

10 CHAPTER

Decentralization: Responsibility Accounting, Performance Evaluation, and Transfer Pricing

AFTER STUDYING THIS CHAPTER, YOU SHOULD BE ABLE TO:

1. Define responsibility accounting, and describe the four types of responsibility centers.
2. Explain why firms choose to decentralize.
3. Compute and explain return on investment (ROI), residual income (RI), and economic value added (EVA).
4. Discuss methods of evaluating and rewarding managerial performance.
5. Explain the role of transfer pricing in a decentralized firm.
6. Discuss the methods of setting transfer prices.

As a firm grows, duties are divided, and spheres of responsibility are created that eventually become centers of responsibility. Closely allied to the subject of responsibility is decision-making authority. Most companies tend to be decentralized in decision-making authority. Issues related to decentralization include performance evaluation, management compensation, and transfer pricing.

OBJECTIVE 1

Define responsibility accounting, and describe the four types of responsibility centers.

Responsibility Accounting

In general, a company is organized along the lines of responsibility. The traditional organizational chart, with its pyramid shape, illustrates the lines of responsibility flowing from the CEO through the vice presidents to middle- and lower-level managers. As organizations increase in size, these lines of responsibility become longer and more numerous. A strong link exists between the structure of an organization and its responsibility accounting system. Ideally, the responsibility accounting system mirrors and supports the structure of an organization.

Types of Responsibility Centers

As the firm grows, top management typically creates areas of responsibility, which are known as responsibility centers, and assigns subordinate managers to those areas. A **responsibility center** is a segment of the business whose manager is accountable for specified sets of activities. **Responsibility accounting** is a system that measures the results of each responsibility center and compares those results with some measure of expected or budgeted outcome. The four major types of responsibility centers are as follows:

1. **Cost center:** A responsibility center in which a manager is responsible only for costs.
2. **Revenue center:** A responsibility center in which a manager is responsible only for revenues.
3. **Profit center:** A responsibility center in which a manager is responsible for both revenues and costs.
4. **Investment center:** A responsibility center in which a manager is responsible for revenues, costs, and investments.

A production department within the factory, such as assembly or finishing, is an example of a cost center. The supervisor of a production department does not set price or make marketing decisions, but he or she can control manufacturing costs. Therefore, the production department supervisor is evaluated on the basis of how well costs are controlled.

The marketing department manager sets price and projected sales. Therefore, the marketing department may be evaluated as a revenue center. Direct costs of the marketing department and overall sales are the responsibility of the sales manager.

In some companies, plant managers are given the responsibility to price and market products they manufacture. These plant managers control both costs and revenues, putting them in control of a profit center. Operating income would be an important performance measure for profit center managers.

Finally, divisions are often cited as examples of investment centers. In addition to having control over cost and pricing decisions, divisional managers have the power to make investment decisions, such as plant closings and openings, and decisions to keep or drop a product line. As a result, both operating income and some type of return on investment are important performance measures for investment center managers.

It is important to realize that while the responsibility center manager has responsibility for only the activities of that center, decisions made by that manager can affect other responsibility centers. For example, the sales force at a floor care products firm routinely offers customers price discounts at the end of the month. Sales increase dramatically, and the factory is forced to institute overtime shifts to keep up with demand.

The Role of Information and Accountability

Information is the key to appropriately holding managers responsible for outcomes. For example, a production department manager is held responsible for departmental costs but not for sales. This is because the production department manager not only controls some of these costs but also is best informed regarding them. Any deviation between actual and expected costs can best be explained at this level. Sales are the

responsibility of the sales manager, again because this manager can best explain what is happening regarding price and quantity sold.

The management accountant has an expanded role in the development of a responsibility accounting system in the global business environment. Business looks to the accountant for financial and business expertise. The accountant's job is not cut and dried. Knowledge, creativity, and flexibility are needed to help managers make decisions. Good training, education, and staying up to date with one's field are important to any accountant. However, the job of the accountant in the international firm is made more challenging by the ambiguous and ever-changing nature of global business. Since much of the accountant's job is to provide relevant information to management, staying up to date requires reading books and articles in a variety of business areas, including information systems, marketing, management, politics, and economics. In addition, the accountant must be familiar with the financial accounting rules of the countries in which the firm operates.

An example of the modern accountant is Nick, one of the authors' students who graduated from Oklahoma State University in the 1990s. Nick spent three years with a Big-6 (at the time) firm in Tulsa. He was drawn by opportunities in the international arena and joined *PricewaterhouseCoopers'* office in Vladivostok. Nick's focus in Russia was on business development and consulting. In essence, he was a management accountant working for a public accounting firm. Major hurdles Nick faced include language (he had to get up to speed on Russian quickly), legal differences (often, bodyguards armed with uzis accompanied him on trips to client firms), tax differences (Russia's ever-changing, and frequently retroactive, tax laws drove a number of foreign firms out of the country), and cultural differences.

Responsibility also entails accountability. Accountability implies performance measurement, which means that actual outcomes are compared with expected or budgeted outcomes. This system of responsibility, accountability, and performance evaluation is often referred to as *responsibility accounting* because of the key role that accounting measures and reports play in the process.

Decentralization

Firms with multiple responsibility centers usually choose one of two approaches to manage their diverse and complex activities: centralized decision making or decentralized decision making. In **centralized decision making**, decisions are made at the very top level, and lower-level managers are charged with implementing these decisions. On the other hand, **decentralized decision making** allows managers at lower levels to make and implement key decisions pertaining to their areas of responsibility. **Decentralization** is the practice of delegating or decentralizing decision-making authority to the lower levels.

Organizations range from highly centralized to strongly decentralized. Although some firms lie at either end of the continuum, most fall somewhere between the two extremes, with the majority of these tending toward a decentralized approach. A special case of the decentralized firm is the **multinational corporation (MNC)**. The MNC is a corporation that “does business in more than one country in such a volume that its well-being and growth rest in more than one country.”¹

Reasons for Decentralization

Seven reasons why firms may prefer the decentralized approach to management include better access to local information, cognitive limitations, more timely response, focusing

OBJECTIVE 2
Explain why firms choose to decentralize.

1. Yair Aharoni, “On the Definition of a Multinational Corporation,” in A. Kapoor and Phillip D. Grub, eds., *The Multinational Enterprise in Transition* (Princeton, NJ: Darwin Press, 1972), 4.

of central management, training and evaluation of segment managers, motivation of segment managers, and enhanced competition. These reasons for delegating decision-making authority to lower levels of management are discussed in more detail in the following sections.

Better Access to Local Information

The quality of decisions is affected by the quality of information available. Lower-level managers who are in contact with immediate operating conditions (e.g., the strength and nature of local competition, the nature of the local labor force, and so on) have better access to local information. As a result, local managers are often in a position to make better decisions. This advantage of decentralization is particularly applicable to multinational corporations, where far-flung divisions may be operating in a number of different countries, subject to various legal systems and customs. This is particularly true in MNCs, where far-flung divisions may be operating in a number of different countries, subject to various legal systems and customs. As a result, local managers are often in a position to make better decisions. Decentralization allows an organization to take advantage of this specialized knowledge. For example, **Loctite Corporation** has local managers run their own divisions. In particular, marketing and pricing are under local administration. Language is not a problem as local managers are in control. Similarly, local managers are conversant with their own laws and customs.

Cognitive Limitations

Even if local information somehow were made available to central management, those managers would face another problem. In a large, complex organization that operates in diverse markets with hundreds or thousands of different products, no one person has all of the expertise and training needed to process and use the information. Cognitive limitations means that individuals with specialized skills would still be needed. Rather than having different individuals at headquarters for every specialized area, why not let these individuals have direct responsibility in the field? In this way, the firm can avoid the cost and bother of collecting and transmitting local information to headquarters. The structure of American business is changing. No longer are middle managers individuals with “people skills” and organization skills only. They must have specific fields of expertise in addition to managerial talent. For example, a middle manager in a bank may refer to herself as a financial specialist even though she manages 20 people. The capability to add skilled expertise is seen as crucial in today’s downsized environment.

More Timely Response

In a centralized setting, time is needed to transmit the local information to headquarters and to transmit the decision back to the local unit. These two transmissions cause delay and increase the potential for miscommunication, decreasing the effectiveness of the response. In a decentralized organization, where the local manager both makes and implements the decision, this problem does not arise.

Local managers in the MNC are capable of a more timely response in decision making. They are able to respond quickly to customer discount demands, local government demands, and changes in the political climate. The different languages native to managers of divisions in the MNC make miscommunication an even greater problem. MNCs address this problem in two ways. First, a decentralized structure pushes decision making down to the local manager level, eliminating the need to interpret instructions from above. Second, MNCs are learning to incorporate technology that overrides the language barrier and eases cross-border data transfer. Technology is of great help in smoothing communication difficulties between parent and subsidiary and between one subsidiary and another. Loctite’s plant in Ireland uses computerized labeling on adhesives bound for Britain or Israel. Bar code technology “reads” the labels, eliminating the need for foreign language translation.

Focusing of Central Management

The nature of the hierarchical pyramid is that higher-level managers have broader responsibilities and powers. By decentralizing the operating decisions, central management is free to focus on strategic planning and decision making. The long-run survival of the organization should be of more importance to central management than day-to-day operations.

Training and Evaluation of Segment Managers

An organization always has a need for well-trained managers to replace higher-level managers who retire or move to take advantage of other opportunities. By decentralizing, lower-level managers are given the opportunity to make decisions as well as to implement them. What better way to prepare a future generation of higher-level managers than by providing them the opportunity to make significant decisions? These opportunities also enable top managers to evaluate the local manager's capabilities. Those who make the best decisions are the ones who can be selected for promotion to central management.

Just as decentralization gives the lower-level managers in the home country a chance to develop managerial skills, foreign subsidiary managers also gain valuable experience. Just as important, home country managers gain broader experience by interacting with managers of foreign divisions. The chance for learning from each other is much greater in a decentralized MNC. Off and on throughout the latter half of the twentieth century, a tour of duty at a foreign subsidiary has been a part of the manager's climb to the top. Now, foreign subsidiary managers may expect to spend some time at headquarters in the home office, as well. At **GE**, for example, senior executives are sent on 4-week tours of foreign markets and return to brief top management. Other senior executives are posted to Asian and Indian divisions. Similarly, foreign executives receive GE management training.

Motivation of Segment Managers

By giving local managers freedom to make decisions, some of their higher-level needs (self-esteem and self-actualization) are being met. Greater responsibility can produce more job satisfaction and motivate the local manager to exert greater effort. More initiative and more creativity can be expected. Of course, the extent to which the motivational benefits can be realized depends to a large degree on how managers are evaluated and rewarded for their performance.

Enhanced Competition

In a highly centralized company, large overall profit margins can mask inefficiencies within the various subdivisions. A decentralized approach allows the company to determine each division's contribution to profit and to expose each division to market forces.

The Units of Decentralization

Decentralization is usually achieved by segmenting the company into *divisions*. One way in which divisions are differentiated is by the types of goods or services produced. For example, **Armstrong World Industries, Inc.**, has four product divisions: floor coverings (resilient sheet and tile); building products (acoustical ceilings and wall panels); industry products (insulation for heating, cooling, plumbing, and refrigeration systems); and ceramic tile. **PepsiCo** divisions include the Snack Ventures Europe division (a joint venture with **General Mills**), **Frito-Lay, Inc.**, **Tropicana**, and **Tricon Global Restaurants**, as well as its flagship soft drink division. Some divisions depend on other divisions. At Tricon's **Pizza Hut** and **KFC**, for example, the cola you purchase will be Pepsi—not Coke. In a decentralized setting, some interdependencies usually exist; otherwise, a company would merely be a collection of totally separate entities. The pres-

ence of these interdependencies creates the need for transfer pricing, which is discussed later in this chapter.

In a similar vein, companies create divisions according to the type of customer served. **Wal-Mart** has four divisions. The Wal-Mart stores division targets discount store customers. **Sam's Club** focuses on buyers for small business. **McLane Company** is a distribution and food manufacturing operation that supplies convenience stores. Finally, the international division concentrates on global opportunities.

Organizing divisions as responsibility centers not only differentiates them on the degree of decentralization but also creates the opportunity for control of the divisions through the use of responsibility accounting. Control of cost centers is achieved by evaluating the efficiency and the effectiveness of divisional managers. **Efficiency** means how well activities are performed. Efficiency might be measured by the number of units produced per hour or by the cost of those units. **Effectiveness**, in this case, can be defined as whether the manager has performed the right activities. Measures of effectiveness might focus on value-added versus non-value-added activities.

Performance reports are the typical instruments used in evaluating efficiency and effectiveness. Profit centers are evaluated by assessing the unit's profit contribution, measured on income statements. Since performance reports and contribution income statements have been discussed previously, this chapter will focus on the evaluation of managers of investment centers.

OBJECTIVE 3

Compute and explain return on investment (ROI), residual income (RI), and economic value added (EVA).

Measuring the Performance of Investment Centers

When companies decentralize decision making, they maintain control by organizing responsibility centers, developing performance measures for each, and basing rewards on an individual's performance at controlling the responsibility center.

Performance measures are developed to provide some direction for managers of decentralized units and to evaluate their performance. The development of performance measures and the specification of a reward structure are major issues for a decentralized organization. Because performance measures can affect the behavior of managers, the measures chosen should encourage a high degree of goal congruence. In other words, they should influence managers to pursue the company's objectives. Three performance evaluation measures for investment centers are return on investment, residual income, and economic value added.

Return on Investment

Because each division of a company has an income statement, couldn't we simply rank the divisions on the basis of net income? Unfortunately, the use of income statements may provide misleading information regarding segment performance. For example, suppose that two divisions report profits of \$100,000 and \$200,000, respectively. Can we say that the second division is performing better than the first? What if the first division used an investment of \$500,000 to produce the contribution of \$100,000, while the second used an investment of \$2 million to produce the \$200,000 contribution? Does your response change? Clearly, relating the reported operating profits to the assets used to produce them is a more meaningful measure of performance.

One way to relate operating profits to assets employed is to compute the profit earned per dollar of investment. For example, the first division earned \$0.20 per dollar invested ($\$100,000/\$500,000$); the second division earned only \$0.10 per dollar invested ($\$200,000/\$2,000,000$). In percentage terms, the first division is providing a 20 percent rate of return and the second division, 10 percent. This method of computing the relative profitability of investments is known as the return on investment.

Return on investment (ROI) is the most common measure of performance for an investment center. It is of value both externally and internally. Externally, ROI is used by stockholders as an indicator of the health of a company. Internally, ROI is used to measure the relative performance of divisions.

ROI can be defined in the following three ways:

$$\begin{aligned}\text{ROI} &= \text{Operating income}/\text{Average operating assets} \\ &= (\text{Operating income}/\text{Sales}) \times (\text{Sales}/\text{Average operating assets}) \\ &= \text{Operating income margin} \times \text{Operating asset turnover}\end{aligned}$$

Of course, **operating income** refers to earnings before interest and income taxes. Operating income is typically used for divisions, and net income is used in the calculation of ROI for the company as a whole. **Operating assets** are all assets acquired to generate operating income. They usually include cash, receivables, inventories, land, buildings, and equipment. The figure for average operating assets is computed as follows:

$$\text{Average operating assets} = (\text{Beginning net book value} + \text{Ending net book value})/2$$

Opinions vary regarding how long-term assets (plant and equipment) should be valued (e.g., gross book value versus net book value or historical cost versus current cost). Most firms use historical cost net book value.²

Margin and Turnover

The initial ROI formula is decomposed into two component ratios: *margin* and *turnover*. **Margin** is the ratio of operating income to sales. It expresses the portion of sales that is available for interest, income taxes, and profit. **Turnover** is a different measure; it is found by dividing sales by average operating assets. The result shows how productively assets are being used to generate sales.

Both measures can affect ROI. For example, **C&C Group** has three divisions; Alcohol, International Spirit & Liqueurs, and Soft Drinks and Snacks. C&C Group expected 2004 group turnover to have increased by approximately 4 percent in the period, while margins, on a constant currency basis, were broadly unchanged.³ As a result, ROI was expected to increase. The company further noted that this represented reasonably good performance in light of the impact of the ban on smoking in the workplace and mixed summer weather.

Let's examine the relationship of margin, turnover, and ROI more closely by considering the data presented in Exhibit 10-1. The Snack Foods Division improved its ROI from 18 percent to 20 percent from Year 1 to Year 2. The Appliance Division's ROI, however, dropped from 18 percent to 15 percent. A better picture of what caused the change in rates is revealed by computing the margin and turnover ratios for each division. These ratios are also presented in Exhibit 10-1.

Notice that the margins for both divisions dropped from Year 1 to Year 2. In fact, the divisions experienced the *same* percentage of decline (16.67 percent). A declining margin could be explained by increasing expenses, by competitive pressures (forcing a decrease in selling prices), or both.

In spite of the declining margin, the Snack Foods Division was able to increase its rate of return. This increase resulted from an increase in the turnover rate that more than compensated for the decline in margin. The increase in turnover could be explained by a deliberate policy to reduce inventories. (Notice that the average assets employed remained the same for the Snack Foods Division even though sales increased by \$10 million.)

2. For a discussion of the relative merits of gross book value, see James S. Reese and William R. Cool, "Measuring Investment Center Performance," *Harvard Business Review* (May-June 1978): 28-46, 174-176.

