Toy Company manufactures units of the game Shogi and sells them in the Japanese market for ¥7,350 each. The following data are from the Sendai division’s 20X8 budget:
Shusei has instructed the Sendai division to budget a rate of return on total assets (before taxes) of 24%.

1. Suppose the Sendai division expects to sell 3,350 games during 2X8.
   a. What rate of return will be earned on total assets?
   b. What would be the expected capital turnover?
   c. What would be the return on sales?
2. The Sendai division is considering adjustments in the budget to reach the desired 24% rate of return on total assets.
   a. How many units must be sold to obtain the desired return if no other part of the budget is changed?
   b. Suppose sales cannot be increased beyond 3,350 units. How much must total assets be reduced to obtain the desired return? Assume that for every ¥1,000 decrease in total assets, fixed costs decrease by ¥100.
3. Assume that only 2,950 units can be sold in the Japanese market. However, another 1,200 units can be sold to the European marketing division of Shusei. The Sendai manager has offered to sell the 1,200 units for ¥6,450 each. The European marketing division manager has countered with an offer to pay ¥6,150 per unit, claiming that she can subcontract production to an Italian producer at a cost equivalent to ¥6,150. The Sendai manager knows that if his production falls to 2,950 units, he could eliminate some assets, reducing total assets to ¥11 million and annual fixed overhead to ¥5.4 million. Should the Sendai manager sell for ¥6,150 per unit? Support your answer with the relevant computations. Ignore the effects of income taxes and import duties.

### Additional Assignment Material

#### QUESTIONS

10-1 “Decentralization has benefits and costs.” Name three of each.
10-2 Sophisticated accounting and communications systems aid decentralization. Explain how they accomplish this.
10-3 Why is decentralization more popular in profit-seeking organizations than in nonprofit organizations?
10-4 “The essence of decentralization is the use of profit centers.” Do you agree? Explain.
10-5 What kinds of organizations find decentralization to be preferable to centralization?
10-6 According to agency theory, employment contracts balance what three factors?
10-7 What is the major benefit of the ROI technique for measuring performance?
10-8 What two major items affect ROI?
10-9 How does economic profit differ from net income?
10-10 Define economic value added (EVA) and describe three ways a company can improve its EVA.
10-11 Division A’s ROI is 20%, and B’s is 10%. The company pays each division manager a bonus based on his or her division’s ROI. Discuss whether each division manager would accept or reject a proposed project with a rate of return of 15%. Would either of them make a different decision if the company evaluated managers using economic profit with a capital charge of 11%? Explain.
10-12 Give three possible definitions of invested capital that we can use in measuring ROI or economic profit.
10-13 “Managers who use a historical-cost accounting system look backward at what something cost yesterday, instead of forward to what it will cost tomorrow.” Do you agree? Why?
10-14 Ross Company uses net book value as a measure of invested capital when computing ROI. A division manager has suggested that the company change to using gross book value instead. What difference in motivation of division managers might result from such a change? Do you suppose most of the assets in the division of the manager proposing the change are relatively new or old? Why?
10-15 Why do companies need transfer-pricing systems?
10-16 Describe two problems that can arise when using actual full cost as a transfer price.

10-17 How does the presence or absence of idle capacity affect the optimal transfer-pricing policy?

10-18 "We use variable-cost transfer prices to ensure that we make no dysfunctional decisions." Discuss.

10-19 What is the major advantage of negotiated transfer prices? What is the major disadvantage?

10-20 Discuss two factors that affect multinational transfer prices but have little effect on purely domestic transfers.

10-21 Describe management by objectives (MBO).

10-22 How can performance measurement lead to unethical behavior by managers?

CRITICAL THINKING EXERCISES

10-23 Decentralization
Many companies implement organizational changes to centralize or decentralize operations only to follow with later changes in the opposite direction. Why might a company that at one time decentralizes decide later to centralize?

10-24 Comparing Financial Measures of Performance
"Both ROI and economic profit use profit and invested capital to measure performance. Therefore it really doesn’t matter which we use." Do you agree? Explain.

10-25 Performance Metrics and Ethics
"Financial performance metrics cause managers to ignore ethics and focus just on meeting their profit targets. After all, look at what happened at Enron, Global Crossing, WorldCom, Tyco, HealthSouth, and several other companies." Evaluate this quote. Can financial performance metrics be compatible with ethical behavior?

10-26 Transfer Pricing and Organizational Behavior
The principle reason for transfer-pricing systems is to communicate data that will lead to goal-congruent decisions by managers of different business units. When managers take actions that conflict with organizational goals, dysfunctional behavior exists. Why does top management sometimes accept a division manager’s judgments, even if the division manager appears to behave in a dysfunctional manner?

EXERCISES

10-27 Simple ROI Calculation
You are given the following data:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$227,500,000</td>
</tr>
<tr>
<td>Inv. cap</td>
<td>$65,000,000</td>
</tr>
<tr>
<td>Net income</td>
<td>$9,100,000</td>
</tr>
</tbody>
</table>

Compute the following:
1. Turnover of capital
2. Return on sales
3. Return on investment (ROI)

10-28 Simple ROI Calculation
Fill in the blanks:

<table>
<thead>
<tr>
<th>Division</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
</tbody>
</table>

| Return on sales | 6% | 4% | ?% |
| Capital turnover | 3  |   | 5  |
| Rate of return on invested capital | ?% | 18% | 20% |
10-29 Simple ROI and Economic Profit Calculations

Consider the following data:

<table>
<thead>
<tr>
<th>Division</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invested capital</td>
<td>$1,050,000</td>
<td>$</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>Income</td>
<td>$</td>
<td>$142,800</td>
<td>$210,000</td>
</tr>
<tr>
<td>Revenue</td>
<td>$2,310,000</td>
<td>$2,856,000</td>
<td>$</td>
</tr>
<tr>
<td>Return on sales</td>
<td>3%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Capital turnover</td>
<td></td>
<td></td>
<td>3.5</td>
</tr>
<tr>
<td>Rate of return on invested capital</td>
<td>%</td>
<td>10.5%</td>
<td>%</td>
</tr>
</tbody>
</table>

1. Prepare a similar tabular presentation, filling in all blanks.
2. Suppose each division is assessed a capital charge based on a cost of capital of 10% of invested capital. Compute the economic profit for each division.
3. Which division is the best performer? Explain.

