23 Performance Measurement, Compensation, and Multinational Considerations

Learning Objectives

1. Select financial and nonfinancial performance measures to use in a balanced scorecard
2. Examine accounting-based measures for evaluating business unit performance, including return on investment (ROI), residual income (RI), and economic value added (EVA®)
3. Analyze the key measurement choices in the design of each performance measure
4. Study the choice of performance targets and design of feedback mechanisms
5. Indicate the difficulties that occur when the performance of divisions operating in different countries is compared
6. Understand the roles of salaries and incentives when rewarding managers
7. Describe the four levers of control and why they are necessary

At the end of this school term, you're going to receive a grade that represents a measure of your performance in this course.

Your grade will likely consist of four elements—homework, quizzes, exams, and class participation. Do some of these elements better reflect your knowledge of the material than others? Would the relative weights placed on the various elements when determining your final grade influence how much effort you expend to improve performance on the different elements? Would it be fair if you received a good grade regardless of your performance? The following article about former AIG chief executive Martin Sullivan examines that very situation in a corporate context. Sullivan continued to receive performance bonuses despite pushing AIG to the brink of bankruptcy. By failing to link pay to performance, the AIG board of directors rewarded behavior that led to a government takeover of the firm.

Misalignment Between CEO Compensation and Performance at AIG[1]

After the September 2008 collapse of AIG, many shareholders and observers focused on the company's executive compensation. Many believed that the incentive structures for executives helped fuel the real estate bubble. Though people were placing long-term bets on mortgage-backed securities, much of their compensation was in the form of short-term bonuses. This encouraged excessive risk without the fear of significant repercussions.

Executive compensation at AIG had been under fire for many years. The Corporate Library, an independent research firm specializing in corporate governance, called the company "a serial offender in the category of outrageous CEO compensation."

Judging solely by company financial measures, AIG's 2007 results were a failure. Driven by the write-down of $11.1 billion in fixed income guarantees, the company's revenue was down 56% from 2006 results. AIG also reported $5 billion in losses in the final quarter of 2007 and warned of possible future losses due to ill-advised investments. Despite this, AIG chief executive Martin Sullivan earned $14.3 million in salary, bonus, stock options, and other long-term

[1] *Source:* Blair, Nathan. 2009. AIG – Blame for the bailout. Stanford Graduate School of Business No. A-203, Stanford, CA: Stanford Graduate School of Business; Son, Hugh. 2008. AIG chief Sullivan's compensation fell 32 percent. *Bloomberg.com*, April 4; Son, Hugh and Erik Holm. 2008. AIG's former chief Sullivan gets $47 million package. *Bloomberg.com*, July 1.

incentives. Sullivan's compensation was in the 90th percentile for CEOs of S&P 500 firms for 2007.

On June 15, 2008, AIG replaced Sullivan as CEO. By then, AIG reported cumulative losses totaling $20 billion. During Sullivan's three-year tenure at the helm, AIG lost 46% of its market value. At the time of his dismissal, the AIG board of directors agreed to give the ousted CEO about $47 million in severance pay, bonus, and long-term compensation.

Two months later, on the verge of bankruptcy, the U.S. government nationalized AIG. At a Congressional hearing in the aftermath of AIG's failure, one witness testified on Sullivan's compensation stating, "I think it is fair to say by any standard of measurement that this pay plan is as uncorrelated to performance as it is possible to be."

Companies measure reward and performance to motivate managers to achieve company strategies and goals. As the AIG example illustrates, however, if the measures are inappropriate or not connected to sustained performance, managers may improve their performance evaluations and increase compensation without achieving company goals. This chapter discusses the general design, implementation, and uses of performance measures, part of the final step in the decision-making process.

Financial and Nonfinancial Performance Measures

Many organizations are increasingly presenting financial and nonfinancial performance measures for their subunits in a single report called the *balanced scorecard* (Chapter 13). Different organizations stress different measures in their scorecards, but the measures are always derived from a company's strategy. Consider the case of Hospitality Inns, a chain of hotels. Hospitality Inns' strategy is to provide excellent customer service and to charge a higher room rate than its competitors. Hospitality Inns uses the following measures in its balanced scorecard:

1. **Financial perspective**—stock price, net income, return on sales, return on investment, and economic value added
2. **Customer perspective**—market share in different geographic locations, customer satisfaction, and average number of repeat visits
3. **Internal-business-process perspective**—customer-service time for making reservations, for check-in, and in restaurants; cleanliness of hotel and room, quality of room service; time taken to clean rooms; quality of restaurant experience; number of new services provided to customers (fax, wireless Internet, video games); time taken to plan and build new hotels