3. "C&C Group: 1H Grp Turnover Up 4%," *The Wall Street Journal*, http://online.wsj.com/article/0,BT_CO_20040826_000549,00.html as of August 26, 2004.

EXHIBIT 10-1**Comparison of Divisional Performance**

Comparison of ROI				
	Snack Foods Division		Appliance Division	
Year 1:				
Sales	\$30,000,000		\$117,000,000	
Operating income	1,800,000		3,510,000	
Average operating assets	10,000,000		19,500,000	
ROI ^a	18%		18%	
Year 2:				
Sales	\$40,000,000		\$117,000,000	
Operating income	2,000,000		2,925,000	
Average operating assets	10,000,000		19,500,000	
ROI ^a	20%		15%	

Margin and Turnover Comparisons				
	Snack Foods Division		Appliance Division	
	Year 1	Year 2	Year 1	Year 2
Margin ^b	6.0%	5.0%	3.0%	2.5%
Turnover ^c	<u>× 3.0</u>	<u>× 4.0</u>	<u>× 6.0</u>	<u>× 6.0</u>
ROI	<u><u>18.0%</u></u>	<u><u>20.0%</u></u>	<u><u>18.0%</u></u>	<u><u>15.0%</u></u>

^aOperating income divided by average operating assets.

^bOperating income divided by sales.

^cSales divided by average operating assets.

The Appliance Division, on the other hand, faced decreasing ROI because margin declined and the turnover rate remained unchanged. Although more information is needed before any definitive conclusion is reached, the different responses to similar difficulties may say something about the relative skills of the two managers.

Advantages of the ROI Measure

When ROI is used to evaluate division performance, division managers naturally try to increase it. This can be accomplished by increasing sales, decreasing costs, and decreasing investment. Three advantages of the use of ROI are as follows:

1. It encourages managers to pay careful attention to the relationships among sales, expenses, and investment, as should be the case for a manager of an investment center.
2. It encourages cost efficiency.
3. It discourages excessive investment in operating assets.

Each of these three advantages is discussed in turn.

The first advantage is that ROI encourages managers to consider the interrelationship of income and investment. Suppose that a division manager is faced with the suggestion from her marketing vice president that the advertising budget be increased by \$100,000. The marketing vice president is confident that this increase will boost sales by \$200,000 and raise the contribution margin by \$110,000. If the division were

evaluated on the basis of operating income, this information might be enough. However, if the division is evaluated on the basis of ROI, the manager will want to know how much additional investment, if any, is required to support the anticipated increase in production and sales. Suppose that an additional \$50,000 of operating assets will be needed. Currently, the division has sales of \$2 million, operating income of \$150,000, and operating assets of \$1 million.

If advertising increased by \$100,000 and the contribution margin by \$110,000, operating income would increase by \$10,000 (\$110,000 – \$100,000). Investment in operating assets must also increase by \$50,000. The ROI without the additional advertising is 15 percent (\$150,000/\$1,000,000). With the additional advertising, the ROI is 15.24 percent (\$160,000/\$1,050,000). Since the ROI is increased by the proposal, the divisional manager should increase advertising.

The second advantage is that ROI encourages cost efficiency. The manager of an investment center always has control over costs. Therefore, increasing efficiency through judicious cost reduction is a common method of increasing ROI. For example, **Tenneco, Inc.**, is focusing on cost reduction in its plants by reducing non-value-added activities. Materials handling costs are very high at some plants. Improving the layout of the plants to reduce the time and distance materials must travel is a way of reducing handling costs. Notice that encouraging cost efficiency means that non-value-added costs must be reduced or productivity must be improved. There are ways to decrease costs in the short run that have a harmful effect on the business. This possibility is discussed in the section on disadvantages of ROI.

The third advantage is that ROI encourages efficient investment. Divisions that have cut costs to the extent possible must focus on investment reduction. For example, operating assets can be trimmed through the reduction of materials inventory and work-in-process inventory, perhaps by installing just-in-time purchasing and manufacturing systems. New, more productive machinery can be installed, inefficient plants can be closed, and so on. Companies are taking a hard look at their level of investment and acting to reduce it. This is a positive result of ROI-based evaluation.

Disadvantages of the ROI Measure

The use of ROI to evaluate performance also has disadvantages. Two negative aspects associated with ROI are frequently mentioned.

1. It discourages managers from investing in projects that would decrease the divisional ROI but would increase the profitability of the company as a whole. (Generally, projects with an ROI less than a division's current ROI would be rejected.)
2. It can encourage myopic behavior, in that managers may focus on the short run at the expense of the long run.

The first disadvantage can be illustrated by an example. Consider a Cleaning Products Division that has the opportunity to invest in two projects for the coming year. The outlay required for each investment, the dollar returns, and the ROI are as follows:

	<i>Project I</i>	<i>Project II</i>
Investment	\$10,000,000	\$4,000,000
Operating income	1,300,000	640,000
ROI	13%	16%

The division is currently earning an ROI of 15 percent, using operating assets of \$50 million to generate operating income of \$7.5 million. The division has approval to request up to \$15 million in new investment capital. Corporate headquarters requires that all investments earn at least 10 percent (this rate represents how much the corporation must earn to cover the cost of acquiring the capital). Any capital not used by a division is invested by headquarters so that it earns exactly 10 percent.

The divisional manager has four alternatives: (a) add Project I, (b) add Project II, (c) add both Projects I and II, and (d) maintain the status quo (invest in neither project). The divisional ROI was computed for each alternative.

	<i>Add Project I</i>	<i>Add Project II</i>	<i>Add Both Projects</i>	<i>Maintain Status Quo</i>
Operating income	\$ 8,800,000	\$ 8,140,000	\$ 9,440,000	\$ 7,500,000
Operating assets	60,000,000	54,000,000	64,000,000	50,000,000
ROI	14.67%	15.07%	14.75%	15.00%

The divisional manager chose to invest only in Project II, since it would have a favorable effect on the division's ROI (15.07 percent is greater than 15.00 percent).

Assuming that any capital not used by the division is invested at 10 percent, the manager's choice produced a lower profit for the company than could have been realized. If Project I had been selected, the company would have earned \$1.3 million. By not selecting Project I, the \$10 million in capital is invested at 10 percent, earning only \$1 million ($0.10 \times \$10,000,000$). By maximizing the division's ROI, then, the divisional manager cost the company \$300,000 in profits ($\$1,300,000 - \$1,000,000$).

The second disadvantage of evaluating performance using ROI is that it can encourage myopic behavior. We saw earlier that one of the advantages of ROI is that it encourages cost reduction. However, while cost reduction can result in more efficiency, it can also result in lower efficiency in the long run. The emphasis on short-run results at the expense of the long run is **myopic behavior**. Managers engaging in myopic behavior usually try to cut operating expenses by attacking discretionary costs. Examples are laying off more highly paid employees, cutting the advertising budget, delaying promotions and employee training, reducing preventive maintenance, and using cheaper materials.

Each of these steps reduces expenses, increases income, and raises ROI. While these actions increase the profits and ROI in the short run, they have some long-run negative consequences. Laying off more highly paid salespeople may adversely affect the division's future sales. For example, it has been estimated that the average monthly cost of replacing a sales representative with five to eight years' experience with a representative with less than one year of experience was \$36,000 of lost sales. Low employee turnover has been linked to high customer satisfaction.⁴ Future sales could also be harmed by cutting back on advertising and using cheaper materials. By delaying promotions, employee morale would be affected, which could, in turn, lower productivity and future sales. Finally, reducing preventive maintenance will likely cut into the productive capability of the division by increasing downtime and decreasing the life of the productive equipment. While these actions raise current ROI, they lead to lower future ROI.

Residual Income

In an effort to overcome the tendency to use ROI to turn down investments that are profitable for the company but that lower a division's ROI, some companies have adopted an alternative performance measure known as *residual income*. **Residual income** is the difference between operating income and the minimum dollar return required on a company's operating assets:

$$\text{Residual income} = \text{Operating income} - (\text{Minimum rate of return} \times \text{Operating assets})$$

4. James L. Heskett, Thomas O. Jones, Gary W. Loveman, W. Earl Sasser, Jr., and Leonard A. Schlesinger, "Putting the Service-Profit Chain to Work," *Harvard Business Review* 74, No. 2 (March/April 1994): 164-174.

Advantages of Residual Income

To illustrate the use of residual income, consider the Cleaning Products Division example again. Recall that the division manager rejected Project I because it would have reduced divisional ROI, which cost the company \$300,000 in profits. The use of residual income as the performance measure would have prevented this loss. The residual income for each project is computed below.

Project I

$$\begin{aligned}\text{Residual income} &= \text{Operating income} - (\text{Minimum rate of return} \times \text{Operating assets}) \\ &= \$1,300,000 - (0.10 \times \$10,000,000) \\ &= \$1,300,000 - \$1,000,000 \\ &= \$300,000\end{aligned}$$

Project II

$$\begin{aligned}\text{Residual income} &= \$640,000 - (0.10 \times \$4,000,000) \\ &= \$640,000 - \$400,000 \\ &= \$240,000\end{aligned}$$

Notice that both projects increase residual income; in fact, Project I increases divisional residual income more than Project II does. Thus, both would be selected by the divisional manager. For comparative purposes, the divisional residual income for each of the four alternatives identified earlier follows:

	<i>Add Project I</i>	<i>Add Project II</i>	<i>Add Both Projects</i>	<i>Maintain Status Quo</i>
Operating assets	<u>\$60,000,000</u>	<u>\$54,000,000</u>	<u>\$64,000,000</u>	<u>\$50,000,000</u>
Operating income	\$ 8,800,000	\$ 8,140,000	\$ 9,440,000	\$ 7,500,000
Minimum return*	<u>6,000,000</u>	<u>5,400,000</u>	<u>6,400,000</u>	<u>5,000,000</u>
Residual income	<u>\$ 2,800,000</u>	<u>\$ 2,740,000</u>	<u>\$ 3,040,000</u>	<u>\$ 2,500,000</u>

*0.10 × Operating assets.

As indicated, selecting both projects produces the greatest increase in residual income. Adding both projects is now the preferred alternative. With this new measure employed, managers are encouraged to accept any project that earns above the minimum rate.

Disadvantages of Residual Income

Two disadvantages of residual income are that it is an absolute measure of return and that it does not discourage myopic behavior. Absolute measures of return make it difficult to directly compare the performance of divisions. For example, consider the residual income computations for Division A and Division B, where the minimum required rate of return is 8 percent.

	<i>Division A</i>	<i>Division B</i>
Average operating assets	<u>\$15,000,000</u>	<u>\$2,500,000</u>
Operating income	\$ 1,500,000	\$ 300,000
Minimum return ^a	<u>1,200,000</u>	<u>200,000</u>
Residual income	<u>\$ 300,000</u>	<u>\$ 100,000</u>
Residual return ^b	2%	4%

^a0.08 × Operating assets.

^bResidual income divided by operating assets.

At first glance, it is tempting to claim that Division A is outperforming Division B, since its residual income is three times higher. Notice, however, that Division A used six times as many assets to produce this difference. If anything, Division B is more efficient.

One possible way to correct this disadvantage is to compute a residual return on investment by dividing residual income by average operating assets. This measure indicates that Division B earned 4 percent while Division A earned only 2 percent. Another possibility is to compute both return on investment and residual income and use both measures for performance evaluation. ROI could then be used for interdivisional comparisons.⁵

The second disadvantage of residual income is that it, like ROI, can encourage a short-run orientation. Just as a manager can choose to cut maintenance, training, and sales force expenses when being evaluated under ROI, the manager being evaluated on the basis of residual income can take the same actions. The problem of myopic behavior is not solved by switching to this measure. A preferable method of reducing the myopic behavior problem of residual income is the economic value added method, discussed next.

Economic Value Added

Another measure of profitability for performance evaluation of investment centers is *economic value added*.⁶ **Economic value added (EVA)** is after-tax operating income minus the total annual cost of capital. If EVA is positive, the company is creating wealth. If it is negative, then the company is destroying capital. Over the long term, only those companies creating capital, or wealth, can survive. Many companies today are passionate believers in the power of EVA. When EVA is used to adjust management compensation, it encourages managers to use existing and new capital for maximum gain. **The Coca-Cola Company, General Electric, Intel, and Merck** are a few of the companies that have seen increasing EVA during the past fifteen years.⁷

EVA is a dollar figure, not a percentage rate of return. However, it does bear a resemblance to rates of return such as ROI because it links net income (return) to capital employed. The key feature of EVA is its emphasis on *after-tax* operating income and the *actual* cost of capital. Other return measures may use accounting book value numbers which may or may not represent the true cost of capital. Residual income, for example, typically uses a minimum expected rate of return. Investors like EVA because it relates profit to the amount of resources needed to achieve it.

Calculating EVA

EVA is after-tax operating income minus the dollar cost of capital employed. The equation for EVA is expressed as follows:

$$\text{EVA} = \text{After-tax operating income} - (\text{Weighted average cost of capital} \times \text{Total capital employed})$$

The difficulty faced by most companies is computing the cost of capital employed. Two steps are involved: (1) determine the weighted average cost of capital (a percentage figure) and (2) determine the total dollar amount of capital employed.

5. In their study, Reese and Cool found that only 2 percent of the companies surveyed used residual income by itself, whereas 28 percent used both residual income and return on investment. See Reese and Cool, "Measuring Investment Center Performance."

6. EVA® is a registered trademark of Stern Stewart & Co.

7. Richard Teitelbaum, "America's Greatest Wealth Creators," *Fortune* (November 10, 1997): 265–276. and Tad Leahy, "Measures of the Future," *Business Finance*, February 1999. <http://www.businessfinancemag.com/magazine/archives/article.html?articleID=5027&pg=2>

To calculate the weighted average cost of capital, the company must identify all sources of invested funds. Typical sources are borrowing and equity (stock issued). Any borrowed money usually has an interest rate attached, and that rate can be adjusted for its tax deductibility. For example, if a company has issued 10-year bonds at an annual interest rate of 8 percent and the tax rate is 40 percent, then the after-tax cost of the bonds is 4.8 percent [$0.08 - (0.4 \times 0.08)$]. Equity is handled differently. The cost of equity financing is the opportunity cost to investors. Over time, stockholders have received an average return that is six percentage points higher than the return on long-term government bonds. If these bond rates are about 6 percent, then the average cost of equity is 12 percent. Riskier stocks command a higher return; more stable and less risky stocks offer a somewhat lower return. Finally, the proportionate share of each method of financing is multiplied by its percentage cost and summed to yield a weighted average cost of capital.

Suppose that a company has two sources of financing: \$2 million of long-term bonds paying 9 percent interest and \$6 million of common stock, which is considered to be of average risk. If the company's tax rate is 40 percent and the rate of interest on long-term government bonds is 6 percent, the company's weighted average cost of capital is computed as follows:

	<i>Amount</i>	<i>Percent</i>	\times	<i>After-Tax Cost</i>	$=$	<i>Weighted Cost</i>
Bonds	\$2,000,000	0.25		$0.09(1 - 0.4) = 0.054$		0.0135
Equity	<u>6,000,000</u>	0.75		$0.06 + 0.06 = 0.120$		<u>0.0900</u>
Total	<u>\$8,000,000</u>					<u>0.1035</u>

Thus, the company's weighted average cost of capital is 10.35 percent.

The second datum necessary to calculate the dollar cost of capital employed is the amount of capital employed. Clearly, the amount paid for buildings, land, and machinery must be included. However, other expenditures meant to have a long-term payoff, such as research and development, employee training, and so on, should also be included. Despite the fact that these latter are classified by GAAP as expenses, EVA is an internal management accounting measure, and therefore, they can be thought of as the investments that they truly are.

EVA Example

Suppose that Furman, Inc., had after-tax operating income last year of \$1,583,000. Three sources of financing were used by the company: \$2 million of mortgage bonds paying 8 percent interest, \$3 million of unsecured bonds paying 10 percent interest, and \$10 million in common stock, which was considered to be no more or less risky than other stocks. Furman, Inc., pays a marginal tax rate of 40 percent. The after-tax cost of the mortgage bonds is 0.048 [$0.08 - (0.4 \times 0.08)$]. The after-tax cost of the unsecured bonds is 0.06 [$0.10 - (0.4 \times 0.10)$]. There are no tax adjustments for equity, so the cost of the common stock is 12 percent (6 percent return on long-term Treasury bonds plus the 6 percent average premium). The **weighted average cost of capital** is computed by taking the proportion of capital from each source of financing and multiplying it by its cost. The weighted average cost of capital for Furman, Inc., is computed as follows:

	<i>Amount</i>	<i>Percent</i>	\times	<i>After-Tax Cost</i>	$=$	<i>Weighted Cost</i>
Mortgage bonds	\$ 2,000,000	0.133		0.048		0.006
Unsecured bonds	3,000,000	0.200		0.060		0.012
Common stock	<u>10,000,000</u>	0.667		0.120		<u>0.080</u>
Total	<u>\$15,000,000</u>					
Weighted average cost of capital						<u>0.098</u>

When the weighted average cost of capital is multiplied by total capital employed, the dollar cost of capital is known. For Furman, Inc., the amount of capital employed is \$15 million, so the cost of capital is \$1,470,000 ($0.098 \times \$15,000,000$).