10-30 EVA

Lohmann Corporation is a major supplier to makers of outdoor power equipment. According to the company’s annual report, “management subscribes to the premise that the value of our company is enhanced if the capital invested in its operations yields a cash return that is greater than that expected by the providers of capital.”

The following data are from Lohmann’s annual report that incorporate EVA adjustments to operating profit and average invested capital (amounts in thousands):

<table>
<thead>
<tr>
<th></th>
<th>20X1</th>
<th>20X2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted before tax operating profit</td>
<td>$78,000</td>
<td>$80,000</td>
</tr>
<tr>
<td>Cash taxes</td>
<td>20,500</td>
<td>22,600</td>
</tr>
<tr>
<td>Adjusted average invested capital</td>
<td>650,000</td>
<td>600,000</td>
</tr>
<tr>
<td>Cost of capital</td>
<td>9.4%</td>
<td>9.4%</td>
</tr>
</tbody>
</table>

1. Compute the EVA for Lohmann for 20X1 and 20X2.
2. Did Lohmann’s overall performance improve from 20X1 to 20X2? Explain.

10-31 Comparison of Asset and Equity Bases

Hope Company has assets of $3 million and long-term, 12% debt of $1,240,000. Crosby Company has assets of $3 million and no long-term debt. The annual operating income (before interest) of both companies is $690,000. Ignore taxes.

1. Compute the rate of return on
   a. assets, and
   b. stockholders’ equity.
2. Evaluate the relative merits of each base for appraising operating management.

10-32 Finding Unknowns

Consider the following data:

<table>
<thead>
<tr>
<th>Division</th>
<th>J</th>
<th>K</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>$450,000</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Revenue</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Invested capital</td>
<td>$</td>
<td>$5,000,000</td>
<td>$20,000,000</td>
</tr>
<tr>
<td>Return on sales</td>
<td>5%</td>
<td>9%</td>
<td>%</td>
</tr>
<tr>
<td>Capital turnover</td>
<td>6</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Rate of return on invested capital</td>
<td>%</td>
<td>27%</td>
<td>16%</td>
</tr>
<tr>
<td>Cost of capital</td>
<td>7%</td>
<td>14%</td>
<td>%</td>
</tr>
<tr>
<td>Economic profit</td>
<td>$</td>
<td>$</td>
<td>$200,000</td>
</tr>
</tbody>
</table>
1. Prepare a similar tabular presentation, filling in all blanks.
2. Which division is the best performer? Explain.

10-33 Gross Versus Net Asset Value

The Alexandria division of Atkinson Company just purchased an asset for $120,000. The asset has a 3-year life. Atkinson's top management evaluates Lisa LaVilla, manager of the Alexandria division, based on ROI for this asset. She can choose to measure the asset using either gross asset value or net asset value. Her operating income before depreciation each year is $100,000.

1. What is the Alexandria division's ROI for each of the 3 years using the gross asset value?
2. What is the Alexandria division's ROI for each of the 3 years using the net asset value?
3. If LaVilla expects Atkinson to transfer her to a different division in about a year, which asset valuation policy would she prefer?

10-34 Variable Cost as a Transfer Price

A chair's variable cost is $52 and its market value as a piece of unfinished furniture is $65 at a transfer point from the assembly division to the finishing division. The finishing division's variable cost of sanding and finishing the chair is $26, and the selling price of the chair after sanding and finishing is $83.

1. Prepare a tabulation of the contribution margin per unit for the finishing division's performance and overall company performance under the two alternatives of (a) selling to outsiders at the transfer point and (b) sanding and finishing the chair and then selling to outsiders.
2. As finishing division manager, which alternative would you choose? Explain.

10-35 Maximum and Minimum Transfer Price

Sherwin Company makes bicycles. Various divisions make components and transfer them to the Dayton division for assembly into final products. The Dayton division can also buy components from external suppliers. The Toledo division makes the wheels, and it also sells wheels to external customers. All divisions are profit centers, and managers are free to negotiate transfer prices. Prices and costs for the Toledo and Dayton divisions are as follows:

<table>
<thead>
<tr>
<th>Toledo Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales price to external customers</td>
</tr>
<tr>
<td>Internal transfer price</td>
</tr>
<tr>
<td>Costs</td>
</tr>
<tr>
<td>Variable costs per wheel</td>
</tr>
<tr>
<td>Total fixed costs</td>
</tr>
<tr>
<td>Budgeted production</td>
</tr>
</tbody>
</table>

*Includes production for transfer to Dayton

<table>
<thead>
<tr>
<th>Dayton Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales price to external customers</td>
</tr>
<tr>
<td>Costs</td>
</tr>
<tr>
<td>Wheels, per bicycle</td>
</tr>
<tr>
<td>Other components, per bicycle</td>
</tr>
<tr>
<td>Other variable costs, per bicycle</td>
</tr>
<tr>
<td>Total fixed costs</td>
</tr>
<tr>
<td>Budgeted production</td>
</tr>
</tbody>
</table>

Fixed costs in both divisions will be unaffected by the transfer of wheels from Toledo to Dayton.