Learning Objective 1

Select financial performance measures

. . . such as return on investment, residual income

and nonfinancial performance measures to use in a balanced scorecard

. . . such as customer-satisfaction, number of defects

4. **Learning-and-growth perspective**—employee education and skill levels, employee satisfaction, employee turnover, hours of employee training, and information-system availability

As in all balanced scorecard implementations, the goal is to make improvements in the learning-and-growth perspective that will lead to improvements in the internal-business-process perspective that, in turn, will result in improvements in the customer and financial perspectives. Hospitality Inns also uses balanced scorecard measures to evaluate and reward the performance of its managers.

Some performance measures, such as the time it takes to plan and build new hotels, have a long time horizon. Other measures, such as time taken to check in or quality of room service, have a short time horizon. In this chapter, we focus on *organization subunits'* most widely used performance measures that cover an intermediate-to-long time horizon. These are internal financial measures based on accounting numbers routinely reported by organizations. In later sections, we describe why companies use both financial and nonfinancial measures to evaluate performance.

Designing accounting-based performance measures requires several steps:

Step 1: Choose Performance Measures That Align with Top Management's Financial Goals. For example, is operating income, net income, return on assets, or revenues the best measure of a subunit's financial performance?

Step 2: Choose the Details of Each Performance Measure in Step 1. Once a firm has chosen a specific performance measure, it must make a variety of decisions about the precise way in which various components of the measure are to be calculated. For example, if the chosen performance measure is return on assets, should it be calculated for one year or for a multiyear period? Should assets be defined as total assets or net assets (total assets minus total liabilities)? Should assets be measured at historical cost or current cost?

Step 3: Choose a Target Level of Performance and Feedback Mechanism for Each Performance Measure in Step 1. For example, should all subunits have identical targets, such as the same required rate of return on assets? Should performance reports be sent to top management daily, weekly, or monthly?

These steps need not be done sequentially. The issues considered in each step are interdependent, and top management will often proceed through these steps several times before deciding on one or more accounting-based performance measures. The answers to the questions raised at each step depend on top management's beliefs about how well each alternative measure fulfills the behavioral criteria discussed in Chapter 22: promoting goal congruence, motivating management effort, evaluating subunit performance, and preserving subunit autonomy.

Decision Point

What financial and nonfinancial performance measures do companies use in their balanced scorecards?

Learning Objective 2

Examine accounting-based measures for evaluating business unit performance, including return on investment (ROI),

. . . return on sales times investment turnover

residual income (RI),

. . . income minus a dollar amount for required return on investment

and economic value added (EVA®)

. . . a variation of residual income

Accounting-Based Measures for Business Units

Companies commonly use four measures to evaluate the economic performance of their subunits. We illustrate these measures for Hospitality Inns.

Hospitality Inns owns and operates three hotels: one each in San Francisco, Chicago, and New Orleans. Exhibit 23-1 summarizes data for each hotel for 2012. At present, Hospitality Inns does not allocate the total long-term debt of the company to the three separate hotels. The exhibit indicates that the New Orleans hotel generates the highest operating income, $510,000, compared with Chicago's $300,000 and San Francisco's $240,000. But does this comparison mean the New Orleans hotel is the most "successful"? The main weakness of comparing operating incomes alone is that differences in *the size of the investment* in each hotel are ignored. **Investment** refers to the resources or assets used to generate income. It is not sufficient to compare operating incomes alone. The real question is whether a division generates sufficient operating income relative to the investment made to earn it.

Three of the approaches to measuring performance include a measure of investment: return on investment, residual income, and economic value added. A fourth approach, return on sales, does not measure investment.

Exhibit 23-1

Financial Data for Hospitality Inns for 2012 (in thousands)

Home Insert Page Layout Formulas Data Review View

	A	B	C	D	E
1		San Francisco Hotel	Chicago Hotel	New Orleans Hotel	Total
2	Hotel revenues	$1,200,000	$1,400,000	$3,185,000	$5,785,000
3	Hotel variable costs	310,000	375,000	995,000	1,680,000
4	Hotel fixed costs	650,000	725,000	1,680,000	3,055,000
5	Hotel operating income	$ 240,000	$ 300,000	$ 510,000	1,050,000
6	Interest costs on long-term debt at 10%				450,000
7	Income before income taxes				600,000
8	Income taxes at 30%				180,000
9	Net income				$ 420,000
10	Net book value at the end of 2012:				
11	Current assets	$ 400,000	$ 500,000	$ 660,000	$1,560,000
12	Long-term assets	600,000	1,500,000	2,340,000	4,440,000
13	Total assets	$1,000,000	$2,000,000	$3,000,000	$6,000,000
14	Current liabilities	$ 50,000	$ 150,000	$ 300,000	$ 500,000
15	Long-term debt				4,500,000
16	Stockholders' equity				1,000,000
17	Total liabilities and stockholders' equity				$6,000,000
18					