Furman, Inc.'s EVA is calculated as follows:

After-tax operating income	\$1,583,000
Less: Weighted average cost of capital	<u>1,470,000</u>
EVA	<u>\$ 113,000</u>

The positive EVA means that Furman, Inc., earned operating income over and above the cost of the capital used. It is creating wealth.

Behavioral Aspects of EVA

A number of companies have discovered that EVA helps to encourage the right kind of behavior from their divisions in a way that emphasis on operating income alone cannot. The underlying reason is EVA's reliance on the true cost of capital. In many companies, the responsibility for investment decisions rests with corporate management. As a result, the cost of capital is considered a corporate expense. If a division builds inventories and investment, the cost of financing that investment is passed along to the overall income statement. It does not show up as a reduction from the division's operating income; investment seems free to the divisions, and of course, they want more. As a result, EVA should be measured for subsets of the company. For example, **Briggs and Stratton**, manufacturer of engines, divided up the company into areas according to types of engine and critical function (e.g., manufacturing and distribution). It then calculates EVA for each area. The result is to make the performance of different areas of the company clearer.⁸

Suppose that Supertech, Inc., has two divisions, the Hardware Division and the Software Division. Operating income statements for the divisions are as follows:

	<i>Hardware Division</i>	<i>Software Division</i>
Sales	\$5,000,000	\$2,000,000
Cost of goods sold	<u>2,000,000</u>	<u>1,100,000</u>
Gross profit	\$3,000,000	\$ 900,000
Divisional selling and administrative expenses	<u>2,000,000</u>	<u>400,000</u>
Operating income	<u>\$1,000,000</u>	<u>\$ 500,000</u>

It looks as if the Hardware Division is doing a good job, and so is Software. Now, let's consider each division's use of capital. Suppose that Supertech's weighted average cost of capital is 11 percent. Hardware, through a buildup of inventories of components and finished goods, use of warehouses, and so on, uses capital amounting to \$10 million, so its dollar cost of capital is \$1,100,000 ($0.11 \times \$10,000,000$). Software does not need large materials inventories, but it does invest heavily in research and development and training. Its capital usage is \$2 million, and its dollar cost of capital is \$220,000 ($0.11 \times \$2,000,000$). The EVA for each division can be calculated as follows:

	<i>Hardware Division</i>	<i>Software Division</i>
Operating income	\$1,000,000	\$500,000
Less: Cost of capital	<u>1,100,000</u>	<u>220,000</u>
EVA	<u>\$ (100,000)</u>	<u>\$280,000</u>

8. G. Bennett Stewart III, "EVA Works—But Not If You Make These Common Mistakes," *Fortune* (May 1, 1995): 117–118.

Now, it is clear that the Hardware Division is actually losing money by using too much capital. The Software Division, on the other hand, has created wealth for Supertech. By using EVA, the Hardware Division's manager will no longer consider inventories and warehouses to be "free" goods. Instead, the manager will strive to reduce capital usage and increase EVA. A reduction of capital usage to \$8 million, for example, would boost EVA to \$120,000 [$\$1,000,000 - (0.11 \times \$8,000,000)$].

Quaker Oats faced a similar situation. Prior to 1991, Quaker Oats evaluated its business segments on the basis of quarterly profits. In order to keep quarterly earnings on an upward march, segment managers offered sharp discounts on products at the end of each quarter. This resulted in huge orders from retailers and sharp surges in production at Quaker's plants at the end of each 3-month period. This practice is called trade loading because it "loads up the trade" (retail stores) with product. It can be expensive, however, because trade loading requires massive amounts of capital—e.g., working capital, inventories, and warehouses to store the quarterly spikes in output. Quaker's plant in Danville, Illinois, produces snack foods and breakfast cereals. Before EVA, the Danville plant ran well below capacity throughout the early part of the quarter. Purchasing, however, bought huge quantities of boxes, plastic wrappers, granola, and chocolate chips. The materials purchases buildup was in anticipation of the production surge of the last six weeks of the quarter. As the products were finished, Quaker packed 15 warehouses with finished goods. All costs associated with inventories were absorbed by corporate headquarters. As a result, they appeared to be free to the plant managers, who were encouraged to build ever higher inventories. The advent of EVA and the cancellation of trade loading led to a smoothing of production throughout the quarter, higher overall production (and sales), and lower inventories. Quaker's Danville plant reduced inventories from \$15 million to \$9 million. Quaker has closed one-third of its 15 warehouses, saving \$6 million annually in salaries and capital costs.⁹

EVA can be used in the public sector, as well. The U.S. Postal Service (USPS) uses EVA to measure its performance. The cost of capital is 12 percent for the USPS, and senior staff bonuses are tied to their ability to create value (i.e., positive EVA).¹⁰

Multiple Measures of Performance

ROI, residual income, and EVA are important measures of managerial performance. However, they are financial measures. As such, the temptation exists for managers to focus only on dollar figures. This focus may not tell the whole story for the company. In addition, lower-level managers and employees may feel helpless to affect net income or investment. As a result, nonfinancial operating measures have been developed. For example, top management could look at such factors as market share, customer complaints, personnel turnover ratios, and personnel development. By letting lower-level managers know that attention to long-run factors is also vital, the tendency to overemphasize financial measures is reduced.

Modern managers are especially likely to use multiple measures of performance and to include nonfinancial as well as financial measures. For example, **Home Depot** surveys customers to get a measure of customer support and tracks the number of hours of training it offers employees each year (23 million hours of training in 2004).¹¹ The Balanced Scorecard (discussed in Chapter 13) was developed to measure a firm's performance in multiple areas.

9. Ibid.

10. Jaclyn Fierman, "Americans Can't Get No Satisfaction," *Fortune* (December 11, 1995): 186–194.

11. Julie Schlosser, "It's His Home Depot Now," *Fortune* (September 20, 2004): 115–119.

OBJECTIVE 4

Discuss methods of evaluating and rewarding managerial performance.

Measuring and Rewarding the Performance of Managers

While some companies consider the performance of the division to be equivalent to the performance of the manager, there is a compelling reason to separate the two. Often, the performance of the division is subject to factors beyond the manager's control. It is particularly important, then, to take a responsibility accounting approach. That is, managers should be evaluated on the basis of factors under their control. A serious concern is the creation of a compensation plan that is closely tied to the performance of the division. This is important in the determination of managerial compensation.

Incentive Pay for Managers— Encouraging Goal Congruence

The subjects of managerial evaluation and incentive pay would be of little concern if all managers were equally likely to perform up to the best of their abilities, and if those abilities were known in advance. In the case of a small company, owned and managed by the same person, there is no problem. The owner puts in as much effort as she or he wishes and receives all of the income from the firm as a reward for his or her performance. However, in most companies, the owner hires managers to operate the company on a day-to-day basis and delegates decision-making authority to them. For example, the stockholders of a company hire the CEO through the board of directors. Similarly, division managers are hired by the CEO to operate their divisions on behalf of the owners. Then, the owners must ensure that the managers are providing good service.

Why wouldn't managers provide good service? There are three reasons: (1) they may have an inadequate ability to perform the job, (2) they may prefer not to work hard, and (3) they may prefer to spend company resources on perquisites. The first reason requires owners to discover information about the manager before hiring him. Think back to the reasons for decentralization—one was that it provided training for future managers. This is true, and it also provides signals to higher management about the managerial ability of division managers. The second and third reasons require the owner to monitor the manager or to arrange an incentive scheme that will more closely align the manager's goals with those of the owner. Some managers may not want to do hard or routine work. In addition, some may be risk-averse and not take actions which expose them, and the company, to risky situations. Thus, it is necessary to compensate them for undertaking risk and hard work. Closely related to the desire of some managers to shirk responsibility is the tendency of managers to overuse perquisites. **Perquisites** are a type of fringe benefit received over and above salary. Some examples are a nice office, use of a company car or jet, expense accounts, and company-paid country club memberships. While some perquisites are legitimate uses of company resources, they can be abused. A well-structured incentive pay plan can help to encourage goal congruence between managers and owners.

Managerial Rewards

Managerial rewards frequently include incentives tied to performance. The objective is to encourage goal congruence, so that managers will act in the best interests of the firm. Arranging managerial compensation to encourage managers to adopt the same goals as the overall firm is an important issue. Managerial rewards include salary increases, bonuses based on reported income, stock options, and noncash compensation.

Cash Compensation

Cash compensation includes salaries and bonuses. One way a company may reward good managerial performance is by granting periodic raises. However, once the raise takes

effect, it is usually permanent. Bonuses give a company more flexibility. Many companies use a combination of salary and bonus to reward performance by keeping salaries fairly level and allowing bonuses to fluctuate with reported income. Managers may find their bonuses tied to divisional net income or to targeted increases in net income. For example, a division manager may receive an annual salary of \$75,000 and a yearly bonus of 5 percent of the increase in reported net income. If net income does not rise, the manager's bonus is zero. This incentive pay scheme makes increasing net income, an objective of the owner, important to the manager as well.

Of course, income-based compensation can encourage dysfunctional behavior. The manager may engage in unethical practices, such as postponing needed maintenance. If the bonus is capped at a certain amount (say the bonus is equal to 1 percent of net income but cannot exceed \$50,000), managers may postpone revenue recognition from the end of the year in which the maximum bonus has already been achieved to the next year. Those who structure the reward systems need to understand both the positive incentives built into the system as well as the potential for negative behavior.

Profit-sharing plans make employees partial owners in the sense that they receive a share of the profits. They are not owners in the sense of decision making or downside risk sharing. This is a form of risk sharing, in particular, sharing of upside risk. Typically, employees are paid a flat rate, and then, any profits to be shared are over and above wages. The objective is to provide an incentive for employees to work harder and smarter.

Stock-Based Compensation

Stock is a share in the company, and theoretically, it should increase in value as the company does well and decrease in value as the company does poorly. Thus, the issue of stock to managers makes them part owners of the company and should encourage goal congruence. Many companies encourage employees to purchase shares of stock, or they grant shares as a bonus. A disadvantage of stock as compensation is that share price can fall for reasons beyond the control of managers. For example, **Wal-Mart** stock rose and fell in value in the early 1990s. When the stock price fell, managers worried about employee morale. To keep morale high, the company created a cash bonus pool to be distributed for meeting sales and income targets.

Companies frequently offer stock options to managers. A **stock option** is the right to buy a certain number of shares of the company's stock, at a particular price and after a set length of time. The objective of awarding stock options is to encourage managers to focus on the longer term. The price of the option shares is usually set approximately at market price at the time of issue. Then, if the stock price rises in the future, the manager may exercise the option, thus purchasing stock at a below-market price and realizing an immediate gain.

For example, Lois Canfield, head of the Toiletries Division of Palgate, Inc., was granted an option to purchase 100,000 shares of Palgate stock at the current market price of \$20 per share. The option was granted in August 2005 and could be exercised after two years. If, by August 2007, Palgate stock has risen to \$23 per share, Lois can purchase all 100,000 shares for \$2,000,000 ($100,000 \times \20 option price) and immediately sell them for \$2,300,000 ($100,000 \times \23). She will realize a profit of \$300,000. Of course, if Palgate stock drops below \$20, Lois will not exercise the option. Typically, however, stock prices rise along with the market, and Lois can safely bet on a future profit as long as Palgate does not perform worse than the market.

Companies are becoming more aware of the impact on options of the overall movement of the stock market. If the market moves strongly higher, there is the potential for windfall profits. That is, any profit realized from selling stock based on low cost options may be more closely related to the overall rise in the stock market and less related

to outstanding performance by top management. In addition, top executives with a number of options may focus on the short-term movements of the stock price rather than on the long-term indicators of company performance. In essence, they may trade long-term returns for short-term returns.

Typically, there are constraints on the exercise of the options. For example, the stock purchased with options may not be sold for a certain period of time. A disadvantage of stock options is that the price of the stock is based on many factors and is not completely within the manager's control.

Issues to Consider in Structuring Income-Based Compensation

The underlying objective of a company that uses income-based compensation is goal congruence between owner and manager. To the extent that the owners of the company want net income and stock price to rise, basing management compensation on such increases helps to encourage managerial efforts in that direction. However, single measures of performance, which are often the basis of bonuses, are frequently subject to gaming behavior. That is, managers may increase short-term measures at the expense of long-term measures. For example, a manager may keep net income high by refusing to invest in more modern and efficient equipment. Depreciation expense remains low, but so do productivity and quality. Clearly, the manager has an incentive to understand the computation of the accounting numbers used in performance evaluation. An accounting change from FIFO to LIFO or in the method of depreciation, for example, will change net income even though sales and costs remain unchanged. Frequently, we see that a new CEO of a troubled corporation will take a number of losses (e.g., inventory write-downs) all at once. This is referred to as the “big bath” and usually results in very low (or negative) net income in that year. Then, the books are cleared for a good increase in net income, and a correspondingly large bonus, for the next year.

Both cash bonuses and stock options can encourage a short-term orientation. To encourage a longer-term orientation, some companies are requiring top executives to purchase and hold a certain amount of company stock to retain employment. **Eastman Kodak, Xerox, CSX Corporation, Gerber Products, Union Carbide Corporation,** and **Hershey Foods** are all companies that have stock ownership guidelines for their top management.

Another issue to be considered in structuring management compensation plans is that frequently owners and managers are affected differently by risk. When managers have so much of their own capital—both financial and human—invested in the company, they may be less apt to take risks. Owners, because of their ability to diversify away some of the risk, may prefer a more risk-taking attitude. As a result, managers must be somewhat insulated from catastrophic downside risk in order to encourage them to make entrepreneurial decisions.

Noncash Compensation

Noncash compensation is an important part of the management reward structure. Autonomy in the conduct of their daily business is an important type of noncash compensation. At **Hewlett-Packard**, cross-functional teams “own” their business and have the authority to reinvest earnings to react quickly to changing markets.

Perquisites are also important. We often see managers who trade off increased salary for improvements in title, office location and trappings, use of expense accounts, and so on. Perquisites can be well used to make the manager more efficient. For example, a busy manager may be able to effectively employ several assistants and may find that use of a corporate jet allows him or her to more efficiently schedule travel in overseeing far-flung divisions. However, perquisites may be abused as well. For instance, one wonders how the shareholders of **Tyco** benefitted from their 50 percent share of the

\$2 million party that former Tyco chief Dennis Kozlowski threw for his wife's birthday, or from Kozlowski's \$6,000 shower curtain.¹²

Measuring Performance in the Multinational Firm

It is important for the MNC to separate the evaluation of the *manager* of a division from the evaluation of the *division*. The manager's evaluation should not include factors over which he exercises no control, such as currency fluctuations, income taxes, and so on. Instead, managers should be evaluated on the basis of revenues and costs incurred. It is particularly difficult to compare the performance of a manager of a division (or subsidiary) in one country with the performance of a manager of a division in another country. Even divisions that appear to be similar in terms of production may face very different economic, social, or political forces. The manager should be evaluated on the basis of the performance he or she can control. Once a manager is evaluated, then the subsidiary financial statements can be restated to the home currency and uncontrollable costs can be allocated.¹³

International environmental conditions may be very different from, and more complex than, domestic conditions. Environmental variables facing local managers of divisions include economic, legal, political, social, and educational factors.

Some important economic variables are inflation, foreign currency exchange rates, income taxes, and transfer prices. For example, MNCs have invested heavily in developing countries. The result is that those countries have built considerable manufacturing capacity and are now competing aggressively around the world. This has led to lower prices and deflation on a global basis. As a result, MNCs, used to dealing with the inflationary environment of the 1970s and 1980s, will have to shift gears to deal with deflation. In this case, cost control is essential.

Legal and political factors also have differing impacts. For example, a country may not allow cash outflows or may forbid the import of certain items. U.S. agricultural laws do not allow rooted plants to enter the country. This posed a problem for U.S. florists who sell poinsettias during the Christmas season. They need many poinsettias, but they do not have the greenhouse capacity to grow them throughout the rest of the year. Mexico provides an ideal growing environment for the plants. However, potted plants cannot enter the United States. Plant science advances solved the importation problem. The plants are imported as cuttings that have been quick cooled, bagged, and shipped in dry ice. They clear Customs in this form, arriving at their destination within the 72-hour window.¹⁴ The result is a thriving poinsettia-growing industry in Mexico and many more of the colorful plants available for U.S. consumers.

Educational, infrastructure, and cultural variables affect how the multinational firm is treated by the subsidiary's country. For example, when **Wal-Mart** expanded into Brazil, its system of just-in-time restocking of shelves did not work. In Brazil, the company did not own its distribution system, meaning that stores in Brazil processed up to 300 deliveries daily, versus seven in the United States. On the cultural front, Wal-Mart had to change its credit policies by accepting postdated checks—the most common form of credit in Brazil.¹⁵ Many clothing distributors in the United States depend on factories in developing countries to do the manufacturing. However, first, those companies had to develop the area, putting in roads and communication equipment and providing training for workers.

12. "Tyco Jurors View \$2 Million Party Video," *CBSNews.com*, <http://www.cbsnews.com/stories/2003/11/25/national/main585633.shtml> as of October 28, 2003. (The trial ended in a mistrial, and the case is set to be retried in 2005.)

13. Helen Gernon and Gary Meek, *Accounting: An International Perspective* (Homewood, IL: Richard D. Irwin-McGraw-Hill, 2001).