1. Compute the maximum transfer price per wheel the Dayton division would be willing to pay to buy wheels from the Toledo division.
2. Compute the minimum transfer price per wheel at which the Toledo division would be willing to produce and sell wheels to the Dayton division. Assume that Toledo has excess capacity.

**10-36 Multinational Transfer Prices**

Princeton International has production and marketing divisions throughout the world. It produces one particular product in Ireland, where the income tax rate is 24%, and transfers it to a marketing division in Japan, where the income tax rate is 45%. Assume that Japan places an import tax of 13% on the product and that import duties are not deductible for income tax purposes.

The variable cost of the product is £500 and the full cost is £800. Suppose the company can legally select a transfer price anywhere between the variable and full cost.

1. What transfer price should Princeton International use to minimize taxes? Explain why this is the tax-minimizing transfer price.
2. Compute the amount of taxes saved by using the transfer price in requirement 1 instead of the transfer price that would result in the highest taxes.

**PROBLEMS**

**10-37 Agency Theory**

The Tamura International Trading Company plans to hire a manager for its division in Mexico City. Tamura International's president and vice president of personnel are trying to decide on an appropriate incentive employment contract. The manager will operate far from the Tokyo corporate headquarters, so evaluation by personal observation will be limited. The president insists that a large incentive to produce profits is necessary; he favors a salary of ¥150,000 and a bonus of 10% of the profits above ¥1,200,000. If operations proceed as expected, profits will be ¥4,600,000, and the manager will receive ¥490,000. But both profits and compensation might be more or less than planned.

The vice president of personnel responds that ¥490,000 is more than most of Tamura International's division managers make. She is sure that the company can hire the competent manager for a guaranteed salary of ¥400,000. She argued, "Why pay ¥490,000 when we can probably hire the same person for ¥400,000?"

1. What factors would affect Tamura International’s choice of employment contract? Include a discussion of the pros and cons of each proposed contract.
2. Why is the expected compensation more with the bonus plan than with the straight salary?

**10-38 Margins and Turnover**

Accountants often express ROI as the product of two components—capital turnover and return on sales. You are considering investing in one of three companies, all in the same industry, and are given the following information:

<table>
<thead>
<tr>
<th>Company</th>
<th>Adam</th>
<th>Basil</th>
<th>Collin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$8,500,000</td>
<td>$1,500,000</td>
<td>$29,000,000</td>
</tr>
<tr>
<td>Income</td>
<td>$765,000</td>
<td>$180,000</td>
<td>$180,000</td>
</tr>
<tr>
<td>Capital</td>
<td>$3,200,000</td>
<td>$12,000,000</td>
<td>$12,000,000</td>
</tr>
</tbody>
</table>

1. Why would you desire the breakdown of return on investment into return on sales and turnover on capital?
2. Compute the return on sales, turnover on capital, and ROI for the three companies, and comment on the relative performance of the companies as thoroughly as the data permit.
3. Notice that Basil and Collin have the same income and capital but vastly different levels of sales. Discuss the types of strategies that Basil and Collin might be employing.
10-39 ROI by Business Segment
ViaMedia does business in three different business segments: (1) entertainment, (2) publishing/information, and (3) consumer/commercial finance. Results for a recent year were as follows (in millions):

<table>
<thead>
<tr>
<th>Segment</th>
<th>Revenues</th>
<th>Operating Income</th>
<th>Total Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entertainment</td>
<td>$1,050</td>
<td>$210</td>
<td>$1,000</td>
</tr>
<tr>
<td>Publishing/Information</td>
<td>$ 700</td>
<td>$140</td>
<td>$1,400</td>
</tr>
<tr>
<td>Consumer/Commercial Finance</td>
<td>$1,060</td>
<td>$265</td>
<td>$ 848</td>
</tr>
</tbody>
</table>

1. Compute the following for each business segment:
   a. Return on sales
   b. Capital turnover
   c. ROI
2. Comment on the differences in ROI among the business segments. Include reasons for the differences.

10-40 EVA Versus Economic Profit
The primary difference between the EVA and economic profit measures is the increased focus on cash flow by EVA. For example, economic profit generally uses the provision for income taxes from the income statement while EVA uses cash taxes paid. EVA companies typically make several adjustments (from 5 to 15 adjustments for the typical EVA company) to both operating income from the income statement and invested capital from the balance sheet. Common examples include adjustments for R&D, LIFO, and warranty costs.

The following data were taken from the 20X3 annual report of Burton Company (thousands of dollars):

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income from operations</td>
<td>$267,400</td>
</tr>
<tr>
<td>Provision for income taxes</td>
<td>57,455</td>
</tr>
<tr>
<td>Net EVA adjustments added to income from operations</td>
<td>5,398</td>
</tr>
<tr>
<td>Additional capital employed from EVA adjustments</td>
<td>234,159</td>
</tr>
<tr>
<td>Ending total shareholders' equity</td>
<td>845,632</td>
</tr>
<tr>
<td>Cash taxes</td>
<td>64,800</td>
</tr>
<tr>
<td>Ending total current liabilities</td>
<td>340,125</td>
</tr>
<tr>
<td>Ending total assets</td>
<td>1,834,456</td>
</tr>
<tr>
<td>Beginning total shareholders' equity</td>
<td>841,589</td>
</tr>
<tr>
<td>Beginning total current liabilities</td>
<td>471,859</td>
</tr>
<tr>
<td>Beginning total assets</td>
<td>1,889,321</td>
</tr>
<tr>
<td>Management's estimate of the cost-of-capital</td>
<td>11.3%</td>
</tr>
</tbody>
</table>

Prepare a schedule that calculates and compares EVA to economic profit for Burton Company.