Return on Investment

Return on investment (ROI) is an accounting measure of income divided by an accounting measure of investment.

$$\text{Return on investment} = \frac{\text{Income}}{\text{Investment}}$$

Return on investment is the most popular approach to measure performance. ROI is popular for two reasons: it blends all the ingredients of profitability—revenues, costs, and investment—into a single percentage; and it can be compared with the rate of return on opportunities elsewhere, inside or outside the company. Like any single performance measure, however, ROI should be used cautiously and in conjunction with other measures.

ROI is also called the *accounting rate of return* or the *accrual accounting rate of return* (Chapter 21, pp. 749–750). Managers usually use the term "ROI" when evaluating the performance of an organization's subunit and the term "accrual accounting rate of return" when using an ROI measure to evaluate a project. Companies vary in the way they define income in the numerator and investment in the denominator of the ROI calculation. Some companies use operating income for the numerator; others prefer to calculate ROI on an after-tax basis and use net income. Some companies use total assets in the denominator; others prefer to focus on only those assets financed by long-term debt and stockholders' equity and use total assets minus current liabilities.

Consider the ROIs of each of the three Hospitality hotels in Exhibit 23-1. For our calculations, we use the operating income of each hotel for the numerator and total assets of each hotel for the denominator.

Using these ROI figures, the San Francisco hotel appears to make the best use of its total assets.

Hotel	Operating Income	÷	Total Assets	=	ROI
San Francisco	$240,000	÷	$1,000,000	=	24%
Chicago	$300,000	÷	$2,000,000	=	15%
New Orleans	$510,000	÷	$3,000,000	=	17%

Each hotel manager can increase ROI by increasing revenues or decreasing costs (each of which increases the numerator), or by decreasing investment (which decreases the denominator). A hotel manager can increase ROI even when operating income decreases by reducing total assets by a greater percentage. Suppose, for example, that operating income of the Chicago hotel decreases by 4% from $300,000 to $288,000 [$300,000 × (1 − 0.04)] and total assets decrease by 10% from $2,000,000 to $1,800,000 [$2,000,000 × (1 − 0.10)]. The ROI of the Chicago hotel would then increase from 15% to 16% ($288,000 ÷ $1,800,000).

ROI can provide more insight into performance when it is represented as two components:

$$\frac{\text{Income}}{\text{Investment}} = \frac{\text{Income}}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Investment}}$$

which is also written as,

$$ROI = \text{Return on sales} \times \text{Investment turnover}$$

This approach is known as the *DuPont method of profitability analysis*. The DuPont method recognizes the two basic ingredients in profit-making: increasing income per dollar of revenues and using assets to generate more revenues. An improvement in either ingredient without changing the other increases ROI.

Assume that top management at Hospitality Inns adopts a 30% target ROI for the San Francisco hotel. How can this return be attained? We illustrate the DuPont method for the San Francisco hotel and show how this method can be used to describe three alternative ways in which the San Francisco hotel can increase its ROI from 24% to 30%.

	Operating Income (1)	Revenues (2)	Total Assets (3)	Operating Income / Revenues (4) = (1) ÷ (2)	×	Revenues / Total Assets (5) = (2) ÷ (3)	=	Operating Income / Total Assets (6) = (4) × (5)
Current ROI	$240,000	$1,200,000	$1,000,000	20%	×	1.2	=	24%
Alternatives								
A. Decrease assets (such as receivables), keeping revenues and operating income per dollar of revenue constant	$240,000	$1,200,000	$800,000	20%	×	1.5	=	30%
B. Increase revenues (via higher occupancy rate), keeping assets and operating income per dollar of revenue constant	$300,000	$1,500,000	$1,000,000	20%	×	1.5	=	30%
C. Decrease costs (via, say, efficient maintenance) to increase operating income per dollar of revenue, keeping revenue and assets constant	$300,000	$1,200,000	$1,000,000	25%	×	1.2	=	30%

Other alternatives, such as increasing the selling price per room, could increase both the revenues per dollar of total assets and the operating income per dollar of revenues. ROI makes clear the benefits managers can obtain by reducing their investment in current or long-term assets. Some managers know the need to boost revenues or to control costs, but they pay less attention to reducing their investment base. Reducing the investment base involves decreasing idle cash, managing credit judiciously, determining proper inventory levels, and spending carefully on long-term assets.