14. Joel Millman, "For Holiday Poinsettias, Growers Go South of the Border," *The Wall Street Journal* (December 17, 1998): B1.

15. Jonathan Friedland and Louise Lee, "The Wal-Mart Way Sometimes Gets Lost in Translation Overseas," *The Wall Street Journal* (October 8, 1997): A1 and A12.

Comparison of Divisional ROI

The existence of differing environmental factors makes interdivisional comparison of ROI potentially misleading. For example, the lack of consistency in internal reporting may obscure interdivisional comparison. A minimum wage law in one country may restrict the manager's ability to affect labor costs. Another country may prevent the export of cash. Still others may have a well-educated workforce but poor infrastructure (transportation and communication facilities). Therefore, the corporation must be aware of and control these differing environmental factors when assessing managerial performance.

The accountant in the MNC must be aware of more than business and finance. Political and legal systems have important implications for the company. Sometimes, the political system changes quickly, throwing the company into crisis mode. Other times, the situation evolves more slowly. For example, **General Electric** has been affected by drug trafficking in Colombia as the Colombian drug lords turned to appliance exporting as a means of laundering their U.S. profits. Honest U.S. and Colombian retail appliance dealers have been hurt by the smugglers' low prices. GE was forced to institute tough audit procedures to ferret out the illegal activity. The result was a drop in GE's market share in the Miami area and an increase in accounting expense.¹⁶

On occasion, the political structure may mean that standard U.S.-based methods of control may not "work" in foreign countries. For example, under the communist regime in the former USSR, manufacturers received a budget, actual results were compared with the budget, and variances were computed. However, variance analysis did not have the same meaning that it has in the United States. If a company faced a variance, the solution was to send the plant's senior political operative to Central Planning Headquarters with a case of champagne or cognac. The hoped-for result was a change in the budget so that it matched actual results and the variance disappeared. The business objective was not efficiency or effectiveness, but a compliance with the central plan. While the Central Planning Headquarters no longer exists, this culture of altering the plan to match the actual results does continue to exist.

Multiple Measures of Performance

Rigid evaluation of the performance of foreign divisions of the MNC ignores the overarching strategic importance of developing a global presence. The interconnectedness of the global company weakens the independence or stand-alone nature of any one segment. As a result, residual income and ROI are less important measures of managerial performance for divisions of the MNC. MNCs must use additional measures of performance that relate more closely to the long-run health of the company. In addition to ROI and residual income, top management looks at such factors as market potential and market share. For example, **Gillette** began to sell Oral-B toothbrushes in China. The size of the Chinese market means that even if Gillette gets only 10 percent of the market, it will sell more toothbrushes in China than in the United States. **Procter & Gamble**, **Bausch & Lomb**, and **Citicorp** are expanding into Indian and Asian markets for the same reason.

Additionally, the use of ROI and RI in the evaluation of managerial performance in divisions of an MNC is subject to problems beyond those faced by a decentralized company that operates in only one country. It is particularly important, then, to take a responsibility accounting approach and evaluate managers on the basis of factors under their control. For example, the manager of the Moscow **McDonald's** cannot simply purchase food; it is not available for purchase locally, and imports from Denmark and Finland are very expensive. As a result, some food is grown locally. Similar difficulties are faced by companies in Eastern Europe. Multiple measures of performance, keyed to

16. Michael Allen, "A Tangled Tale of GE, Appliance Smuggling and Laundered Money," *The Wall Street Journal* (December 21, 1998): A1 and A6.

local operating conditions, can spotlight managers' responses to different and difficult operating conditions.

Transfer Pricing

Often, the output of one division can be used as input for another division. For example, integrated circuits produced by one division can be used by a second division to make video recorders. **Transfer prices** are the prices charged for goods produced by one division and transferred to another. The price charged affects the revenues of the transferring division and the costs of the receiving division. As a result, the profitability, return on investment, and managerial performance evaluation of both divisions are affected.

OBJECTIVE 5

Explain the role of transfer pricing in a decentralized firm.

The Impact of Transfer Pricing on Income

Exhibit 10-2 illustrates the effect of the transfer price on two divisions of ABC, Inc. Division A produces a component and sells it to another division of the same company, Division C. The \$30 transfer price is revenue to Division A and increases division income; clearly, Division A wants the price to be as high as possible. Conversely, the \$30 transfer price is cost to Division C and decreases division income, just like the cost of any materials. Division C prefers a lower transfer price. For the company as a whole, A's revenue minus C's cost equals zero.

EXHIBIT 10-2 Impact of Transfer Price on Transferring Divisions and the Company as a Whole	
ABC, Inc.	
Division A	Division C
Produces component and transfers it to C for transfer price of \$30 per unit	Purchases component from A at transfer price of \$30 per unit and uses it in production of final product
Transfer price = \$30 per unit	Transfer price = \$30 per unit
Revenue to A	Cost to C
Increases net income	Decreases net income
Increases ROI	Decreases ROI
Transfer price revenue = Transfer price cost Zero impact on ABC, Inc.	

While the actual transfer price nets out for the company as a whole, transfer pricing can affect the level of profits earned by the company as a whole if it affects divisional behavior. Divisions, acting independently, may set transfer prices that maximize divisional profits but adversely affect firmwide profits. For example, suppose that Division A in Exhibit 10-2 sets a transfer price of \$30 for a component that costs \$24 to produce. If Division C can obtain the component from an outside supplier for \$28, it will refuse to buy from Division A. Division C will realize a savings of \$2 per component (\$30 internal transfer price – \$28 external price). However, assuming that Division A cannot replace the internal sales with external sales, the company as a whole will be worse off by \$4 per component (\$28 external cost – \$24 internal cost). This outcome would increase the total cost to the firm as a whole. Thus, how transfer prices are set can be critical for profits of the business as a whole.

OBJECTIVE

6

Discuss the methods of setting transfer prices.

Setting Transfer Prices

A transfer pricing system should satisfy three objectives: accurate performance evaluation, goal congruence, and preservation of divisional autonomy.¹⁷ Accurate performance evaluation means that no one divisional manager should benefit at the expense of another (in the sense that one division is made better off while the other is made worse off). Goal congruence means that divisional managers select actions that maximize firmwide profits. Autonomy means that central management should not interfere with the decision-making freedom of divisional managers. The **transfer pricing problem** concerns finding a system that simultaneously satisfies all three objectives.

We can evaluate the degree to which a transfer price satisfies the objectives of a transfer pricing system by considering the opportunity cost of the goods transferred. The *opportunity cost approach* can be used to describe a wide variety of transfer pricing practices. Under certain conditions, this approach is compatible with the objectives of performance evaluation, goal congruence, and autonomy.

The **opportunity cost approach** identifies the minimum price that a selling division would be willing to accept and the maximum price that the buying division would be willing to pay. These minimum and maximum prices correspond to the opportunity costs of transferring internally. They are defined for each division as follows:

1. The **minimum transfer price**, or floor, is the transfer price that would leave the selling division no worse off if the good is sold to an internal division.
2. The **maximum transfer price**, or ceiling, is the transfer price that would leave the buying division no worse off if an input is purchased from an internal division.

The opportunity cost rule signals when it is possible to increase firmwide profits through internal transfers. Specifically, a good should be transferred internally whenever the opportunity cost (minimum price) of the selling division is less than the opportunity cost (maximum price) of the buying division. By its very definition, this approach ensures that the divisional manager of either division is no worse off by transferring internally. This means that total divisional profits are not decreased by the internal transfer.

Rarely does central management set specific transfer prices. Instead, most companies develop some general policies that divisions must follow. Three commonly used policies are market-based transfer pricing, negotiated transfer pricing, and cost-based transfer pricing. Each of these can be evaluated according to the opportunity cost approach.

Market Price

If there is an outside market for the intermediate product (the good to be transferred) and that outside market is perfectly competitive, the correct transfer price is the market price.¹⁸ In such a case, divisional managers' actions will simultaneously optimize divisional profits and firmwide profits. Furthermore, no division can benefit at the expense of another division. In this setting, central management will not be tempted to intervene.

The opportunity cost approach also signals that the correct transfer price is the market price. Since the selling division can sell all that it produces at the market price, transferring internally at a lower price would make that division worse off. Similarly, the

17. Joshua Ronen and George McKinney, "Transfer Pricing for Divisional Autonomy," *Journal of Accounting Research* (Spring 1970): 100–101.

18. A perfectly competitive market for the intermediate product requires four conditions: (1) the division producing the intermediate product is small relative to the market as a whole and cannot influence the price of the product; (2) the intermediate product is indistinguishable from the same product of other sellers; (3) firms can easily enter and exit the market; and (4) consumers, producers, and resource owners have perfect knowledge of the market.

buying division can always acquire the intermediate good at the market price, so it would be unwilling to pay more for an internally transferred good. Since the minimum transfer price for the selling division is the market price and since the maximum price for the buying division is also the market price, the only possible transfer price is the market price.

In fact, moving away from the market price will decrease the overall profitability of the firm. This principle can be used to resolve divisional conflicts that may occur, as the following example illustrates.

Yarrow Manufacturers is a large, privately held corporation that produces small appliances. The company has adopted a decentralized organizational structure. The Parts Division, which is at capacity, produces parts that are used by the Motor Division. The parts can also be sold to other manufacturers and to wholesalers at a market price of \$8. For all practical purposes, the market for the parts is perfectly competitive.

Suppose that the Motor Division, operating at 70 percent capacity, receives a special order for 100,000 motors at a price of \$30. Full manufacturing cost of the motors is \$31, broken down as follows.

Direct materials	\$10
Transferred-in part	8
Direct labor	2
Variable overhead	1
Fixed overhead	<u>10</u>
Total cost	<u>\$31</u>

Notice that the motor includes a part transferred in from the Parts Division at a market-based transfer price of \$8. Should the Parts Division lower the transfer price to allow the Motor Division to accept the special order? We can use the opportunity cost approach to answer this question.

Since the Parts Division can sell all that it produces, the minimum transfer price is the market price of \$8. Any lower price would make the Parts Division worse off. For the Motor Division, identifying the maximum transfer price that can be paid so that it is no worse off is a bit more complex.

Since the Motor Division is under capacity, the fixed overhead portion of the motor's cost is not relevant. The relevant costs are those additional costs that will be incurred if the order is accepted. These costs, excluding for the moment the cost of the transferred-in component, equal \$13 (\$10 + \$2 + \$1). Thus, the contribution to profits before considering the cost of the transferred-in component is \$17 (\$30 – \$13). The division could pay as much as \$17 for the component and still break even on the special order. However, since the component can always be purchased from an outside supplier for \$8, the maximum price that the division should pay internally is \$8. As a result, the market price is the best transfer price.

Negotiated Transfer Prices

Perfectly competitive markets rarely exist. In most cases, producers *can* influence price (e.g., by being large enough to influence demand by dropping the price of the product or by selling closely related but differentiated products). When imperfections exist in the market for the intermediate product, market price may no longer be suitable. In this case, negotiated transfer prices may be a practical alternative. Opportunity costs can be used to define the boundaries of the negotiation set.

Negotiated outcomes should be guided by the opportunity costs facing each division. A negotiated price should be agreed to only if the opportunity cost of the selling division is less than the opportunity cost of the buying division.

Example 1: Avoidable Distribution Costs

To illustrate, assume that a division produces a circuit board that can be sold in the outside market for \$22. The division can sell all that it produces to the outside market at \$22. If it does so, however, it incurs a distribution cost of \$2 per unit. Currently, the division sells 1,000 units per day, with a variable manufacturing cost of \$12 per unit. Alternatively, the board can be sold internally to the company's recently acquired Electronic Games Division. The distribution cost is avoidable if the board is sold internally.

The Electronic Games Division is also at capacity, producing and selling 350 games per day. These games sell for \$45 per unit and have a variable manufacturing cost of \$32 per unit. Variable selling expenses of \$3 per unit are also incurred. Sales and production data for each division are summarized in Exhibit 10-3.

EXHIBIT 10-3		Summary of Sales and Production Data	
	Circuit Board Division	Games Division	
Units sold:			
Per day	1,000	350	
Per year*	260,000	91,000	
Unit data:			
Selling price	\$22	\$45	
Variable costs:			
Manufacturing	\$12	\$32	
Selling	\$2	\$3	
Annual fixed costs	\$1,480,000	\$610,000	

*There are 260 selling days in a year.

How could the Games Division and the Circuit Board Division set a transfer price? Let's assume that the Games Division currently pays \$22 per circuit board. Clearly, the Games Division would refuse to pay more than \$22; thus, the maximum transfer price is \$22. The minimum transfer price is set by the Circuit Board Division. While this division prices its circuit boards at \$22, it will avoid \$2 of distribution cost if it sells internally. Therefore, the minimum transfer price is \$20 ($\$22 - \2). If a bargaining range exists, the transfer price will fall somewhere between \$22 and \$20.

Suppose that the Game Division manager offered a transfer price of \$20. That division would be better off by \$2 per circuit board, since it had previously paid \$22 per board. Its profits would increase by \$700 per day ($\2×350 units per day). The Circuit Board Division, on the other hand, would be no better, or worse, off than before and no incremental profit would accrue to the division. While a transfer price of \$20 per circuit board is possible, it is unlikely that the Circuit Board manager would agree to it.

Now suppose that the Circuit Board Division counters with an offer of \$21.10 per board. That transfer price allows the Circuit Board Division to increase its profits by \$385 per day [$(\$21.10 - \$20.00) \times 350$ units]. The Games Division would increase its profits by \$315 per day [$(\$22 - \$21.10) \times 350$ units].

While we cannot tell exactly where the Circuit Board Division and the Games Division would set a transfer price, we can see that it will be somewhere within the bargaining range. [The minimum transfer price (\$20) and the maximum transfer price

(\$22) set the limits of the bargaining range.] Exhibit 10-4 provides income statements for each division before and after the agreement. Notice how the total profits of the firm increase by \$182,000 as claimed; notice, too, how that profit increase is split between the two divisions.

EXHIBIT 10-4 Comparative Income Statements			
Before Negotiation: All Sales External			
	Circuit Board Division	Games Division	Total
Sales	\$ 5,720,000	\$ 4,095,000	\$ 9,815,000
Less variable expenses:			
Cost of goods sold	(3,120,000)	(2,912,000)	(6,032,000)
Variable selling	(520,000)	(273,000)	(793,000)
Contribution margin	\$ 2,080,000	\$ 910,000	\$ 2,990,000
Less: Fixed expenses	1,480,000	610,000	2,090,000
Operating income	<u>\$ 600,000</u>	<u>\$ 300,000</u>	<u>\$ 900,000</u>
After Negotiation: Internal Transfers @ \$21.10			
	Circuit Board Division	Games Division	Total
Sales	\$ 5,638,100	\$ 4,095,000	\$ 9,733,100
Less variable expenses:			
Cost of goods sold	(3,120,000)	(2,830,100)	(5,950,100)
Variable selling	(338,000)	(273,000)	(611,000)
Contribution margin	\$ 2,180,100	\$ 991,900	\$ 3,172,000
Less: Fixed expenses	1,480,000	610,000	2,090,000
Operating income	<u>\$ 700,100</u>	<u>\$ 381,900</u>	<u>\$ 1,082,000</u>
Change in operating income	<u>\$ 100,100</u>	<u>\$ 81,900</u>	<u>\$ 182,000</u>

Example 2: Excess Capacity

In perfectly competitive markets, the selling division can sell all that it wishes at the prevailing market price. In a less ideal setting, a selling division may be unable to sell all that it produces; accordingly, the division may reduce its output and, as a consequence, have excess capacity.¹⁹

To illustrate the role of transfer pricing and negotiation in this setting, consider the dialogue between Sharon Bunker, manager of a Plastics Division, and Carlos Rivera, manager of a Pharmaceutical Division:

CARLOS: Sharon, my division has shown a loss for the past three years. When I took over the division at the beginning of the year, I set a goal with headquarters to break even. At this point, projections show a loss of \$5,000—but I think I have a way to reach my goal, if I can get your cooperation.

19. Output can be increased by decreasing selling price. Of course, decreasing selling price to increase sales volume may not increase profits—in fact, profits could easily decline. We assume in this example that the divisional manager has chosen the most advantageous selling price and that the division is still left with excess capacity.

SHARON: If I can help, I certainly will. What do you have in mind?

CARLOS: I need a special deal on your plastic bottle Model 3. I have the opportunity to place our aspirins with a large retail chain on the West Coast—a totally new market for our product. But we have to give them a real break on price. The chain has offered to pay \$0.85 per bottle for an order of 250,000 bottles. My variable cost per unit is \$0.60, not including the cost of the plastic bottle. I normally pay \$0.40 for your bottle, but if I do that, the order will lose me \$37,500. I cannot afford that kind of loss. I know that you have excess capacity. I'll place an order for 250,000 bottles, and I'll pay your variable cost per unit, provided it is no more than \$0.25. Are you interested? Do you have sufficient excess capacity to handle a special order of 250,000 bottles?

SHARON: I have enough excess capacity to handle the order easily. The variable cost per bottle is \$0.15. Transferring at that price would make me no worse off; my fixed costs will be there whether I make the bottles or not. However, I would like to have some contribution from an order like this. I'll tell you what I'll do. I'll let you have the order for \$0.20. That way, we both make a \$0.05 contribution per bottle, for a total contribution of \$12,500. That'll put you in the black and help me get closer to my budgeted profit goal.