10-41 EVA
The Jeske Company had the following financial results for two recent fiscal years (in millions):

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenues</th>
<th>Operating expenses</th>
<th>Cash income taxes</th>
<th>Average invested capital (total assets less current liabilities)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>$4,463</td>
<td>3,569</td>
<td>292</td>
<td>$2,854</td>
</tr>
<tr>
<td>1</td>
<td>$4,510</td>
<td>3,615</td>
<td>255</td>
<td>$2,689</td>
</tr>
</tbody>
</table>

1. Suppose that Jeske's cost of capital is 11.5%. Compute the company's EVA for years 1 and 2. Assume definitions of after-tax operating income and invested capital as reported in Jeske's annual reports without adjustments advocated by Stern Stewart or others.
2. Discuss the change in EVA between years 1 and 2.
10-42 EVA and Cost of Capital
The Holt Company uses EVA to evaluate top management performance. In 20X8, Holt had net operating income of $8,210 million, income taxes of $1,395 million, and average noncurrent liabilities plus stockholders’ equity of $27,555 million. The company’s capital is about 55% long-term debt and 45% equity. Assume that the after-tax cost of debt is 10% and the cost of equity is 12%.

1. Compute Holt’s EVA. Assume definitions of after-tax operating income and invested capital as reported in Holt’s annual reports without adjustments advocated by Stern Stewart.
2. Explain what EVA tells you about the performance of the top management of Holt in 20X8.

10-43 Evaluation of Divisional Performance
As the CEO of Middling Hardware Company, you examined the following measures of the performance of three divisions (in thousands of dollars):

<table>
<thead>
<tr>
<th>Division</th>
<th>Average Net Assets Based On</th>
<th>Operating Income Based On</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Historical Cost</td>
<td>Replacement Cost</td>
</tr>
<tr>
<td>Tools</td>
<td>$15,000</td>
<td>$16,000</td>
</tr>
<tr>
<td>Appliances</td>
<td>44,000</td>
<td>55,000</td>
</tr>
<tr>
<td>Lighting</td>
<td>27,000</td>
<td>48,000</td>
</tr>
</tbody>
</table>

*The differences in operating income between historical and replacement cost are attributable to the differences in depreciation expenses.

1. Calculate for each division the rate of return on net assets and the economic profit based on historical cost and on replacement cost. For purposes of calculating economic profit, use 10% as the cost of capital.
2. Rank the performance of each division under each of the four different measures computed in number 1.
3. What do these measures indicate about the performance of the divisions? Of the division managers? Which measure do you prefer? Why?

10-44 Use of Gross or Net Book Value of Fixed Assets
Assume that a machine shop acquires $520,000 of fixed assets with a useful life of 4 years and no residual value. The shop uses straight-line depreciation. The company judges the shop manager based on income in relation to these fixed assets. Annual net income, after deducting depreciation, is $20,000.

Assume that sales, and all expenses except depreciation, are on a cash basis. Dividends equal net income. Thus, cash in the amount of the depreciation charge will accumulate each year. The plant manager’s performance is judged in relation to fixed assets because all current assets, including cash, are considered under central-company control. Assume (unrealistically) that any cash accumulated remains idle. Ignore taxes.

1. Prepare a comparative tabulation of the plant’s rate of return and the company’s overall rate of return based on
   a. gross (i.e., original cost) assets.
   b. net book value of assets.
2. Evaluate the relative merits of gross assets and net book value of assets as investment bases.

10-45 Role of Economic Value and Replacement Value
(This problem requires understanding of the concept of present values. See Appendix B.)

"To me, economic value is the only justifiable basis for measuring plant assets for purposes of evaluating performance. By economic value, I mean the present value of expected future services. Still, we do not even do this on acquisition of new assets—that is, we may compute a positive net present value, using discounted cash flow; but we record the asset at no more than its cost. In this way, the excess present value is not shown in the initial balance sheet. Moreover, the use of replacement costs in subsequent years is also unlikely to result in showing economic values. The replacement cost will probably be less than the economic value at any given instant of an asset’s life.

"Market values are totally unappealing to me because they represent a second-best alternative value—that is, they ordinarily represent the maximum amount obtainable from an alternative that has been rejected. Obviously, if the market value exceeds the economic value of the assets in use, they should be sold. However, in most instances, the opposite is true; market values of individual assets are far below their economic value in use."
“The obtaining and recording of total present values of individual assets based on discounted-cash-flow techniques is an infeasible alternative. I, therefore, conclude that replacement cost (less accumulated depreciation) of similar assets producing similar services is the best practical approximation of the economic value of the assets in use. Of course, it is more appropriate for the evaluation of the division’s performance than the division manager’s performance.”

Critically evaluate these comments. Please do not wander; concentrate on the issues described by the quotation.

10-46 Profit Centers and Transfer Pricing in an Automobile Dealership

A large automobile dealership in Chicago is installing a responsibility accounting system and three profit centers: parts and service, new vehicles, and used vehicles. Top management has told the three department managers to run their shops as if they were in business for themselves. However, there are interdepartmental dealings. For example,

a. the parts and service department prepares new cars for final delivery and repairs used cars prior to resale.
b. the used-car department’s major source of inventory has been cars traded in as partial payment for new cars.