Residual Income

Residual income (**RI**) is an accounting measure of income minus a dollar amount for required return on an accounting measure of investment.

$$\text{Residual income } (RI) = \text{Income} - (\text{Required rate of return} \times \text{Investment})$$

Required rate of return multiplied by the investment is the *imputed cost of the investment*. The **imputed cost** of the investment is a cost recognized in particular situations but not

recorded in financial accounting systems because it is an opportunity cost. In this situation, the imputed cost refers to the return Hospitality Inns could have obtained by making an alternative investment with similar risk characteristics.

Assume each hotel faces similar risks, and that Hospitality Inns has a required rate of return of 12%. The RI for each hotel is calculated as the operating income minus the required rate of return of 12% of total assets:

Hotel	Operating Income	–	Required Rate of Return	×	Investment	=	Residual Income
San Francisco	$240,000	–	(12%	×	$1,000,000)	=	$120,000
Chicago	$300,000	–	(12%	×	$2,000,000)	=	$ 60,000
New Orleans	$510,000	–	(12%	×	$3,000,000)	=	$150,000

Note that the New Orleans hotel has the best RI.

Some companies favor the RI measure because managers will concentrate on maximizing an absolute amount, such as dollars of RI, rather than a percentage, such as ROI. The objective of maximizing RI means that as long as a subunit earns a return in excess of the required return for investments, that subunit should continue to invest.

The objective of maximizing ROI may induce managers of highly profitable subunits to reject projects that, from the viewpoint of the company as a whole, should be accepted. Suppose Hospitality Inns is considering upgrading room features and furnishings at the San Francisco hotel. The upgrade will increase operating income of the San Francisco hotel by $70,000 and increase its total assets by $400,000. The ROI for the expansion is 17.5% ($70,000 ÷ $400,000), which is attractive to Hospitality Inns because it exceeds the required rate of return of 12%. By making this expansion, however, the San Francisco hotel's ROI will decrease:

$$\text{Pre-upgrade } ROI = \frac{\$240{,}000}{\$1{,}000{,}000} = 0.24, \text{ or } 24\%$$

$$\text{Post-upgrade } ROI = \frac{\$240{,}000 + \$70{,}000}{\$1{,}000{,}000 + \$400{,}000} = \frac{\$310{,}000}{\$1{,}400{,}000} = 0.221, \text{ or } 22.1\%$$

The annual bonus paid to the San Francisco manager may decrease if ROI affects the bonus calculation and the upgrading option is selected. Consequently, the manager may shun the expansion. In contrast, if the annual bonus is a function of RI, the San Francisco manager will favor the expansion:

$$\text{Pre-upgrade } RI = \$240{,}000 - (0.12 \times \$1{,}000{,}000) = \$120{,}000$$

$$\text{Post-upgrade } RI = \$310{,}000 - (0.12 \times \$1{,}400{,}000) = \$142{,}000$$

Goal congruence (ensuring that subunit managers work toward achieving the company's goals) is thus more likely using RI rather than ROI as a measure of the subunit manager's performance.

To see that this is a general result, observe that the post-upgrade ROI is a weighted average of the pre-upgrade ROI and the ROI of the project under consideration. Therefore, whenever a new project has a return higher than the required rate of return (12% in our example) but below the current ROI of the division (24% in our example), the division manager is tempted to reject it even though it is a project the shareholders would like to pursue.[2] On the other hand, RI is a measure that aggregates linearly. Therefore, the post-upgrade RI always equals the pre-upgrade RI plus the RI of the project under consideration (in the preceding example, the project's RI is $70,000 – 12% × $400,000 = $22,000, which is the difference between the post-upgrade and pre-upgrade RI amounts). As a result, a manager who is evaluated on residual income will choose a new project if and only if it has a positive RI. But this is exactly the criterion shareholders want the manager to employ; in other words, RI achieves goal congruence.

[2] Analogously, the manager of an underperforming division with an ROI of 7%, say, may wish to accept projects with returns between 7% and 12% even though these opportunities do not meet the shareholders' required rate of return.