CARLOS: Great! This is better than I expected. If this West Coast chain provides more orders in the future—as I expect it will—and at better prices, I'll make sure you get our business.

Notice the role that opportunity costs play in the negotiation. In this case, the minimum transfer price is the Plastic Division's variable cost (\$0.15), representing the incremental outlay if the order is accepted. Since the division has excess capacity, only variable costs are relevant to the decision. By covering the variable costs, the order does not affect the division's total profits. For the buying division, the maximum transfer price is the purchase price that would allow the division to cover its incremental costs on the special order (\$0.25). Adding the \$0.25 to the other costs of processing (\$0.60), the total incremental costs incurred are \$0.85 per unit. Since the selling price is also \$0.85 per unit, the division is made no worse off. Both divisions, however, can be better off if the transfer price is between the minimum price of \$0.15 and the maximum price of \$0.25.

Comparative statements showing the contribution margin earned by each division and the firm as a whole are shown in Exhibit 10-5, on the following page, for each of the four transfer prices discussed. These statements show that the firm earns the same profit for all four transfer prices; however, different prices do affect the individual divisions' profits differently. Because of the autonomy of each division, there is no guarantee that the firm will earn the maximum profit. For example, if Sharon had insisted on maintaining the price of \$0.40, no transfer would have taken place, and the overall \$25,000 increase in profits would have been lost.

Disadvantages of Negotiated Transfer Prices

Negotiated transfer prices have three disadvantages that are commonly mentioned.

1. One divisional manager, possessing private information, may take advantage of another divisional manager.
2. Performance measures may be distorted by the negotiating skills of managers.
3. Negotiation can consume considerable time and resources.

It is interesting to observe that Carlos, the manager of the Pharmaceutical Division, did not know the variable cost of producing the plastic bottle. Yet, that cost was a key to the negotiation. This lack of knowledge gave Sharon, the other divisional manager, the opportunity to exploit the situation. For example, she could have claimed that the variable cost was \$0.27 and offered to sell for \$0.25 per unit as a favor to Carlos, saying that she would be willing to absorb a \$5,000 loss in exchange for a promise of

EXHIBIT 10-5 Comparative Statements			
Transfer Price of \$0.40			
	Pharmaceuticals	Plastics	Total
Sales	\$212,500	\$100,000	\$312,500
Less: Variable expenses	<u>250,000</u>	<u>37,500</u>	<u>287,500</u>
Contribution margin	<u>\$ (37,500)</u>	<u>\$ 62,500</u>	<u>\$ 25,000</u>
Transfer Price of \$0.25			
Sales	\$212,500	\$ 62,500	\$275,000
Less: Variable expenses	<u>212,500</u>	<u>37,500</u>	<u>250,000</u>
Contribution margin	<u>\$ 0</u>	<u>\$ 25,000</u>	<u>\$ 25,000</u>
Transfer Price of \$0.20			
Sales	\$212,500	\$ 50,000	\$262,500
Less: Variable expenses	<u>200,000</u>	<u>37,500</u>	<u>237,500</u>
Contribution margin	<u>\$ 12,500</u>	<u>\$ 12,500</u>	<u>\$ 25,000</u>
Transfer Price of \$0.15			
Sales	\$212,500	\$ 37,500	\$250,000
Less: Variable expenses	<u>187,500</u>	<u>37,500</u>	<u>225,000</u>
Contribution margin	<u>\$ 25,000</u>	<u>\$ 0</u>	<u>\$ 25,000</u>

future business. In this case, she would capture the full \$25,000 benefit of the transfer. Alternatively, she could have misrepresented the figure and used it to turn down the request, thus preventing Carlos from achieving his budgetary goal; after all, she may be competing with Carlos for promotions, bonuses, salary increases, and so on.

Fortunately, Sharon displayed sound judgment and acted with integrity. For negotiation to work, managers must be willing to share relevant information. How can this requirement be satisfied? The answer lies in the use of good internal control procedures.

Perhaps the best course of action is to hire managers with integrity—managers who have a commitment to ethical behavior. Additionally, top management can take other actions to discourage the use of private information for exploitive purposes. For example, corporate headquarters could base some part of the management reward structure on overall profitability to encourage actions that are in the best interests of the company as a whole.

The second disadvantage of negotiated transfer prices is that the practice distorts the measurement of managerial performance. According to this view, divisional profitability may be affected too strongly by the negotiating skills of managers, masking the actual management of resources entrusted to each manager. Although this argument may have some merit, it ignores the fact that negotiating skill is also a desirable managerial skill. Perhaps divisional profitability should reflect differences in negotiating skills.

The third criticism of this technique is that negotiating can be very time consuming. The time spent in negotiation by divisional managers could be spent managing

other activities, which may have a bearing on the success of the division. Sometimes, negotiations may reach an impasse, forcing top management to spend time mediating the process.²⁰ Although the use of managerial time may be costly, a mutually satisfactory negotiated outcome can produce increased profits for the firm that easily exceed the cost of the managerial time involved. Furthermore, negotiation does not have to be repeated each time for similar transactions.

Advantages of Negotiated Transfer Prices

Although time consuming, negotiated transfer prices offer some hope of complying with the three criteria of goal congruence, autonomy, and accurate performance evaluation. As previously mentioned, decentralization offers important advantages for many firms. Just as important, however, is the process of making sure that actions of the different divisions mesh together so that the company's overall goals are attained. If negotiation helps ensure goal congruence, the temptation for central management to intervene is diminished considerably. There is, quite simply, no need to intervene. Finally, if negotiating skills of divisional managers are comparable or if the firm views these skills as an important managerial skill, concerns about motivation and accurate performance measures are avoided.

Cost-Based Transfer Prices

Three forms of cost-based transfer pricing will be considered: full cost, full cost plus markup, and variable cost plus fixed fee. In all three cases, to avoid passing on the inefficiencies of one division to another, standard costs should be used to determine the transfer price. For example, the Micro Products Division of **Tandem Computers, Inc.**, uses a corporate materials overhead rate, rather than the division-specific rate, to facilitate cost-based transfers between divisions.²¹ A more important issue, however, is the propriety of cost-based transfer prices. Should they be used? If so, under what circumstances?

Full-Cost Transfer Pricing

Perhaps the least desirable type of transfer pricing approach is that of full cost. Its only real virtue is simplicity. Its disadvantages are considerable. Full-cost transfer pricing can provide perverse incentives and distort performance measures. As we have seen, the opportunity costs of both the buying and selling divisions are essential for determining the propriety of internal transfers. At the same time, they provide useful reference points for determining a mutually satisfactory transfer price. Only rarely will full cost provide accurate information about opportunity costs.

A full-cost transfer price would have shut down the negotiated prices described earlier. In the first example, the manager would never have considered transferring internally if the price had to be full cost. Yet, by transferring at selling price less some distribution expenses, both divisions—and the firm as a whole—were better off. In the second example, the manager of the Pharmaceutical Division could never have accepted the special order with the West Coast chain. Both divisions and the company would have been worse off, both in the short run and in the long run.

Full Cost Plus Markup

Full cost plus markup suffers from virtually the same problems as full cost. It is somewhat less perverse, however, if the markup can be negotiated. For example, a

20. The involvement of top management may be very cursory, however. In the case of a very large oil company that negotiates virtually all transfer prices, two divisional managers could not come to an agreement after several weeks of effort and appealed to their superior. His response: "Either come to an agreement within 24 hours, or you are both fired." Needless to say, an agreement was reached within the allotted time.

21. Earl D. Bennett, Sarah A. Reed, and Ted Simmonds, "Learning from a CIM Experience," *Management Accounting* (July 1991): 28–33.

full-cost-plus-markup formula could have been used to represent the negotiated transfer price of the first example. In some cases, a full-cost-plus-markup formula may be the outcome of negotiation; if so, it is simply another example of negotiated transfer pricing. In these cases, the use of this method is fully justified. Using full cost plus markup to represent all negotiated prices, however, is not possible (e.g., it could not be used to represent the negotiated price of the second example). The superior approach is negotiation, since more cases can be represented, and full consideration of opportunity costs is possible.

Variable Cost Plus Fixed Fee

Like full cost plus markup, variable cost plus fixed fee can be a useful transfer pricing approach provided that the fixed fee is negotiable. This method has one advantage over full cost plus markup: if the selling division is operating below capacity, variable cost is its opportunity cost. Assuming that the fixed fee is negotiable, the variable cost approach can be equivalent to negotiated transfer pricing. Negotiation with full consideration of opportunity costs is preferred.

Propriety of Use

In spite of the disadvantages of cost-based transfer prices, many companies use these methods, especially full cost and full cost plus markup. There must be some compelling reasons for their use—reasons that outweigh the benefits associated with negotiated transfer prices and the disadvantages of these methods. The methods do have the virtue of being simple and objective. These qualities, by themselves, cannot justify their use, however. Some possible explanations for the use of these methods can be given. In many cases, transfers between divisions have a small impact on the profitability of either division. For this situation, it may be cost beneficial to use an easy-to-identify, cost-based formula rather than spending valuable time and resources on negotiation.

In other cases, the use of full cost plus markup may simply be the formula agreed upon in negotiations. That is, the full-cost-plus-markup formula is the outcome of negotiation, but the transfer pricing method being used is reported as full cost plus markup. Once established, this formula could be used until the original conditions change to

COST MANAGEMENT

Companies can use ERP packages or customized software to support their international marketing. **Cisco** is an example of a company applying ERP in the international arena. An important feature of Cisco's Oracle system has been its multicurrency functionality. Customers can be billed in their own currency, while Cisco itself uses U.S. currency. In addition, Pete Solvik, Cisco's chief information officer, points out that "we can also deal with the tax and regulatory issues in every country where we do business, without problems, because our system is based primarily in the United States. And we're also focusing on Euro support."

Cisco points out that **Oracle** supports its globalization initiatives. The company would not have been able to acquire close to 30 companies in five years if it had not had

Technology in Action

the ability to integrate companies into one Oracle-based, worldwide system. In addition, Cisco relies on Oracle's manufacturing applications to run its worldwide outsource factory across almost 50 outsource buyers and manufacturers of goods.

Twentieth Century Fox uses a customized Internet software package, *Eight Ball*, to speed the distribution of data and improve decision making. *Eight Ball* puts a massive, constantly updated database at the disposal of Fox executives around the world. If a movie or video is not "selling well in Paris, for example, executives will be able, in hours, to tweak the advertising budget to compensate." An executive in Hong Kong can communicate with other Fox executives around the world for ideas on how to spice up in-store displays.

the point where renegotiation is necessary. In this way, the time and resources of negotiation can be minimized. For example, the goods transferred may be custom-made, and the managers may have little ability to identify an outside market price. In this case, reimbursement of full costs plus a reasonable rate of return may be a good surrogate for the transferring division's opportunity costs.

Transfer Pricing and the Multinational Firm

For the multinational firm, transfer pricing must accomplish two objectives, performance evaluation and optimal determination of income taxes. If all countries had the same tax structure, then transfer prices would be set independently of income taxes. However, there are high-tax countries (like the United States) and low-tax countries (such as the Cayman Islands). As a result, MNCs may use transfer pricing to shift costs to high-tax countries and shift revenues to low-tax countries.

Exhibit 10-6 illustrates this concept, as two transfer prices are set. The first transfer price is \$100 as title for the goods passes from the Belgian subsidiary to the re-invoicing center in Puerto Rico. Because the first transfer price is equal to full cost, profit is zero, and income taxes on zero profit also equal zero. The second transfer price is set at \$200 by the re-invoicing center in Puerto Rico. The transfer from Puerto Rico to the United States does result in profit, but this profit does not result in any income tax because Puerto Rico has no corporate income taxes. Finally, the U.S. subsidiary sells the product to an external party at the \$200 transfer price. Again, price equals cost, so there is no profit on which to pay income taxes. Consider what would have happened without the re-invoicing center. The goods would have gone directly from Belgium to the United States. If the transfer price was set at \$200, the profit in Belgium would have been \$100, subject to the 42 percent tax rate. Alternatively, if the transfer price set was \$100, no Belgian income tax would have been paid, but the U.S. subsidiary would have realized a profit of \$100, and that would have been subject to the U.S. corporate income tax rate of 35 percent.

EXHIBIT 10-6

Use of Transfer Pricing to Affect Income Taxes Paid

Action	Tax Impact
Belgian subsidiary of Parent Company produces a component at a cost of \$100 per unit. Title to the component is transferred to a Re-invoicing Center* in Puerto Rico at a transfer price of \$100/unit.	42% tax rate \$100 revenue – \$100 cost = \$0 Taxes paid = \$0
Re-invoicing Center in Puerto Rico, also a subsidiary of Parent Company, transfers title of component to U.S. subsidiary of Parent Company at a transfer price of \$200/unit.	0% tax rate \$200 revenue – \$100 cost = \$100 Taxes paid = \$0
U.S. subsidiary sells component to external company at \$200 each.	35% tax rate \$200 revenue – \$200 cost = \$0 Taxes paid = \$0

*A re-invoicing center takes title to the goods but does not physically receive them. The primary objective of a re-invoicing center is to shift profits to divisions in low-tax countries.

U.S.-based multinationals are subject to Internal Revenue Code Section 482 on the pricing of intercompany transactions. This section gives the IRS the authority to reallocate income and deductions among divisions if it believes that such reallocation will reduce potential tax evasion. Basically, Section 482 requires that sales be made at “arm’s length.” That is, the transfer price set should match the price that would be set if the transfer were being made by unrelated parties, adjusted for differences that have a measurable effect on the price. Differences include landing costs and marketing costs. Landing costs (e.g., freight, insurance, customs duties, and special taxes) can increase the allowable transfer price. Marketing costs are usually avoided for internal transfers and reduce the transfer price. The IRS allows three pricing methods that approximate arm’s-length pricing. In order of preference, these are the comparable uncontrolled price method, the resale price method, and the cost-plus method. The **comparable uncontrolled price method** is essentially market price. The **resale price method** is equal to the sales price received by the reseller less an appropriate markup. That is, the subsidiary purchasing a good for resale sets a transfer price equal to the resale price less a gross profit percentage. The **cost-plus method** is simply the cost-based transfer price.

Let’s use ABC, Inc., as an example. Division B (in the United States) purchases a component from Division C (in Canada). The component can be purchased externally for \$38 each. The freight and insurance on the item amount to \$5; however, commissions of \$3.80 need not be paid. In this case, the appropriate transfer pricing method is the comparable uncontrolled price method and is found as follows:

Market price	\$38.00
Plus: Freight and insurance	5.00
Less: Commissions	<u>(3.80)</u>
Transfer price	<u>\$39.20</u>

Suppose instead, that there is no outside market for the component that Division C transfers to Division B. Then, the comparable uncontrolled price method cannot be used. Let’s try the resale price method. If Division B sells the component for \$42 and normally receives a 40 percent markup on cost of goods sold, then the transfer price would be \$30, computed as follows:

$$\begin{aligned} \text{Resale price} &= \text{Transfer price} + 0.40 \text{ Transfer price} \\ \$42 &= 1.40 \times \text{Transfer price} \\ \text{Transfer price} &= \$42/1.40 \\ &= \$30 \end{aligned}$$

Finally, let’s assume that there is no external market for the component transferred from Division C to Division B, and that the component is used in the manufacture of another product (i.e., it is not resold). Then, the cost-plus method is used, and we need to know Division C’s manufacturing cost. Let’s assume it is \$20. Now, Division B can add the \$5 cost of freight and insurance to the \$20 manufacturing cost to arrive at a cost-based transfer price of \$25.

The determination of an arm’s-length price is a difficult one. Many times, the transfer pricing situation facing a company does not “fit” any of the three preferred methods just outlined. Then, the IRS will permit a fourth method—a transfer price negotiated between the company and the IRS. The IRS, taxpayers, and the Tax Court have struggled with negotiated transfer prices for years. However, this type of negotiation occurs after the fact—after income tax returns have been submitted and the company is being audited. Recently, the IRS has authorized the issuance of **advance pricing agreements (APAs)** to assist tax-paying firms to determine whether a proposed transfer price is acceptable to the IRS in advance of income tax filing. “An APA is an agreement between the IRS and a taxpayer on the pricing method to be applied in an international transaction. It can cover transfers of intangibles (such as royalties on licenses), sales of prop-

erty, provision of services, and other items. An APA is binding on both the IRS and the taxpayer for the years specified in the APA and is not made public.”²² Since the APA procedure is so new, neither the IRS nor the firms are sure of the informational requirements. Currently, the IRS may limit its advance rulings on transactions between U.S.-based companies and divisions in treaty countries, such as Australia, Canada, Japan, and the United Kingdom. For example, **Apple Computer** obtained an advance pricing agreement from the IRS on transfers of Apple products to its Australian subsidiary.²³

Transfer pricing abuses are illegal—if they can be proved to be abuses. Many examples exist of both foreign and U.S. firms charging unusual transfer prices. The IRS successfully showed that **Toyota** had been overcharging its U.S. subsidiary for cars, trucks, and parts sold in the United States. The effect was to lower Toyota’s reported income substantially in the United States and increase income reported in Japan. The settlement reportedly approached \$1 billion.²⁴

The IRS also regulates the transfer pricing of foreign companies with U.S. subsidiaries. A U.S. company that is at least 25 percent foreign owned must keep extensive documentation of arm’s-length transfer pricing.