The owner of the dealership has asked you to draft a company policy statement on transfer pricing, together with specific rules to be applied to the examples cited. He has told you that clarity is of paramount importance because he will rely on your statement for settling transfer-pricing disputes.

10-47 Transfer Pricing

The shocks and struts division of Transnational Motors Company produces strut assemblies for automobiles. It has been the sole supplier of strut assemblies to the automotive division and charges $48 per unit, the current market price for very large wholesale lots. The shocks and struts division also sells to outside retail outlets, at $61 per unit. Normally, outside sales amount to 30% of a total sales volume of 1 million strut assemblies per year. Typical combined annual data for the division follow:

<table>
<thead>
<tr>
<th></th>
<th>$51,900,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$51,900,000</td>
</tr>
<tr>
<td>Variable costs, at $38.50 per strut assembly</td>
<td>$38,500,000</td>
</tr>
<tr>
<td>Fixed costs</td>
<td>4,200,000</td>
</tr>
<tr>
<td>Total costs</td>
<td>$42,700,000</td>
</tr>
<tr>
<td>Gross margin</td>
<td>$ 9,200,000</td>
</tr>
</tbody>
</table>

Flint Auto Parts Company, an entirely separate entity, has offered the automotive division comparable strut assemblies at a firm price of $42.70 per unit. The shocks and struts division of Transnational Motors claims that it cannot possibly match this price because it could not earn any margin at the price Flint is offering.

1. Assume that you are the manager of the automotive division of Transnational Motors. Comment on the shocks and struts division’s claim. Assume that normal outside volume cannot be increased.
2. Now assume the shocks and struts division believes that it can increase outside sales by 700,000 strut assemblies per year by increasing fixed costs by $2.5 million and variable costs by $4.50 per unit while reducing the selling price to $58. Assume that maximum capacity is 1 million strut assemblies per year. Should the division reject intracompany business and concentrate solely on outside sales?

10-48 Transfer-Pricing Concession

You are the divisional controller of the U.S. division of Samtech Electronics. Your division is operating at capacity. The Australian division has asked the U.S. division to supply a sound system (chip and speaker), which it will use in a new model Game Box that it is introducing. The U.S. division currently sells identical sound systems to outside customers at $11.00 each.

The Australian division has offered to pay $7.00 for each sound system. The total cost of the Game Box is as follows:

<table>
<thead>
<tr>
<th></th>
<th>$62.60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchased parts from outside vendors</td>
<td>$28.10</td>
</tr>
<tr>
<td>Sound system from U.S. division</td>
<td>7.00</td>
</tr>
<tr>
<td>Other variable costs</td>
<td>17.50</td>
</tr>
<tr>
<td>Fixed overhead</td>
<td>10.00</td>
</tr>
<tr>
<td>Total</td>
<td>$62.60</td>
</tr>
</tbody>
</table>
The Australian division is operating at 50% of capacity, and this Game Box is an important new product introduction to increase its use of capacity. Based on a target-costing approach, the Australian division management has decided that paying more than $7.00 for the sound system would make production of the Game Box infeasible because the predicted selling price for the Game Box is only $62.00.

Samtech Electronics evaluates divisional managers on the basis of pretax ROI and dollar profits compared to the budget. Ignore taxes and tariffs.

1. As divisional controller of the U.S. division, would you recommend supplying the sound system to the Australian division for $7.00 each? Why or why not?
2. Would it be to the short-run economic advantage of Samtech Electronics for the U.S. division to supply the sound system to the Australian division? Explain your answer.
3. Discuss the organizational and behavioral difficulties, if any, inherent in this situation. As the U.S. division controller, what would you advise the Samtech Electronics president to do in this situation?

10-49 Transfer Prices and Idle Capacity

The Eugene division of Union Furniture purchases lumber, which it uses to fabricate tables, chairs, and other wood furniture. It purchases most of the lumber from Shasta Mill, also a division of Union Furniture. Both the Eugene division and Shasta Mill are profit centers.

The Eugene division proposes to produce a new Shaker-style chair that will sell for $95. The manager is exploring the possibility of purchasing the required lumber from Shasta Mill. Production of 800 chairs is planned, using capacity in the Eugene division that is currently idle.

The Eugene division can purchase the lumber needed for one chair from an outside supplier for $72. Union Furniture has a policy that internal transfers are priced at fully allocated cost.

Assume the following costs for the production of one chair and the lumber required for the chair:

<table>
<thead>
<tr>
<th>Shasta Mill—Lumber Cost</th>
<th>Eugene Division—Chair Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable cost</td>
<td>$48</td>
</tr>
<tr>
<td>Allocated fixed cost</td>
<td>$22</td>
</tr>
<tr>
<td>Fully allocated cost</td>
<td>$70</td>
</tr>
<tr>
<td>Lumber from Shasta Mill</td>
<td>$70</td>
</tr>
<tr>
<td>Manufacturing cost</td>
<td>$23</td>
</tr>
<tr>
<td>Selling cost</td>
<td>$6</td>
</tr>
<tr>
<td>Total variable cost</td>
<td>$99</td>
</tr>
</tbody>
</table>

1. Assume that the Shasta Mill has idle capacity and, therefore, would incur no additional fixed costs to produce the required lumber. Would the Eugene division manager buy the lumber for the chair from the Shasta Mill given the existing transfer-pricing policy? Why or why not? Would the company as a whole benefit if the manager decides to buy from the Shasta Mill? Explain.
2. Assume that there is no idle capacity at the Shasta Mill and the lumber required for one chair can be sold to outside customers for $72. Would the company as a whole benefit if the Eugene manager buys from Shasta? Explain.