Economic Value Added[3]

Economic value added is a specific type of RI calculation that is used by many companies. **Economic value added (EVA®)** equals after-tax operating income *minus* the (after-tax) weighted-average cost of capital *multiplied* by total assets minus current liabilities.

$$\text{Economic value added (EVA)} = \text{After-tax operating income} - \left[\begin{array}{c}\text{Weighted-average cost of capital}\end{array} \times \left(\begin{array}{c}\text{Total assets}\end{array} - \begin{array}{c}\text{Current liabilities}\end{array}\right)\right]$$

EVA substitutes the following numbers in the RI calculations: (1) income equal to after-tax operating income, (2) required rate of return equal to the (after-tax) weighted-average cost of capital, and (3) investment equal to total assets minus current liabilities.[4]

We use the Hospitality Inns data in Exhibit 23-1 to illustrate the basic EVA calculations. The weighted-average cost of capital (WACC) equals the *after-tax* average cost of all the long-term funds used by Hospitality Inns. The company has two sources of long-term funds: (a) long-term debt with a market value and book value of $4.5 million issued at an interest rate of 10%, and (b) equity capital that also has a market value of $4.5 million (but a book value of $1 million).[5] Because interest costs are tax-deductible and the income tax rate is 30%, the after-tax cost of debt financing is $0.10 \times (1 - \text{Tax rate}) = 0.10 \times (1 - 0.30) = 0.10 \times 0.70 = 0.07$, or 7%. The cost of equity capital is the opportunity cost to investors of not investing their capital in another investment that is similar in risk to Hospitality Inns. Hospitality Inns' cost of equity capital is 14%.[6] The WACC computation, which uses market values of debt and equity, is as follows:

$$WACC = \frac{(7\% \times \text{Market value of debt}) + (14\% \times \text{Market value of equity})}{\text{Market value of debt} + \text{Market value of equity}}$$

$$= \frac{(0.07 \times \$4{,}500{,}000) + (0.14 \times \$4{,}500{,}000)}{\$4{,}500{,}000 + \$4{,}500{,}000}$$

$$= \frac{\$945{,}000}{\$9{,}000{,}000} = 0.105, \text{ or } 10.5\%$$

The company applies the same WACC to all its hotels because each hotel faces similar risks.

Total assets minus current liabilities (see Exhibit 23-1) can also be computed as follows:

$$\text{Total assets} - \text{Current liabilities} = \text{Long-term assets} + \text{Current assets} - \text{Current liabilities}$$

$$= \text{Long-term assets} + \text{Working capital}$$

where

$$\text{Working capital} = \text{Current assets} - \text{Current liabilities}$$

After-tax hotel operating income is:

$$\text{Hotel operating income} \times (1 - \text{Tax rate}) = \text{Hotel operating income} \times (1 - 0.30) = \text{Hotel operating income} \times 0.70$$

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[3] S. O'Byrne and D. Young, *EVA and Value-Based Management: A Practical Guide to Implementation* (New York: McGraw-Hill, 2000); J. Stein, J. Shiely, and I. Ross, *The EVA Challenge: Implementing Value Added Change in an Organization* (New York: John Wiley and Sons, 2001).

[4] When implementing EVA, companies make several adjustments to the operating income and asset numbers reported under generally accepted accounting principles (GAAP). For example, when calculating EVA, costs such as R&D, restructuring costs, and leases that have long-run benefits are recorded as assets (which are then amortized), rather than as current operating costs. The goal of these adjustments is to obtain a better representation of the economic assets, particularly intangible assets, used to earn income. Of course, the specific adjustments applicable to a company will depend on its individual circumstances.

[5] The market value of Hospitality Inns' equity exceeds book value because book value, based on historical cost, does not measure the current value of the company's assets and because various intangible assets, such as the company's brand name, are not shown at current value in the balance sheet under GAAP.

[6] In practice, the most common method of calculating the cost of equity capital is by applying the capital asset pricing model (CAPM). For details, see J. Berk and P. DeMarzo, *Corporate Finance*, 2nd ed. (Upper Saddle River, NJ: Prentice Hall, 2010).