Of course, MNCs are also subject to taxation by other countries as well as the United States. Since income taxes are virtually universal, consideration of income tax effects pervades management decision making. Canada, Japan, the European Union, and South Korea have all issued transfer pricing regulations within the past 12 years. This increased emphasis on transfer price justification may account for the increased use of market prices as the transfer price by MNCs. A survey of transfer pricing methods used by *Fortune 500* companies in 1977 and 1990 showed that MNCs reduced their reliance on cost-based transfer prices in favor of market-based transfer prices over the 13-year period.²⁵ Additionally, the most important environmental variable considered by MNCs in setting a transfer pricing policy is overall profit to the company—with overall profit including the income tax impact of intracompany transfers.

The Secretaria de Hacienda y Credito Publico (Hacienda), the income tax authority of Mexico, now requires maquiladoras to comply with both Mexican and U.S. transfer pricing rules. Because the United States sees maquiladoras as service providers, an appropriate transfer pricing approach is a markup on operating expenses. The amount of markup depends on the particular circumstances of each maquiladora. Hacienda has an additional enforcement tool, the 1.8 percent Mexican asset tax. Maquiladoras, out of compliance with transfer pricing rules, must pay the asset tax on all noninventory assets in Mexico. The tax implications for U.S. companies operating in Mexico include not only income taxes, but also the customs valuation of goods imported into Mexico and merchandise assembled by the maquiladora and returned to the United States, as well as the NAFTA Certificat of Origin computations. This is a case where the APA may be especially valuable.²⁶

Managers may legally avoid income taxes; they may not evade them. The distinction is important. Unfortunately, the difference between avoidance and evasion is less a line than a blurry gray area. While the situation depicted in Exhibit 10-6 is clearly abusive, other tax-motivated actions are not. For example, an MNC may decide to establish a needed research and development center within an existing subsidiary in a high-tax country, since the costs are deductible. MNCs may have income tax-planning information systems that attempt to accomplish global income tax minimization. This is not an easy task.

22. “New Intercompany Pricing Rulings Create and Eliminate Tax Uncertainty,” *Deloitte & Touche Review* (March 25, 1991): 6.

23. Roger Y. W. Tang, “Transfer Pricing in the 1990s,” *Management Accounting* (February 1992): 22–26.

24. “The Corporate Shell Game,” *Newsweek* (April 15, 1991): 48–49.

25. Tang, op. cit.

26. “Maquiladoras: Transfer Pricing and Customs Planning,” *Deloitte & Touche Review* (February 6, 1995): 5–6;

and “Mexico Sets Tight Deadline on Maquiladora Transfer Pricing,” *Deloitte & Touche Review* (April 17, 1995): 5–6.

SUMMARY

Responsibility accounting is closely allied to the structure and decision-making authority of the firm. In order to increase overall efficiency, many companies choose to decentralize. The essence of decentralization is decision-making freedom. In a decentralized organization, lower-level managers make and implement decisions, whereas in a centralized organization, lower-level managers are responsible only for implementing decisions.

Reasons for decentralization are numerous. Companies decentralize because local managers can make better decisions using local information. Local managers can also provide a more timely response to changing conditions. Additionally, decentralization for large, diversified companies is necessary because of cognitive limitations—it is impossible for any one central manager to be fully knowledgeable concerning all products and markets. Other reasons include training and motivating local managers and freeing top management from day-to-day operating conditions so that they can spend time on longer-range activities, such as strategic planning.

Three measures of divisional performance are return on investment (ROI), residual income, and economic value added (EVA). All three relate income to the operating assets used to achieve the income.

Decentralized firms may encourage goal congruence by constructing management compensation programs that reward managers for taking actions which benefit the firm. Possible reward systems include cash compensation, stock options, and noncash benefits.

When one division of a company produces a product that can be used in production by another division, transfer pricing exists. The transfer pricing problem involves finding a mutually satisfactory transfer price that is compatible with the company's goals of accurate performance evaluation, divisional autonomy, and goal congruence. Three methods are commonly used for setting transfer prices: market-based, cost-based, and negotiated. In general, the market price is best, followed by negotiated, and then cost-based transfer prices.

The accountant provides financial and business expertise. The job of the accountant in the international firm is made more challenging by the ambiguous and ever-changing nature of global business. He or she must stay up to date in a variety of business areas ranging from information systems to marketing, to management, to politics, and to economics. In addition, the accountant must be familiar with the financial accounting rules of the countries in which his or her firm operates.

Companies involved in international business may structure their activities in three major ways. They may engage in import/export activities; they may purchase wholly owned subsidiaries; or they may participate in joint ventures. Accountants must be aware of the potential exposure of their firms to transaction risk, economic risk, and translation risk. They may hedge to limit exposure to these risks.

MNCs choose to decentralize for much the same reasons domestic companies choose to decentralize. Reasons for decentralization are numerous. Companies decentralize because local managers can make better decisions using local information. Local managers can also provide a more timely response to changing conditions. Additionally, decentralization for large, diversified companies is necessary because of cognitive limitations—it is impossible for any one central manager to be fully knowledgeable of all products and markets. Other reasons include training and motivating local managers and freeing up top management from day-to-day operating conditions so that they can spend time on more long-range activities, such as strategic planning.

Environmental factors are those social, economic, political, legal, and cultural factors that differ from country to country and that managers cannot change. These fac-

tors, however, do affect profits and ROI. Therefore, evaluation of the divisional manager should be separated from evaluation of the subsidiary.

When one division of a company produces a product that can be used in production by another division, transfer pricing exists. The transfer price is revenue to the selling division and cost to the buying division. As is the case with domestic companies, MNCs may use transfer prices in performance evaluation. MNCs with subsidiaries in both high-tax and low-tax countries may use transfer pricing to shift costs to the high-tax countries (where their deductibility will lower income tax payments) and to shift revenues to low-tax countries.

MNCs face ethical issues different from those of domestic companies. Other countries have business customs and laws that differ from those of the home country. The firm must determine whether a particular custom is merely a different way of doing business or a violation of its own code of ethics.

REVIEW PROBLEMS AND SOLUTIONS

1 TRANSFER PRICING

The Components Division produces a part that is used by the Goods Division. The cost of manufacturing the part is as follows:

Direct materials	\$10
Direct labor	2
Variable overhead	3
Fixed overhead*	<u>5</u>
Total cost	<u>\$20</u>

*Based on a practical volume of 200,000 parts.

Other costs incurred by the Components Division are as follows:

Fixed selling and administrative	\$500,000
Variable selling	\$1 per unit

The part usually sells for between \$28 and \$30 in the external market. Currently, the Components Division is selling it to external customers for \$29. The division is capable of producing 200,000 units of the part per year; however, because of a weak economy, only 150,000 parts are expected to be sold during the coming year. The variable selling expenses are avoidable if the part is sold internally.

The Goods Division has been buying the same part from an external supplier for \$28. It expects to use 50,000 units of the part during the coming year. The manager of the Goods Division has offered to buy 50,000 units from the Components Division for \$18 per unit.

Required:

1. Determine the minimum transfer price that the Components Division would accept.
2. Determine the maximum transfer price that the manager of the Goods Division would pay.
3. Should an internal transfer take place? Why or why not? If you were the manager of the Components Division, would you sell the 50,000 components for \$18 each? Explain.

4. Suppose that the average operating assets of the Components Division total \$10 million. Compute the ROI for the coming year, assuming that the 50,000 units are transferred to the Goods Division for \$21 each.

SOLUTION

- The minimum transfer price is \$15. The Components Division has idle capacity and so must cover only its incremental costs, which are the variable manufacturing costs. (Fixed costs are the same whether or not the internal transfer occurs; the variable selling expenses are avoidable.)
- The maximum transfer price is \$28. The Goods Division would not pay more for the part than the price it would have to pay an external supplier.
- Yes, an internal transfer ought to occur; the opportunity cost of the selling division is less than the opportunity cost of the buying division. The Components Division would earn an additional \$150,000 profit ($\$3 \times 50,000$). The total joint benefit, however, is \$650,000 ($\$13 \times 50,000$). The manager of the Components Division should attempt to negotiate a more favorable outcome for that division.

4. Income statement:

Sales [$(\$29 \times 150,000) + (\$21 \times 50,000)$]	\$ 5,400,000
Less: Variable cost of goods sold ($\$15 \times 200,000$)	(3,000,000)
Variable selling expenses ($\$1 \times 150,000$)	<u>(150,000)</u>
Contribution margin	\$ 2,250,000
Less: Fixed overhead ($\$5 \times 200,000$)	(1,000,000)
Fixed selling and administrative	<u>(500,000)</u>
Operating income	<u>\$ 750,000</u>

$$\begin{aligned} \text{ROI} &= \text{Operating income} / \text{Average operating assets} \\ &= \$750,000 / \$10,000,000 \\ &= 0.075 \end{aligned}$$

2 EVA

Surfit Company, which manufactures surfboards, has been in business for six years. Sam Foster, owner of Surfit, is pleased with the firm's profit picture and is considering taking the company public (i.e., selling stock in Surfit on the NASDAQ exchange). Data for the past year are as follows:

After-tax operating income	\$ 250,000
Total capital employed	1,060,000
Long-term debt (interest at 9%)	100,000
Owner's equity	900,000

Surfit Company pays taxes at the rate of 35 percent.

Required:

- Calculate the weighted average cost of capital, assuming that owner's equity is valued at the average cost of common stock of 12 percent. Calculate the total cost of capital for Surfit Company last year.
- Calculate EVA for Surfit Company.

SOLUTION

	<i>Amount</i>	<i>Percent</i>	\times	<i>After-Tax Cost</i>	$=$	<i>Weighted Cost</i>
Long-term debt	\$ 100,000	0.10		0.0585		0.0059
Owner's equity	<u>900,000</u>	0.90		0.1200		<u>0.1080</u>
Total	<u>\$1,000,000</u>					<u>0.1139</u>

The weighted average cost of capital is 11.39 percent.

The cost of capital last year = $0.1139 \times \$1,060,000 = \$120,734$.

2. $EVA = \$250,000 - \$120,734 = \$129,266$

3 CURRENCY EXCHANGE, TRANSFER PRICING

Golo, Inc., has two manufacturing plants, one in Singapore and the other in San Antonio. The San Antonio plant is located in a foreign trade zone. On March 1, Golo received a large order from a Japanese customer. The order is for ¥10,000,000 to be paid on receipt of the goods, scheduled for June 1. The goods are to be delivered by Golo to the Japanese company's Los Angeles division. Golo assigned this order to the San Antonio plant; however, one necessary component for the order is to be manufactured by the Singapore plant. The component will be transferred to San Antonio on April 1 using a cost-plus transfer price of \$10,000 (U.S. dollars). Typically, two percent of the Singapore parts are defective. U.S. tariff on the component parts is 30 percent. Carrying cost for Golo is 15 percent per year.

The spot rates for \$1 U.S. are as follows:

	<i>Exchange Rates of \$1 for</i>	
	<i>Yen</i>	<i>Singapore Dollars</i>
March 1	107.00	1.60
April 1	107.50	1.55
June 1	107.60	1.50

Required:

1. What is the total cost of the imported parts from Singapore to the San Antonio plant in U.S. dollars?
2. If the San Antonio plant was not located in a foreign trade zone, what would be the total cost of the imported parts from Singapore?
3. How much does Golo expect to receive from the Japanese customer in U.S. dollars using the spot rate at the time of the order?
4. How much does Golo expect to receive from the Japanese customer in U.S. dollars using the spot rate at the time of payment?
5. Suppose that on March 1, the forward rate for June 1 delivery of \$1 for yen is 107.20. If Golo's policy is to hedge foreign currency transactions, what is the amount Golo expects to receive on June 1 in U.S. dollars?

SOLUTION

1. Transfer price	\$10,000
Tariff ($\$9,800 \times 0.3$)	<u>2,940</u>
Total cost	<u>\$12,940</u>

The transfer price was set in U.S. dollars, so there is no currency exchange involved for the San Antonio plant. The San Antonio plant is in a foreign trade

zone, so the 30 percent tariff is paid only on the good parts costing \$9,800 ($\$10,000 \times 0.98$). (*Note:* If the delivery of goods was to Japan instead of Los Angeles, no tariff would be due since the imported parts would never enter the United States.)

2. If the San Antonio plant were located outside the foreign trade zone, the cost of the imported parts would be as follows:

Transfer price	\$10,000
Tariff ($\$10,000 \times 0.3$)	3,000
Carrying cost of tariff*	<u>75</u>
Total cost	<u><u>\$13,075</u></u>

* $\$3,000 \times 2/12 \times 0.15 = \75 .

3. On March 1, Golo expects to receive \$93,458 ($\text{¥}10,000,000/107$).
4. On June 1, Golo expects to receive \$92,937 ($\text{¥}10,000,000/107.60$).
5. If Golo hedges, the forward rate is used, and the amount to be received on June 1 is \$93,284 ($\text{¥}10,000,000/107.20$).

KEY TERMS

Advance pricing agreements (APAs) 460	Operating assets 436
Centralized decision making 432	Operating income 436
Comparable uncontrolled price method 460	Opportunity cost approach 451
Cost center 431	Perquisites 445
Cost-plus method 460	Profit center 431
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QUESTIONS FOR WRITING AND DISCUSSION

1. What is decentralization? Discuss the differences between centralized and decentralized decision making.
2. Explain why firms choose to decentralize.

3. Explain how access to local information can improve decision making.
4. What are margin and turnover? Explain how these concepts can improve the evaluation of an investment center.
5. What are the three benefits of ROI? Explain how each can lead to improved profitability.
6. What are two disadvantages of ROI? Explain how each can lead to decreased profitability.
7. What is residual income? Explain how residual income overcomes one of ROI's disadvantages.
8. What is EVA? How does it differ from ROI and residual income?
9. What is a stock option? How can it encourage goal congruence?
10. What is a transfer price?
11. What is the transfer pricing problem?
12. If the minimum transfer price of the selling division is less than the maximum transfer price of the buying division, the intermediate product should be transferred internally. Do you agree or disagree? Why?
13. If an outside, perfectly competitive market exists for the intermediate product, what should the transfer price be? Why?
14. Identify three cost-based transfer prices. What are the disadvantages of cost-based transfer prices? When might it be appropriate to use cost-based transfer prices?
15. What is the purpose of Internal Revenue Code Section 482? What four methods of transfer pricing are acceptable under this section?

EXERCISES

10-1 ROI, MARGIN, TURNOVER

LO3 Gilliam Corporation presented two years of data for its Sporting Goods Division and its Camping Division.



Sporting Goods Division:

	<i>Year 1</i>	<i>Year 2</i>
Sales	\$70,000,000	\$75,000,000
Operating income	2,800,000	3,000,000
Average operating assets	20,000,000	20,000,000

Camping Division:

	<i>Year 1</i>	<i>Year 2</i>
Sales	\$24,000,000	\$25,000,000
Operating income	1,200,000	1,000,000
Average operating assets	10,000,000	10,000,000

Required:

1. Compute the ROI and the margin and turnover ratios for each year for the Sporting Goods Division.
2. Compute the ROI and the margin and turnover ratios for each year for the Camping Division.
3. Explain the change in ROI from Year 1 to Year 2 for each division.

10-2 ROI AND INVESTMENT DECISIONS

LO3



Refer to **Exercise 10-1** for data. At the end of Year 2, the manager of the Camping Division is concerned about the division's performance. As a result, he is considering the opportunity to invest in two independent projects. The first is called the "Ever-Tent"; it is a small 2-person tent capable of withstanding the high winds at the top of Mt. Everest. While the market for actual Everest climbers is small, the manager expects that well-to-do weekend campers will buy it due to the cachet of the name and its light weight. The second is a "KiddieKamp" kit which includes a child-sized sleeping bag and a colorful pup tent that can be set up easily in one's back yard. Without the investments, the division expects that Year 2 data will remain unchanged. The expected operating incomes and the outlay required for each investment are as follows:

	<i>Ever-Tent</i>	<i>KiddieKamp</i>
Operating income	\$ 55,000	\$ 38,000
Outlay	500,000	400,000

Gilliam's corporate headquarters has made available up to \$1 million of capital for this division. Any funds not invested by the division will be retained by headquarters and invested to earn the company's minimum required rate of return, 9 percent.

Required:

1. Compute the ROI for each investment.
2. Compute the divisional ROI for each of the following four alternatives:
 - a. The Ever-Tent is added.
 - b. The KiddieKamp is added.
 - c. Both investments are added.
 - d. Neither investment is made; the status quo is maintained.
 Assuming that divisional managers are evaluated and rewarded on the basis of ROI performance, which alternative do you think the divisional manager will choose?

10-3 RESIDUAL INCOME AND INVESTMENT DECISIONS

LO3

Refer to the data given in **Exercise 10-2**.



Required:

1. Compute the residual income for each of the opportunities.
2. Compute the divisional residual income for each of the following four alternatives:
 - a. The Ever-Tent is added.
 - b. The KiddieKamp is added.
 - c. Both investments are added.
 - d. Neither investment is made; the status quo is maintained.
 Assuming that divisional managers are evaluated and rewarded on the basis of residual income, which alternative do you think the divisional manager will choose?
3. Based on your answer in Requirement 2, compute the profit or loss from the divisional manager's investment decision. Was the correct decision made?