10-50 Transfer-Pricing Principles

A law firm, Arno Legal Services, is decentralized with 25 offices around the state of California. The headquarters is bused in San Francisco. Another operating division is located in San Jose, 50 miles away. A subsidiary printing operation, ArnoPrint, is located in the headquarters building. Top management has indicated the desirability of the San Jose office using ArnoPrint for printing reports. All charges are eventually billed to the client, but Arno Legal Services was concerned about keeping such charges competitive.

ArnoPrint charges San Jose the following:

<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photographing page for offset</td>
<td>$.200</td>
</tr>
<tr>
<td>printing (a setup cost)</td>
<td></td>
</tr>
<tr>
<td>Printing cost per page</td>
<td>.02</td>
</tr>
</tbody>
</table>

At this rate, ArnoPrint sales have a 50% contribution margin to fixed overhead.
Outside bids for 250 copies of a 180-page report needed immediately have been as follows:

<table>
<thead>
<tr>
<th>Print Shop</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print 4U</td>
<td>$942.00</td>
</tr>
<tr>
<td>Jiffy Press</td>
<td>918.25</td>
</tr>
<tr>
<td>Kustom Print</td>
<td>923.50</td>
</tr>
</tbody>
</table>

These three printers are located within a 5-mile radius of Arno Legal Services' San Jose office and can have the reports ready in 2 days. A messenger would have to be sent to drop off the original and pick up the copies. The messenger usually goes to headquarters, but in the past, special trips have been required to deliver the original or pick up the copies. It takes 3–4 days to get the copies from ArnoPrint (because of the extra scheduling difficulties in delivery and pickup).

Quality control at ArnoPrint is poor. Reports received in the past have contained wrinkled pages, have occasionally been mis-collated, or have had pages deleted altogether. (In one instance, an in-house memorandum including the San Jose Office's financial performance statistics was inserted in a report prepared for an outside client. Fortunately, the San Jose office detected the error before the report was distributed to the client.) The degree of quality control in the three outside print shops is unknown.

(Although the differences in costs may seem immaterial in this case, regard the numbers as significant for purposes of focusing on the key issues.)

1. If you were the decision maker at the San Jose office of Arno Legal Services, to which print shop would you give the business? Is this an optimal economic decision from the entire organization's viewpoint?
2. What would be the ideal transfer price in this case, if based only on economic considerations?
3. Time is an important factor in maintaining client goodwill. There is potential return business from this client. Given this perspective, what might be the optimal decision for the company?
4. Comment on the wisdom of top management in indicating that ArnoPrint should be used.

10-51 Negotiated Transfer Prices
The Lighting division of Ibex Office Furniture needs 1,200 units of a leaded-glass lamp shade from the fabricating division. The company has a policy of negotiated transfer prices. The fabricating division has enough excess capacity to produce 2,000 units of the lamp shade. Its variable cost of production is $23. The market price of the lamp shade to external customers is $39.

What is the natural bargaining range for a transfer price between the two divisions? Explain why no price below your range would be acceptable. Also explain why no price above your range would be acceptable.

10-52 Transfer Prices and Minority Shareholders
This chapter discussed transferring profits between divisions of a multinational company. Another situation where transfer prices have a similar effect is when a parent company transfers items to or from a subsidiary when there are minority shareholders in the subsidiary. Consider the Michelin Group and its Polish subsidiary, Stomil Olsztyn, of which Michelin owns 70%. Michelin buys tires from Stomil Olsztyn at a transfer price. Since Michelin owns a majority of Stomil Olsztyn, it controls the transfer-pricing policy. The holders of the other 30% of Stomil Olsztyn claim that Michelin sets the transfer prices too low, thereby reducing the profits of Stomil Olsztyn. They maintain that Stomil Olsztyn would be more profitable if it were allowed to sell its tires on the market rather than transfer them to Michelin. In reply, Michelin managers maintain that Stomil Olsztyn is more profitable than other members of the Michelin Group, and, therefore, the transfer prices must be fair.

Discuss the incentives for Michelin to transfer tires at a low price from Stomil Olsztyn to its Michelin parent. What transfer price do the minority shareholders in Stomil Olsztyn favor? Use an example of a tire that Stomil Olsztyn produces at a variable cost of €20 that is transferred to Michelin for €25. How should Michelin and Stomil Olsztyn establish a fair transfer price?

10-53 Multinational Transfer Prices
Minnesota Medical Instruments produces a variety of medical products at its plant in Minneapolis. The company has sales divisions worldwide. One of these sales divisions is located in Stockholm, Sweden. Assume that the U.S. income tax rate is 30%, the Swedish rate is 65%, and a 5% import duty is imposed on medical supplies brought into Sweden.
One product produced in Minneapolis and shipped to Sweden is a heart defibrillator. The variable cost of production is $200 per unit, and the fully allocated cost is $350 per unit.

1. Suppose the Swedish and U.S. governments allow either the variable or fully allocated cost to be used as a transfer price. Which price should Minnesota Medical Instruments choose to minimize the total of income taxes and import duties? Compute the amount the company saves if it uses your suggested transfer price instead of the alternative. Assume import duties are not deductible for tax purposes.

2. Suppose the Swedish parliament passed a law decreasing the income tax rate to 40% and increasing the duty on heart monitors to 15%. Repeat number 1, using these new facts.

10-54 Review of Major Points in This Chapter
The Canadian Instruments Company uses the decentralized form of organizational structure and considers each of its divisions as an investment center. The Toronto division is currently selling 15,000 air filters annually, although it has sufficient productive capacity to produce 21,000 units per year. Variable manufacturing costs amount to $21 per unit, while the total fixed costs amount to $90,000. These 15,000 air filters are sold to outside customers at $40 per unit.