EVA calculations for Hospitality Inns are as follows:

Hotel	After-Tax Operating Income	–	[WACC × (Total Assets – Current Liabilities)]	=	EVA
San Francisco	$240,000 × 0.70	–	[10.50% × ($1,000,000 – $ 50,000)]	=	$68,250
Chicago	$300,000 × 0.70	–	[10.50% × ($2,000,000 – $150,000)]	=	$15,750
New Orleans	$510,000 × 0.70	–	[10.50% × ($3,000,000 – $300,000)]	=	$73,500

The New Orleans hotel has the highest EVA. Economic value added, like residual income, charges managers for the cost of their investments in long-term assets and working capital. Value is created only if after-tax operating income exceeds the cost of investing the capital. To improve EVA, managers can, for example, (a) earn more after-tax operating income with the same capital, (b) use less capital to earn the same after-tax operating income, or (c) invest capital in high-return projects.[7]

Managers in companies such as Briggs and Stratton, Coca-Cola, CSX, Equifax, and FMC use the estimated impact on EVA to guide their decisions. Division managers find EVA helpful because it allows them to incorporate the cost of capital, which is generally only available at the company-wide level, into decisions at the division level. Comparing the actual EVA achieved to the estimated EVA is useful for evaluating performance and providing feedback to managers about performance. CSX, a railroad company, credits EVA for decisions such as to run trains with three locomotives instead of four and to schedule arrivals just in time for unloading rather than having trains arrive at their destination several hours in advance. The result? Higher income because of lower fuel costs and lower capital investments in locomotives.

Return on Sales

The income-to-revenues ratio (or sales ratio), often called *return on sales* (*ROS*), is a frequently used financial performance measure. As we have seen, ROS is one component of ROI in the DuPont method of profitability analysis. To calculate ROS for each of Hospitality's hotels, we divide operating income by revenues:

Hotel	Operating Income	÷	Revenues (Sales)	=	ROS
San Francisco	$240,000	÷	$1,200,000	=	20.0%
Chicago	$300,000	÷	$1,400,000	=	21.4%
New Orleans	$510,000	÷	$3,185,000	=	16.0%

The Chicago hotel has the highest ROS, but its performance is rated worse than the other hotels using measures such as ROI, RI, and EVA.

Comparing Performance Measures

The following table summarizes the performance of each hotel and ranks it (in parentheses) under each of the four performance measures:

Hotel	ROI	RI	EVA	ROS
San Francisco	24% (1)	$120,000 (2)	$68,250 (2)	20.0% (2)
Chicago	15% (3)	$ 60,000 (3)	$15,750 (3)	21.4% (1)
New Orleans	17% (2)	$150,000 (1)	$73,500 (1)	16.0% (3)

The RI and EVA rankings are the same. They differ from the ROI and ROS rankings. Consider the ROI and RI rankings for the San Francisco and New Orleans hotels. The New Orleans hotel has a smaller ROI. Although its operating income is only slightly more than

[7] Observe that the sum of the divisional after-tax operating incomes used in the EVA calculation, ($240,000 + $300,000 + $510,000) × 0.7 = $735,000, exceeds the firm's net income of $420,000. The difference is due to the firm's after-tax interest expense on its long-term debt, which amounts to $450,000 × 0.7 = $315,000. Because the EVA measure includes a charge for the weighted average cost of capital, which includes the after-tax cost of debt, the income figure used in computing EVA should reflect the after-tax profit before interest payments on debt are considered. After-tax operating income (often referred to in practice as NOPAT, or net operating profit after taxes) is thus the relevant measure of divisional profit for EVA calculations.

twice the operating income of the San Francisco hotel—$510,000 versus $240,000—its total assets are three times as large—$3 million versus $1 million. The New Orleans hotel has a higher RI because it earns a higher income after covering the required rate of return on investment of 12%. The high ROI of the San Francisco hotel indicates that its assets are being used efficiently. Even though each dollar invested in the New Orleans hotel does not give the same return as the San Francisco hotel, this large investment creates considerable value because its return exceeds the required rate of return. The Chicago hotel has the highest ROS but the lowest ROI. The high ROS indicates that the Chicago hotel has the lowest cost structure per dollar of revenues of all of Hospitality Inns' hotels. The reason for Chicago's low ROI is that it generates very low revenues per dollar of assets invested. Is any method better than the others for measuring performance? No, because each evaluates a different aspect of performance.

Decision Point

What are the relative merits of return on investment (ROI), residual income (RI), and economic value added (EVA) as performance measures for subunit managers?

ROS measures how effectively costs are managed. To evaluate overall aggregate performance, ROI, RI, or EVA measures are more appropriate than ROS because they consider both income and investment. ROI indicates which investment yields the highest return. RI and EVA measures overcome some of the goal-congruence problems of ROI. Some managers favor EVA because of the accounting adjustments related to the capitalization of investments in intangibles. Other managers favor RI because it is easier to calculate and because, in most cases, it leads to the same conclusions as EVA. Generally, companies use multiple financial measures to evaluate performance.