10-4 CALCULATING EVA

LO3

Brewster Company manufactures elderberry wine. Last year, Brewster earned operating income of \$210,000 after income taxes. Capital employed equaled \$2 million.



Brewster is 50 percent equity and 50 percent 10-year bonds paying 6 percent interest. Brewster's marginal tax rate is 35 percent. The company is considered a fairly risky investment and probably commands a 12-point premium above the 6 percent rate on long-term Treasury bonds.

Mortimer Brewster's aunts, Abby and Martha, have just retired, and Mortimer is the new CEO of Brewster Company. He would like to improve EVA for the company. Compute EVA under each of the following independent scenarios that Mortimer is considering. (Use a spreadsheet to perform your calculations.)

Required:

1. No changes are made; calculate EVA using the original data.
2. Sugar will be used to replace another natural ingredient (arsenic) in the elderberry wine. This should not affect costs but will begin to affect the market assessment of Brewster Company, bringing the premium above long-term Treasury bills to 9 percent the first year and 6 percent the second year. Calculate revised EVA for both years.
3. Brewster is considering expanding but needs additional capital. The company could borrow money, but it is considering selling more common stock, which would increase equity to 80 percent of total financing. Total capital employed would be \$3,000,000. The new after-tax operating income would be \$450,000. Using the original data, calculate EVA. Then, recalculate EVA assuming the materials substitution described in Requirement 2. New after-tax income will be \$450,000, and in Year 1, the premium will be 9 percent above the long-term Treasury rate. In Year 2, it will be 6 percent above the long-term Treasury rate. (*Hint:* You will calculate three EVAs for this requirement.)

10-5 OPERATING INCOME FOR SEGMENTS

LO3



Whirlmore, Inc., manufactures and sells washers and dryers through three divisions: Home-Supreme, Apartment, and International. Each division is evaluated as a profit center. Data for each division for last year are as follows (numbers in thousands).

	<i>Home-Supreme</i>	<i>Apartment</i>	<i>International</i>
Sales	\$2,700	\$2,400	\$1,300
Cost of goods sold	1,770	1,870	1,040
Selling and administrative expenses	640	180	100

The income tax rate for Whirlmore, Inc., is 30 percent. Whirlmore, Inc., has two sources of financing: bonds paying 8 percent interest, which account for 20 percent of total investment, and equity accounting for the remaining 80 percent of total investment. Whirlmore, Inc., has been in business for over 15 years and is considered a relatively stable stock, despite its link to the cyclical construction industry. As a result, Whirlmore stock has an opportunity cost of 5 percent over the 6 percent long-term government bond rate. Whirlmore's total capital employed is \$3 million (\$2,100,000 for the Home-Supreme Division, \$500,000 for the Apartment Division, and the remainder for the International Division).

Required:

1. Prepare a segmented income statement for Whirlmore, Inc., for last year.
2. Calculate Whirlmore's weighted average cost of capital.
3. Calculate EVA for each division and for Whirlmore, Inc.
4. Comment on the performance of each of the divisions.

10-6 TRANSFER PRICING, IDLE CAPACITY

LO5, LO6 VSOP, Inc., has a number of divisions that produce liquors, malt beverages, and glassware. The Glassware Division manufactures a variety of bottles which can be sold externally (to soft-drink and juice bottlers) or internally to VSOP's Malt Beverage Division. Sales and cost data on a case of 24 basic 12-ounce bottles are as follows:

Unit selling price	\$2.80
Unit variable cost	\$1.15
Unit product fixed cost*	\$0.70
Practical capacity in cases	500,000

*\$350,000/500,000.

During the coming year, the Glassware Division expects to sell 390,000 cases of this bottle. The Malt Beverage Division currently plans to buy 100,000 cases on the outside market for \$2.80 each. Jill Von Holstein, manager of the Glassware Division, approached Eric Alman, manager of the Malt Beverage Division, and offered to sell the 100,000 cases for \$2.75 each. Jill explained to Eric that she can avoid selling costs of \$0.10 per case by selling internally and that she would split the savings by offering a \$0.05 discount on the usual price.

Required:

1. What is the minimum transfer price that the Glassware Division would be willing to accept? What is the maximum transfer price that the Malt Beverage Division would be willing to pay? Should an internal transfer take place? What would be the benefit (or loss) to the firm as a whole if the internal transfer takes place?
2. Suppose Eric knows that the Glassware Division has idle capacity. Do you think that he would agree to the transfer price of \$2.75? Suppose he counters with an offer to pay \$2.40. If you were Jill, would you be interested in this price? Explain with supporting computations.
3. Suppose that VSOP's policy is that all internal transfers take place at full manufacturing cost. What would the transfer price be? Would the transfer take place?

10-7 TRANSFER PRICING AND SECTION 482

LO6 Auto-Lite Manufacturing, Inc., has a division in the United States that produces a variety of headlamps and interior light packages for automobiles. One type of headlamp for compact cars is transferred to a Manufacturing Division in Italy. The headlamps can be (and are) sold externally in the United States for \$25 each. It costs \$0.75 per headlamp for shipping and \$2.00 per headlamp for import duties. When the headlamps are sold externally, Auto-Lite Manufacturing spends \$2.50 per headlamp for commissions and an average of \$0.30 per headlamp for advertising.

Required:

1. Which Section 482 method should be used to calculate the allowable transfer price?
2. Using the appropriate Section 482 method, calculate the transfer price.

10-8 TRANSFER PRICING AND SECTION 482

LO6 Perrex, Inc., has a division in Honduras that makes a powder used to coat wire, and another division in the United States that manufactures wire. The Powder Division incurs manufacturing costs of \$0.83 for one pound of powder.

The Wire Division currently buys its powder coating from an outside supplier for \$0.95 per pound. If the Wire Division purchases the powder from the Honduran division, the shipping costs will be \$0.05 per pound, but sales commissions of \$0.06 per pound will be avoided with an internal transfer.

Required:

1. Which Section 482 method should be used to calculate the allowable transfer price? Calculate the appropriate transfer price per pound.
2. Assume that the Wire Division cannot buy this type of powder externally since it has an unusual formula that prevents electrical conductance. Which Section 482 method should be used to calculate the allowable transfer price? Calculate the appropriate transfer price per pound.

10-9 TRANSFER PRICING AND SECTION 482

LO6 Zetter, Inc., has a division in Canada that makes paint. Zetter has another U.S. division, the Retail Division, that operates a chain of home improvement stores. The Retail Division would like to buy the unique, long-lasting paint from the Canadian division, since this type of paint is not currently available. The Paint Division incurs manufacturing costs of \$4.60 for one gallon of paint.

If the Retail Division purchases the paint from the Canadian division, the shipping costs will be \$0.45 per gallon, but sales commissions of \$1.30 per gallon will be avoided with an internal transfer. The Retail Division plans to sell the paint for \$18 per gallon. Normally, the Retail Division earns a gross margin of 50 percent above cost of goods sold.

Required:

1. Which Section 482 method should be used to calculate the allowable transfer price?
2. Calculate the appropriate transfer price per gallon.

10-10 ROI AND RESIDUAL INCOME

LO3 A multinational corporation has a number of divisions, two of which are the Pacific-Rim Division and the European Division. Data on the two divisions are as follows:

	<i>Pacific-Rim</i>	<i>European</i>
Average operating assets	900,000	9,000,000
Operating income	126,000	1,350,000
Minimum required return	12%	12%

Required:

1. Compute residual income for each division. By comparing residual income, is it possible to make a useful comparison of divisional performance? Explain.
2. Compute the residual rate of return by dividing the residual income by the average operating assets. Is it possible now to say that one division outperformed the other? Explain.
3. Compute the return on investment for each division. Can we make meaningful comparisons of divisional performance? Explain.
4. Add the residual rate of return computed in Requirement 2 to the required rate of return. Compare these rates with the ROI computed in Requirement 3. Will this relationship always be the same?

10-11 MARGIN, TURNOVER, ROI

LO3 Consider the data for each of the following four independent companies:

	A	B	C	D
Revenue	\$10,000	\$48,000	\$96,000	?
Expenses	\$8,000	?	\$90,000	?
Operating income	\$2,000	\$12,000	?	?
Assets	\$40,000	?	\$48,000	\$9,600
Margin	?	25%	?	6.25%
Turnover	?	0.50	?	2.00
ROI	?	?	?	?

Required:

1. Calculate the missing values in the above table.
2. Assume that the cost of capital is 9 percent for each of the four firms. Compute the residual income for each of the four firms.

10-12 ROI, RESIDUAL INCOME

LO3 The following selected data pertain to the Silverthorne Division for last year:

Sales	\$1,000,000
Variable costs	\$600,000
Traceable fixed costs	\$100,000
Average invested capital	\$1,500,000
Imputed interest rate	15%

Required:

1. How much is the residual income?
2. How much is the return on investment?

10-13 STOCK OPTIONS

LO4 Roselle, Inc., has acquired two new companies, one in consumer products and the other in financial services. Roselle's top management believes that the executives of the two newly acquired companies can be most quickly assimilated into the parent company if they own shares of Roselle stock. Accordingly, on April 1, Roselle approved a stock option plan whereby each of the top four executives of the new companies could purchase up to 20,000 shares of Roselle stock at \$15 per share. The option will expire in five years.

Required:

1. If Roselle stock rises to \$34 per share by December 1, what is the value of the option to each executive?
2. Discuss some of the advantages and disadvantages of the Roselle stock option plan.

PROBLEMS

10-14 TRANSFER PRICING

LO5, LO6 Truman Industries is a vertically integrated firm with several divisions that operate as decentralized profit centers. Truman's Systems Division manufactures scientific in-

CMA

struments and uses the products of two of Truman's other divisions. The Board Division manufactures printed circuit boards (PCBs). One PCB model is made exclusively for the Systems Division using proprietary designs, while less complex models are sold in outside markets. The products of the Transistor Division are sold in a well-developed competitive market; however, one transistor model is also used by the Systems Division. The costs per unit of the products used by the Systems Division are as follows:

	<i>PCB</i>	<i>Transistor</i>
Direct materials	\$2.00	\$0.40
Direct labor	4.00	1.00
Variable overhead	2.35	0.50
Fixed overhead	<u>0.80</u>	<u>0.75</u>
Total cost	<u>\$9.15</u>	<u>\$2.65</u>

The Board Division sells its commercial product at full cost plus a 34 percent markup and believes the proprietary board made for the Systems Division would sell for \$12.25 per unit on the open market. The market price of the transistor used by the Systems Division is \$3.40 per unit.

Required:

1. What is the minimum transfer price for the Transistor Division? What is the maximum transfer price of the transistor for the Systems Division?
2. Assume the Systems Division is able to purchase a large quantity of transistors from an outside source at \$2.90 per unit. Further assume that the Transistor Division has excess capacity. Can the Transistor Division meet this price?
3. The Board and Systems divisions have negotiated a transfer price of \$11 per printed circuit board. Discuss the impact this transfer price will have on each division. (*CMA adapted*)

10-15 ROI, RESIDUAL INCOME

LO1, LO3,
LO4

CMA

Raddington Industries produces tool and die machinery for manufacturers. The company expanded vertically in 2007 by acquiring one of its suppliers of alloy steel plates, Reigis Steel Company. To manage the two separate businesses, the operations of Reigis are reported separately as an investment center.

Raddington monitors its divisions on the basis of both unit contribution and return on average investment (ROI), with investment defined as average operating assets employed. Management bonuses are determined on ROI. All investments in operating assets are expected to earn a minimum return of 11 percent before income taxes.

Reigis's cost of goods sold is considered to be entirely variable, while the division's administrative expenses are not dependent on volume. Selling expenses are a mixed cost with 40 percent attributed to sales volume. Reigis contemplated a capital acquisition with an estimated ROI of 11.5 percent; however, division management decided against the investment because it believed that the investment would decrease Reigis's overall ROI.

The 2008 operating statement for Reigis follows. The division's operating assets employed were \$15,750,000 at November 30, 2008, a 5 percent increase over the 2007 year-end balance.

Reigis Steel Company
Operating Statement
For the Year Ended November 30, 2008
 (\$000 omitted)

Sales revenue		\$25,000
Less expenses:		
Cost of goods sold	\$16,500	
Administrative expenses	3,955	
Selling expenses	<u>2,700</u>	<u>23,155</u>
Operating income before income taxes		<u><u>\$ 1,845</u></u>

Required:

1. Calculate the unit contribution for Reigis Steel Company if 1,484,000 units were produced and sold during the year ended November 30, 2008.
2. Calculate the following performance measures for 2008 for Reigis Steel Company:
 - a. Pretax return on average investment in operating assets employed (ROI).
 - b. Residual income calculated on the basis of average operating assets employed.
3. Explain why the management of Reigis Steel Company would have been more likely to accept the contemplated capital acquisition if residual income rather than ROI were used as a performance measure.
4. Reigis Steel Company is a separate investment center within Raddington Industries. Identify several items that Reigis should control if it is to be evaluated fairly by either the ROI or residual income performance measures. (*CMA adapted*)

10-16 BONUSES AND STOCK OPTIONS

LO4 Casey Bertholt graduated from State U with a major in accounting five years ago. She obtained a position with a well-known professional services firm upon graduation and has become one of their outstanding performers. In the course of her work, she has developed numerous contacts with business firms in the area. One of them, Litton, Inc., recently offered her a position as head of their Financial Services Division. The offer includes a salary of \$40,000 per year, annual bonuses of 1 percent of divisional operating income, and a stock option for 10,000 shares of Litton stock to be exercised at \$12 per share in two years. Last year, the Financial Services Division earned \$1,110,000. This year, it is budgeted to earn \$1,600,000. Litton stock has increased in value at the rate of 15 percent per year over the past five years. Casey currently earns \$55,000.

Required:

Advise Casey on the relative merits of the Litton offer.

10-17 SETTING TRANSFER PRICES—MARKET PRICE VERSUS FULL COST

LO5, LO6 Macalester, Inc., manufactures heating and air conditioning units in its six divisions. One division, the Components Division, produces electronic components that can be used by the other five. All the components produced by this division can be sold to outside customers; however, from the beginning, about 70 percent of its output has been used internally. The current policy requires that all internal transfers of components be transferred at full cost.

Recently, Loren Ferguson, the new chief executive officer of Macalester, decided to investigate the transfer pricing policy. He was concerned that the current method of

pricing internal transfers might force decisions by divisional managers that would be suboptimal for the firm. As part of his inquiry, he gathered some information concerning Part 4CM, used by the Small AC Division in its production of a window air conditioner, Model 7AC.

The Small AC Division sells 100,000 units of Model 7AC each year at a unit price of \$55. Given current market conditions, this is the maximum price that the division can charge for Model 7AC. The cost of manufacturing the air conditioner is computed as follows:

Part 4CM	\$ 7
Direct materials	20
Direct labor	16
Variable overhead	3
Fixed overhead	<u>6</u>
Total unit cost	<u>\$52</u>

The window unit is produced efficiently, and no further reduction in manufacturing costs is possible.

The manager of the Components Division indicated that she could sell 10,000 units (the division's capacity for this part) of Part 4CM to outside buyers at \$12 per unit. The Small AC Division could also buy the part for \$12 from external suppliers. She supplied the following detail on the manufacturing cost of the component:

Direct materials	\$3.00
Direct labor	0.50
Variable overhead	1.50
Fixed overhead	<u>2.00</u>
Total unit cost	<u>\$7.00</u>

Required:

1. Compute the firmwide contribution margin associated with Part 4CM and Model 7AC. Also, compute the contribution margin earned by each division.
2. Suppose that Loren Ferguson abolishes the current transfer pricing policy and gives divisions autonomy in setting transfer prices. Can you predict what transfer price the manager of the Components Division will set? What should be the minimum transfer price for this part? The maximum transfer price?
3. Given the new transfer pricing policy, predict how this will affect the production decision for Model 7AC of the manager of the Small AC Division. How many units of Part 4CM will the manager of the Small AC Division purchase, either internally or externally?
4. Given the new transfer price set by the Components Division and your answer to Requirement 3, how many units of 4CM will be sold externally?
5. Given your answers to Requirements 3 and 4, compute the firmwide contribution margin. What has happened? Was Loren's decision to grant additional decentralization good or bad?

10-18 TRANSFER PRICING WITH IDLE CAPACITY

LO3, LO5, LO6

Chapin, Inc., owns a number of food service companies. Two divisions are the Coffee Division and the Donut Shop Division. The Coffee Division purchases and roasts coffee beans for sale to supermarkets and specialty shops. The Donut Shop Division operates a chain of donut shops where the donuts are made on the premises. Coffee is an important item for sale along with the donuts and, to date, has been purchased from

the Coffee Division. Company policy permits each manager the freedom to decide whether or not to buy or sell internally. Each divisional manager is evaluated on the basis of return on investment and residual income.

Recently, an outside supplier has offered to sell coffee beans, roasted and ground, to the Donut Shop Division for \$4.00 per pound. Since the current price paid to the Coffee Division is \$4.50 per pound, Brandi Alzer, the manager of the Donut Shop Division, was interested in the offer. However, before making the decision to switch to the outside supplier, she decided to approach Raymond Jasson, manager of the Coffee Division, to see if he wanted to offer an even better price. If not, then Brandi would buy from the outside supplier.