The Montreal division, also a part of Canadian Instruments, has indicated that it would like to buy 1,500 air filters from the Toronto division, but at a price of $37 per unit. This is the price the Montreal division is currently paying an outside supplier.

1. Compute the effect on the operating income of the company as a whole if the Montreal division purchases the 1,500 air filters from the Toronto division.
2. What is the minimum price that the Toronto division should be willing to accept for these 1,500 air filters?
3. What is the maximum price that the Montreal division should be willing to pay for these 1,500 air filters?
4. Suppose instead that the Toronto division is currently producing and selling 21,000 air filters annually to outside customers. What is the effect on the overall Canadian Instruments Company operating income if the Toronto division is required by top management to sell 1,500 air filters to the Montreal division at (a) $21 per unit and (b) $37 per unit?
5. For this question only, assume that the Toronto division is currently earning an annual operating income of $36,000, and the division's average invested capital is $300,000. The division manager has an opportunity to invest in a proposal that will require an additional investment of $20,000 and will increase annual operating income by $2,000. (a) Should the division manager accept this proposal if the Canadian Instruments Company uses ROI in evaluating the performance of its divisional managers? (b) If the company uses economic profit? (Assume a cost of capital of 7%.)

CASES

10-55 Profit Centers and Central Services
Star Manufacturing, manufacturer of Starlite brand small appliances, has a process engineering department (PED). The department's major task has been to help the production departments improve their operating methods and processes.

For several years, Star Manufacturing has charged the cost of consulting services to the production departments based on a signed agreement between the managers involved. The agreement specifies the scope of the project, the predicted savings, and the number of consulting hours required. The charge to the production departments is based on the costs to the engineering department of the services rendered. For example, senior engineer hours cost more per hour than junior engineer hours. An overhead cost is included. The agreement is really a "fixed-price" contract. That is, the production manager knows the total cost of the project in advance. A recent survey revealed that production managers have a high level of confidence in the engineers.

The PED department manager oversees the work of about 40 engineers and 10 technicians. She reports to the engineering manager, who reports to the vice president of manufacturing. The PED manager has the freedom to increase or decrease the number of engineers under her supervision. The PED manager's performance evaluation is based on many factors including the annual incremental savings to the company in excess of the costs of operating the PED department.

The production departments are profit centers. Their goods are transferred to subsequent departments, such as a sales department or sales division, at prices that approximate market prices for similar products.
Top management is seriously considering a “no-charge” plan. That is, production departments would receive engineering services at absolutely no cost. Proponents of the new plan maintain that it would motivate the production managers to take better advantage of engineering talent. In all other respects, the new system would be unchanged from the present system.

1. Compare the present and proposed plans. What are their strong and weak points? In particular, will the PED manager tend to hire the “optimal” amount of engineering talent?
2. Which plan do you favor? Why?

**10-56 Management by Objectives**

Roger Ravenhill is the CEO of Haida Company. Ravenhill has a financial management background and is known throughout the organization as a “no-nonsense” executive. When Ravenhill became CEO, he emphasized cost reduction and savings and introduced a comprehensive cost control and budget system. The company goals and budget plans were established by Ravenhill and given to his subordinates for implementation. Some of the company's key executives were dismissed or demoted for failing to meet projected budget plans. Under the leadership of Roger Ravenhill, Haida has once again become financially stable and profitable after several years of poor performance.

Recently, Ravenhill has become concerned with the human side of the organization and has become interested in the management technique referred to as “management by objectives” (MBO). If there are enough positive benefits of MBO, he plans to implement the system throughout the company. However, he realizes that he does not fully understand MBO because he does not understand how it differs from the current system of establishing firm objectives and budget plans.

1. Briefly explain what MBO entails and identify its advantages and disadvantages.
2. Does Roger Ravenhill’s management style incorporate the human-value premises and goals of MBO? Explain your answer.

**NIKE 10-K PROBLEM**

**10-57 ROI and Economic Profit**

Examine Nike’s segments as defined in Note 18 to its financial statements in the 10-K report in Appendix C. We will use the segment information from the first six segments listed to calculate approximations to ROI and economic profit. For purposes of this problem, define segment income as segment EBIT and define segment assets as the sum of the assets shown in note 18, namely receivables, inventory, and property plant and equipment. Therefore, pretax and pre-interest ROA is EBIT divided by segment assets and an approximation to economic profit is EBIT minus a charge for the cost of capital to finance segment assets.

Using these definitions, determine ROA and economic profit for each segment in 2010 and 2011 using EBIT from Note 18 in the 10-K and the information on segment assets in the following table. Assume that Nike’s cost of capital is 10%. Use your results to evaluate the performance of each segment. Which segment management seems to be doing the best job? What subjective factors would you consider, in addition to ROA and economic profit, in assessing segment performance?

<table>
<thead>
<tr>
<th>Segment</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>$2,433</td>
<td>$1,941</td>
</tr>
<tr>
<td>Western Europe</td>
<td>1,272</td>
<td>1,031</td>
</tr>
<tr>
<td>Central and Eastern Europe</td>
<td>448</td>
<td>384</td>
</tr>
<tr>
<td>Greater China</td>
<td>471</td>
<td>379</td>
</tr>
<tr>
<td>Japan</td>
<td>595</td>
<td>568</td>
</tr>
<tr>
<td>Emerging Markets</td>
<td>953</td>
<td>683</td>
</tr>
<tr>
<td>Nike Total (includes corporate assets not in segments)</td>
<td>$7,968</td>
<td>$6,623</td>
</tr>
</tbody>
</table>
EXCEL APPLICATION EXERCISE

10-58 Return on Investment and Economic Profit

Goal: Create an Excel spreadsheet to calculate performance of divisional segments using the ROI and economic profit methods. Use the results to answer questions about your findings.