Choosing the Details of the Performance Measures

Learning Objective 3

Analyze the key measurement choices in the design of each performance measure

. . . choice of time horizon, alternative definitions, and measurement of assets

It is not sufficient for a company to identify the set of performance measures it wishes to use. The company has to make several choices regarding the specific details of how the measures are computed. These range from decisions regarding the time frame over which the measures are computed, to the definition of key terms such as "investment" and the calculation of particular components of each performance measure.

Alternative Time Horizons

An important element in designing accounting-based performance measures is choosing the time horizon of the performance measures. The ROI, RI, EVA, and ROS calculations represent the results for a single period, one year in our example. Managers could take actions that cause short-run increases in these measures but that conflict with the long-run interest of the company. For example, managers may curtail R&D and plant maintenance in the last three months of a fiscal year to achieve a target level of annual operating income. For this reason, many companies evaluate subunits on the basis of ROI, RI, EVA, and ROS over multiple years.

Another reason to evaluate subunits over multiple years is that the benefits of actions taken in the current period may not show up in short-run performance measures, such as the current year's ROI or RI. For example, an investment in a new hotel may adversely affect ROI and RI in the short run but benefit ROI and RI in the long run.

A multiyear analysis highlights another advantage of the RI measure: Net present value of all cash flows over the life of an investment equals net present value of the RIs.[8]

[8] This equivalence, often referred to as the "Conservation Property" of residual income, was originally articulated by Gabriel Preinreich in 1938. To see the equivalence, suppose the $400,000 investment in the San Francisco hotel increases operating income by $70,000 per year as follows: Increase in operating cash flows of $150,000 each year for 5 years minus depreciation of $80,000 ($400,000 ÷ 5) per year, assuming straight-line depreciation and $0 terminal disposal value. Depreciation reduces the investment amount by $80,000 each year. Assuming a required rate of return of 12%, net present values of cash flows and residual incomes are as follows:

Year	0	1	2	3	4	5	Net Present Value
(1) Cash flow	–$400,000	$150,000	$150,000	$150,000	$150,000	$150,000	
(2) Present value of $1 discounted at 12%	1	0.89286	0.79719	0.71178	0.63552	0.56743	
(3) Present value: (1) × (2)	–$400,000	$133,929	$119,578	$106,767	$ 95,328	$ 85,114	$140,716
(4) Operating income		$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000	
(5) Assets at start of year		$400,000	$320,000	$240,000	$160,000	$ 80,000	
(6) Capital charge: (5) × 12%		$ 48,000	$ 38,400	$ 28,800	$ 19,200	$ 9,600	
(7) Residual income: (4) − (6)		$ 22,000	$ 31,600	$ 41,200	$ 50,800	$ 60,400	
(8) Present value of RI: (7) × (2)		$ 19,643	$ 25,191	$ 29,325	$ 32,284	$ 34,273	$140,716

This characteristic means that if managers use the net present value method to make investment decisions (as advocated in Chapter 21), then using multiyear RI to evaluate managers' performances achieves goal congruence.

Another way to motivate managers to take a long-run perspective is by compensating them on the basis of changes in the market price of the company's stock, because stock prices incorporate the expected future effects of current decisions.

Alternative Definitions of Investment

Companies use a variety of definitions for measuring investment in divisions. Four common alternative definitions used in the construction of accounting-based performance measures are as follows:

1. **Total assets available**—includes all assets, regardless of their intended purpose.
2. **Total assets employed**—total assets available minus the sum of idle assets and assets purchased for future expansion. For example, if the New Orleans hotel in Exhibit 23-1 has unused land set aside for potential expansion, total assets employed by the hotel would exclude the cost of that land.
3. **Total assets employed minus current liabilities**—total assets employed, excluding assets financed by short-term creditors. One negative feature of defining investment in this way is that it may encourage subunit managers to use an excessive amount of short-term debt because short-term debt reduces the amount of investment.
4. **Stockholders' equity**—calculated by assigning liabilities among subunits and deducting these amounts from the total assets of each subunit. One drawback of this method is that it combines operating decisions made by hotel managers with financing decisions made by top management.

Companies that use ROI or RI generally define investment as the total assets available. When top management directs a subunit manager to carry extra or idle assets, total assets employed can be more informative than total assets available. Companies that adopt EVA define investment as total assets employed minus current liabilities. The most common rationale for using total assets employed minus current liabilities is that the subunit manager often influences decisions on current liabilities of the subunit.

Alternative Asset Measurements

To design accounting-based performance measures, we must consider different ways to measure assets included in the investment calculations. Should assets be measured at historical cost or current cost? Should gross book value (that is, original cost) or net book value (original cost minus accumulated depreciation) be used for depreciable assets?