Upon receiving the information from Brandi about the outside offer, Raymond gathered the following information about the coffee:

Direct materials	\$0.90
Direct labor	0.40
Variable overhead	0.70
Fixed overhead*	<u>1.50</u>
Total unit cost	<u>\$3.50</u>

*Fixed overhead is based on \$1,500,000/1,000,000 pounds.

Selling price per pound	\$4.50
Production capacity	1,000,000 pounds
Internal sales	100,000 pounds

Required:

1. Suppose that the Coffee Division is producing at capacity and can sell all that it produces to outside customers. How should Raymond respond to Brandi's request for a lower transfer price? What will be the effect on firmwide profits? Compute the effect of this response on each division's profits.
2. Now, assume that the Coffee Division is currently selling 950,000 pounds. If no units are sold internally, total coffee sales will drop to 850,000 pounds. Suppose that Raymond refuses to lower the transfer price from \$4.50. Compute the effect on firmwide profits and on each division's profits.
3. Refer to Requirement 2. What are the minimum and maximum transfer prices? Suppose that the transfer price is the maximum price less \$1. Compute the effect on the firm's profits and on each division's profits. Who has benefited from the outside bid?
4. Refer to Requirement 2. Suppose that the Coffee Division has operating assets of \$2,000,000. What is divisional ROI based on the current situation? Now, refer to Requirement 3. What will divisional ROI be if the transfer price of the maximum price less \$1 is implemented? How will the change in ROI affect Raymond? What information has he gained as a result of the transfer pricing negotiations?

10-19 TRANSFER PRICING: VARIOUS COMPUTATIONS

LOS, LO6 Owens Company has a decentralized organization with a divisional structure. Two of these divisions are the Appliance Division and the Manufactured Housing Division. Each divisional manager is evaluated on the basis of ROI.

The Appliance Division produces a small automatic dishwasher that the Manufactured Housing Division can use in one of its models. Appliance can produce up to 10,000 of these dishwashers per year. The variable costs of manufacturing the dishwashers are \$44. The Manufactured Housing Division inserts the dishwasher into the

model house and then sells the manufactured house to outside customers for \$23,000 each. The division's capacity is 2,000 units. The variable costs of the manufactured house (in addition to the cost of the dishwasher itself) are \$12,600.

Required:

Assume each part is independent, unless otherwise indicated.

1. Assume that all of the dishwashers produced can be sold to external customers for \$120 each. The Manufactured Housing Division wants to buy 2,000 dishwashers per year. What should the transfer price be?
2. Refer to Requirement 1. Assume \$12 of avoidable distribution costs. Identify the maximum and minimum transfer prices. Identify the actual transfer price, assuming that negotiation splits the difference.
3. Assume that the Appliance Division is operating at 75 percent capacity. The Manufactured Housing Division is currently buying 2,000 dishwashers from an outside supplier for \$90 each. Assume that any joint benefit will be split evenly between the two divisions. What is the expected transfer price? How much will the profits of the firm increase under this arrangement? How much will the profits of the Appliance Division increase, assuming that it sells the extra 2,000 dishwashers internally?

10-20 MANAGERIAL PERFORMANCE EVALUATION

LO1, LO2,
LO3

CMA

Greg Peterson has recently been appointed vice president of operations for Webster Corporation. Greg has a manufacturing background and previously served as operations manager of Webster's Tractor Division. The business segments of Webster include the manufacture of heavy equipment, food processing, and financial services.

In a recent conversation with Carol Andrews, Webster's chief financial officer, Greg suggested that segment managers be evaluated on the basis of the segment data appearing in Webster's annual financial report. This report presents revenues, earnings, identifiable assets, and depreciation for each segment for a 5-year period. Greg believes that evaluating segment managers by criteria similar to that used in evaluating the company's top management would be appropriate. Carol has expressed her reservations about using segment information from the annual financial report for this purpose and has suggested that Greg consider other ways to evaluate the performance of segment managers.

Required:

1. Explain why the segment information prepared for public reporting purposes may not be appropriate for the evaluation of segment management performance.
2. Describe the possible behavioral impact of Webster Corporation's segment managers if their performance is evaluated on the basis of the information in the annual financial report.
3. Identify and describe several types of financial information that would be more appropriate for Greg to review when evaluating the performance of segment managers. (*CMA adapted*)

10-21 MANAGEMENT COMPENSATION

LO4

Renslen, Inc., a truck manufacturing conglomerate, has recently purchased two divisions: Meyers Service Company and Wellington Products, Inc. Meyers provides maintenance service on large truck cabs for 10-wheeler trucks, and Wellington produces air brakes for the 10-wheeler trucks.

The employees at Meyers take pride in their work, as Meyers is proclaimed to offer the best maintenance service in the trucking industry. The management of Meyers,

as a group, has received additional compensation from a 10 percent bonus pool based on income before income taxes and bonus. Renslen plans to continue to compensate the Meyers management team on this basis as it is the same incentive plan used for all other Renslen divisions, except for the Wellington division.

Wellington offers a high-quality product to the trucking industry and is the premium choice even when compared to foreign competition. The management team at Wellington strives for zero defects and minimal scrap costs; current scrap levels are at 2 percent. The incentive compensation plan for Wellington management has been a 1 percent bonus based on gross margin. Renslen plans to continue to compensate the Wellington management team on this basis.

The following condensed income statements are for both divisions for the fiscal year ended May 31, 2007:

Renslen, Inc.
Divisional Income Statements
For the Year Ended May 31, 2007

	<i>Meyers Service Company</i>	<i>Wellington Products, Inc.</i>
Revenues	\$4,000,000	\$10,000,000
Cost of product	\$ 75,000	\$ 4,950,000
Salaries*	2,200,000	2,150,000
Fixed selling expenses	1,000,000	2,500,000
Interest expense	30,000	65,000
Other operating expenses	<u>278,000</u>	<u>134,000</u>
Total expenses	<u>\$3,583,000</u>	<u>\$ 9,799,000</u>
Income before income taxes and bonus	<u>\$ 417,000</u>	<u>\$ 201,000</u>

*Each division has \$1,000,000 of management salary expense that is eligible for the bonus pool.

Renslen has invited the management teams of all its divisions to an off-site management workshop in July where the bonus checks will be presented. Renslen is concerned that the different bonus plans at the two divisions may cause some heated discussion.

Required:

1. Determine the 2007 bonus pool available for the management team at:
 - a. Meyers Service Company
 - b. Wellington Products, Inc.
2. Identify at least two advantages and disadvantages to Renslen, Inc., of the bonus pool incentive plan at:
 - a. Meyers Service Company
 - b. Wellington Products, Inc.
3. Having two different types of incentive plans for two operating divisions of the same corporation can create problems.
 - a. Discuss the behavioral problems that could arise within management for Meyers Service Company and Wellington Products, Inc., by having different types of incentive plans.
 - b. Present arguments that Renslen, Inc., can give to the management teams of both Meyers and Wellington to justify having two different incentive plans.

10-22 ROI, RESIDUAL INCOME, BEHAVIORAL ISSUES

LO3 CMA

Jump Start Company (JSC), a subsidiary of Mason Industries, manufactures go-carts and other recreational vehicles. Family recreational centers that feature go-cart tracks along with miniature golf, batting cages, and arcade games have increased in popularity. As a result, JSC has been pressured by Mason management to diversify into some of these other recreational areas. Recreational Leasing, Inc. (RLI), one of the largest firms leasing arcade games to these family recreational centers, is looking for a friendly buyer. Mason's top management believes that RLI's assets could be acquired for an investment of \$3.2 million and has strongly urged Bill Grieco, division manager of JSC, to consider acquiring RLI.

Bill has reviewed RLI's financial statements with his controller, Marie Donnelly, and they believe that the acquisition may not be in the best interest of JSC.

"If we decide not to do this, the Mason people are not going to be happy," said Bill. "If we could convince them to base our bonuses on something other than return on investment, maybe this acquisition would look more attractive. How would we do if the bonuses were based on residual income using the company's 15 percent cost of capital?"

Mason has traditionally evaluated all of its divisions on the basis of return on investment, which is defined as the ratio of operating income to total assets. The desired rate of return for each division is 20 percent. The management team of any division reporting an annual increase in the return on investment is automatically eligible for a bonus. The management of divisions reporting a decline in the return on investment must provide convincing explanations for the decline to be eligible for a bonus, and this bonus is limited to 50 percent of the bonus paid to divisions reporting an increase.

The following condensed financial statements are for both JSC and RLI for the fiscal year ended May 31, 2007:

	<i>JSC</i>	<i>RLI</i>
Sales revenue	\$10,500,000	
Leasing revenue		\$ 2,800,000
Variable expenses	(7,000,000)	(1,000,000)
Fixed expenses	(1,500,000)	(1,200,000)
Operating income	<u>\$ 2,000,000</u>	<u>\$ 600,000</u>
Current assets	\$ 2,300,000	\$ 1,900,000
Long-term assets	5,700,000	1,100,000
Total assets	<u>\$ 8,000,000</u>	<u>\$ 3,000,000</u>
Current liabilities	\$ 1,400,000	\$ 850,000
Long-term liabilities	3,800,000	1,200,000
Stockholders' equity	2,800,000	950,000
Total liabilities and stockholders' equity	<u>\$ 8,000,000</u>	<u>\$ 3,000,000</u>

Required:

1. If Mason Industries continues to use return on investment as the sole measure of division performance, explain why JSC would be reluctant to acquire RLI. Be sure to support your answer with appropriate calculations.
2. If Mason Industries could be persuaded to use residual income to measure the performance of JSC, explain why JSC would be more willing to acquire RLI. Be sure to support your answer with appropriate calculations.

3. Discuss how the behavior of division managers is likely to be affected by the use of:
 - a. Return on investment as a performance measure
 - b. Residual income as a performance measure (*CMA adapted*)

10-23 TRANSFER PRICING IN THE MNC

LOS Carnover, Inc., manufactures a broad line of industrial and consumer products. One of its plants is located in Madrid, Spain, and another in Singapore. The Madrid plant is operating at 85 percent capacity. Its main product, electric motors, has experienced softness in the market, which has led to predictions of further softening of the market and predictions of a decline in production to 65 percent capacity. If that happens, workers will have to be laid off and one wing of the factory closed. The Singapore plant manufactures heavy-duty industrial mixers that use the motors manufactured by the Madrid plant as an integral component. Demand for the mixers is strong. Price and cost information for the mixers are as follows:

Price	\$2,200
Direct materials	630
Direct labor	125
Variable overhead	250
Fixed overhead	100

Fixed overhead is based on an annual budgeted amount of \$3,500,000 and budgeted production of 35,000 mixers. The direct materials cost includes the cost of the motor at \$200 (market price).

The Madrid plant capacity is 20,000 motors per year. Cost data are as follows:

Direct materials	\$ 75
Direct labor	60
Variable overhead	60
Fixed overhead	100

Fixed overhead is based on budgeted fixed overhead of \$2,000,000.

Required:

1. What is the maximum transfer price the Singapore plant would accept?
2. What is the minimum transfer price the Madrid plant would accept?
3. Consider the following environmental factors:

<i>Madrid Plant</i>	<i>Singapore Plant</i>
Full employment is very important.	Cheap labor is plentiful.
Local government prohibits layoffs without permission (which is rarely granted).	Accounting is based on British-American model, oriented toward decision-making needs of creditors and investors.
Accounting is legalistic and conservative, designed to ensure compliance with government objectives.	

How might these environmental factors impact the transfer pricing decision?

10-24 CASE ON ROI AND RESIDUAL INCOME, ETHICAL CONSIDERATIONS

LO3 Grate Care Company specializes in producing products for personal grooming. The company operates six divisions, including the Hair Products Division. Each division is treated as an investment center. Managers are evaluated and rewarded on the basis of ROI performance. Only those managers who produce the best ROIs are selected to receive bonuses and to fill higher-level managerial positions. Fred Olsen, manager of the Hair Products Division, has always been one of the top performers. For the past two years, Fred's division has produced the largest ROI; last year, the division earned an operating income of \$2.56 million and employed average operating assets valued at \$16 million. Fred is pleased with his division's performance and has been told that if the division does well this year, he will be in line for a headquarters position.

For the coming year, Fred's division has been promised new capital totaling \$1.5 million. Any of the capital not invested by the division will be invested to earn the company's required rate of return (9 percent). After some careful investigation, the marketing and engineering staff recommended that the division invest in equipment that could be used to produce a crimping and waving iron, a product currently not produced by the division. The cost of the equipment was estimated at \$1.2 million. The division's marketing manager estimated operating earnings from the new line to be \$156,000 per year.

After receiving the proposal and reviewing the potential effects, Fred turned it down. He then wrote a memo to corporate headquarters, indicating that his division would not be able to employ the capital in any new projects within the next eight to 10 months. He did note, however, that he was confident that his marketing and engineering staff would have a project ready by the end of the year. At that time, he would like to have access to the capital.

Required:

1. Explain why Fred Olsen turned down the proposal to add the capability of producing a crimping and waving iron. Provide computations to support your reasoning.
2. Compute the effect that the new product line would have on the profitability of the firm as a whole. Should the division have produced the crimping and waving iron?
3. Suppose that the firm used residual income as a measure of divisional performance. Do you think Fred's decision might have been different? Why?
4. Explain why a firm like Grate Care might decide to use both residual income and return on investment as measures of performance.
5. Did Fred display ethical behavior when he turned down the investment? In discussing this issue, consider why he refused to allow the investment.

10-25 COLLABORATIVE LEARNING EXERCISE

LO5, LO6

CMA

Lynsar Corporation started as a single plant that produced the major components assembled into electric motors—the company's main product. Lynsar later expanded by developing outside markets for some of the components used in its motors. Eventually, Lynsar reorganized into four manufacturing divisions: Bearing, Casing, Switch, and Motor. Each of the four manufacturing divisions operates as an autonomous unit, and divisional performance is the basis for year-end bonuses.

Lynsar's transfer pricing policy permits the manufacturing divisions to sell externally to outside customers as well as internally to the other divisions. The price for goods transferred between divisions is to be negotiated between the buying and selling divisions without any interference from top management.

Lynsar's profits have dropped for the current year even though sales have increased, and the drop in profits can be traced almost entirely to the Motor Division. Jere Feldon, Lynsar's chief financial officer, has discovered that the Motor Division has purchased switches for its motors from an outside supplier during the current year rather than buying them from the Switch Division. The Switch Division is at capacity and has refused to sell the switches to the Motor Division because it can sell them to outside customers at a price higher than the actual full (absorption) manufacturing cost that has always been negotiated in the past with the Motor Division. When the Motor Division refused to meet the price the Switch Division was receiving from its outside buyer, the Motor Division had to purchase the switches from an outside supplier at an even higher price.

Jere is reviewing Lynsar's transfer pricing policy because he believes that suboptimization has occurred. While the Switch Division made the correct decision to maximize its divisional profit by not transferring the switches at actual full manufacturing cost, this decision was not necessarily in the best interest of Lynsar. The Motor Division paid more for the switches than the selling price the Switch Division charged its outside customers. The Motor Division has always been Lynsar's largest division and has tended to dominate the smaller divisions. Jere has learned that the Casing and Bearing divisions are also resisting the Motor Division's desires to continue using actual full manufacturing cost as the negotiated price.

Jere has requested that the corporate accounting department study alternative transfer pricing methods that would promote overall goal congruence, motivate divisional management performance, and optimize overall company performance. Three of the transfer pricing methods being considered are listed below. If one of these methods should be selected, it would be applied uniformly across all divisions.

- a. Standard full manufacturing costs plus markup
- b. Market selling price of the products being transferred
- c. Outlay (out-of-pocket) costs incurred to the point of transfer plus opportunity cost per unit

Required:

Form a group of six students. First, brainstorm answers to the following three requirements. Then, split your group into three pairs; each pair is responsible for writing up the answer to one of the requirements and turning it in as part of a group assignment for the following class period.

1.
 - a. Discuss both the positive and negative behavioral implications that can arise from employing a negotiated transfer pricing system for goods that are exchanged between divisions.
 - b. Explain the behavioral problems that can arise from using actual full (absorption) manufacturing costs as a transfer price.
2. Discuss the behavioral problems that could arise if Lynsar Corporation decides to change from its current policy covering the transfer of goods between divisions to a revised transfer pricing policy that would apply uniformly to all divisions.
3. Discuss the likely behavior of both "buying" and "selling" divisional managers for each of the following transfer pricing methods being considered by Lynsar Corporation.
 - a. Standard full manufacturing costs plus markup
 - b. Market selling price of the products being transferred
 - c. Outlay (out-of-pocket) costs incurred to the point of transfer plus opportunity cost per unit (*CMA adapted*)

10-26 CYBER RESEARCH CASE

- LO3** Using an Internet search engine, find the home page for the firm that registered the EVA trademark. When did this happen? Write a 1- to 2-page paper giving your opinion of this action. What are the advantages and disadvantages of registering an acronym such as this one? Should Robert Kaplan have registered the term “Balanced Scorecard”? Should someone have registered “ROI”? Discuss this issue from the point of view of the registering firm as well as that of the accounting profession as a whole.