Scenario: The company has asked you to calculate ROI and economic profit for three divisions. The background data for your analysis appears in Fundamental Assignment Material 10-A1. Use an interest rate of 10% when calculating the capital charge.

When you have completed your spreadsheet, answer the following questions:

1. Which division has the best performance using the ROI method? Using the economic profit method?
2. Which division has the worst performance under both methods?
3. Which method would you suggest for evaluating the manager of each division?

Step-by-Step:

1. Open a new Excel spreadsheet.
2. In column A, create a bold-faced heading that contains the following:
   Row 1: Chapter 10 Decision Guideline
   Row 2: Divisions Hubert, Duane, and Louis
   Row 3: Measures of Profitability
   Row 4: Today’s Date
3. Merge and center the four heading rows across columns A–I.
4. In row 7, create the following center-justified column headings:
   Column A: Division
   Column B: Invested Capital
   Column C: Revenue
   Column D: Income
   Column E: Capital Charge
   Column F: Economic Profit
   Column G: Return on Investment
   Column H: Return on Sales
   Column I: Capital Turnover
5. Change the format of Economic Profit and Return on Investment to bold-faced headings.
6. Change the format of the column headings in row 7 to permit the titles to be displayed on multiple lines within a single cell.

Alignment tab: Wrap Text: Checked

Note: Adjust column widths so the headings only use two lines.

Adjust row height to insure that row is the same height as adjusted headings.

7. In column A, create the following center-justified row headings:
   Row 8: Hubert
   Skip a row.
   Row 10: Duane
   Skip a row.
   Row 12: Louis
8. Use the scenario data to fill in invested capital, revenue, and income amounts for each division.
9. Use the scenario data and appropriate formulas to calculate capital charge amounts for each division.
10. Use the appropriate formulas from this chapter to calculate economic profit, ROI, return on sales, and capital turnover amounts for each division.
11. Format amounts in columns B, C, D, E, and F for division A as follows:

Number tab: Category: Currency
Decimal places: 0
Symbol: $
Negative numbers: Black with parentheses
12. Format amounts in columns B, C, D, E, and F for divisions B and C as follows:

<table>
<thead>
<tr>
<th>Number tab:</th>
<th>Category:</th>
<th>Currency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Decimal places:</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Symbol:</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Negative numbers:</td>
<td>Black with parentheses</td>
</tr>
</tbody>
</table>

13. Format amounts in columns G and H to display as percentages without decimal places.

<table>
<thead>
<tr>
<th>Number tab:</th>
<th>Category:</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Decimal places:</td>
<td>0</td>
</tr>
</tbody>
</table>

14. Format the capital turnover amounts to display two decimal places, followed by the word *times*.

<table>
<thead>
<tr>
<th>Number tab:</th>
<th>Category:</th>
<th>Custom</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From the Type list, highlight the type shown next:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Type:</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Change the data in the Type field from 0.00 to the following:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Type:</td>
<td>0.00 “times”</td>
</tr>
</tbody>
</table>

Click the OK button.

15. Save your work, and print a copy for your files.

Note: Print your spreadsheet using landscape in order to ensure that all columns appear on one page.

**COLLABORATIVE LEARNING EXERCISE**

**10-59 ROI**

Form groups of three to six students. Each student should select a company. Coordinate the selection of companies so that each group has companies from a wide variety of industries. For example, a good mix of industries for a group of five students would be a retail company, a basic manufacturing company, a computer software company, a bank, and an electric utility company.

1. Each student should find the latest annual report for his or her company. (If you cannot find the company’s home page, try www.sec.gov, and search the Security and Exchange Commission’s Edgar files for the company’s 10-K report, which will contain its financial statements.) Compute the following:
   a. Return on sales
   b. Capital turnover
   c. ROI

2. As a group, compare these performance metrics for the chosen companies. Why do they differ across companies? What characteristic of the company and its industry might explain the differences in the measures?

**INTERNET EXERCISE**

**10-60 Decentralization at Marriott International**

Decentralization of an organization can occur for many reasons. It may be that the organization is involved in multiple activities that are not closely related to each other, such as construction and auto sales. In other cases, the decision may be due to the structure of the firm’s ownership and how it chooses to manage its image. Let’s look at a firm that falls under this category—**Marriott International**.

1. Go to Marriott International’s Web site at www.marriott.com. Does the home page emphasize corporate information or promotional information?
2. How has Marriott decentralized its businesses? Click on “Explore Our Brands” near the bottom of the page to find a list of Marriott’s divisions. Do you suppose the divisions are cost centers, profit centers, or investment centers?
3. Go to the most recent annual report by clicking on “About Marriott,” “Investors,” “Financial Information,” and finally click on “Financial Reports & Proxy” to find the most recent annual report. Locate the information on business segments in the Notes to Financial Statements. How many segments does Marriott identify? What are these segments? What information does the firm report with respect to each of the different segments?

4. Marriott provides both income and assets for each of the segments. Calculate the return on average total assets for the past year for each of the segments.

5. What was the return on average total assets for the corporation as a whole for the past year? Given the different kinds of business segments the company has, do you think that operating return on average total assets would be a good measure for evaluating the individual segments? What factors might influence your answer?

6. Is Marriott likely to have any transfer prices? If Marriott has transfers, how do you suppose the company determines its transfer prices?