Current Cost

Current cost is the cost of purchasing an asset today identical to the one currently held, or the cost of purchasing an asset that provides services like the one currently held if an identical asset cannot be purchased. Of course, measuring assets at current costs will result in different ROIs than the ROIs calculated on the basis of historical costs.

We illustrate the current-cost ROI calculations using the data for Hospitality Inns (Exhibit 23-1) and then compare current-cost-based ROIs and historical-cost-based ROIs. Assume the following information about the long-term assets of each hotel:

	San Francisco	Chicago	New Orleans
Age of facility in years (at end of 2012)	8	4	2
Gross book value (original cost)	$1,400,000	$2,100,000	$2,730,000
Accumulated depreciation	$ 800,000	$ 600,000	$ 390,000
Net book value (at end of 2012)	$ 600,000	$1,500,000	$2,340,000
Depreciation for 2012	$ 100,000	$ 150,000	$ 195,000

Hospitality Inns assumes a 14-year estimated useful life, zero terminal disposal value for the physical facilities, and straight-line depreciation.

An index of construction costs indicating how the cost of construction has changed over the eight-year period that Hospitality Inns has been operating (2004 year-end = 100) is as follows:

Year	2005	2006	2007	2008	2009	2010	2011	2012
Construction cost index	110	122	136	144	152	160	174	180

Earlier in this chapter, we computed an ROI of 24% for San Francisco, 15% for Chicago, and 17% for New Orleans (p. 809). One possible explanation of the high ROI for the San Francisco hotel is that its long-term assets are expressed in 2004 construction-price levels—prices that prevailed eight years ago—and the long-term assets for the Chicago and New Orleans hotels are expressed in terms of higher, more-recent construction-price levels, which depress ROIs for these two hotels.

Exhibit 23-2 illustrates a step-by-step approach for incorporating current-cost estimates of long-term assets and depreciation expense into the ROI calculation. We make these calculations to approximate what it would cost today to obtain assets that would produce the same expected operating income that the subunits currently earn. (Similar adjustments to represent the current costs of capital employed and depreciation expense can also be made in the RI and EVA calculations.) The current-cost adjustment reduces the ROI of the San Francisco hotel by more than half.

	Historical-Cost ROI	Current-Cost ROI
San Francisco	24%	10.8%
Chicago	15%	11.1%
New Orleans	17%	14.7%

Adjusting assets to recognize current costs negates differences in the investment base caused solely by differences in construction-price levels. Compared with historical-cost ROI, current-cost ROI better measures the current economic returns from the investment. If Hospitality Inns were to invest in a new hotel today, investing in one like the New Orleans hotel offers the best ROI.

Current cost estimates may be difficult to obtain for some assets. Why? Because the estimate requires a company to consider, in addition to increases in price levels, technological advances and processes that could reduce the current cost of assets needed to earn today's operating income.

Long-Term Assets: Gross or Net Book Value?

Historical cost of assets is often used to calculate ROI. There has been much discussion about whether gross book value or net book value of assets should be used. Using the data in Exhibit 23-1 (p. 809), we calculate ROI using net and gross book values of plant and equipment as follows:

	Operating Income (from Exhibit 23-1) (1)	Net Book Value of Total Assets (from Exhibit 23-1) (2)	Accumulated Depreciation (from p. 815) (3)	Gross Book Value of Total Assets (4) = (2) + (3)	2012 ROI Using Net Book Value of Total Assets (calculated earlier) (5) = (1) ÷ (2)	2012 ROI Using Gross Book Value of Total Assets (6) = (1) ÷ (4)
San Francisco	$240,000	$1,000,000	$800,000	$1,800,000	24%	13.3%
Chicago	$300,000	$2,000,000	$600,000	$2,600,000	15%	11.5%
New Orleans	$510,000	$3,000,000	$390,000	$3,390,000	17%	15.0%

Using gross book value, the 13.3% ROI of the older San Francisco hotel is lower than the 15.0% ROI of the newer New Orleans hotel. Those who favor using gross book value claim it enables more accurate comparisons of ROI across subunits. For example, using

Exhibit 23-2 ROI for Hospitality Inns: Computed Using Current-Cost Estimates as of the End of 2012 for Depreciation Expense and Long-Term Assets

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	A	B	C	D	E	F	G	H	I	J
1	**Step 1:** Restate long-term assets from gross book value at historical cost to gross book value at current cost as of the end of 2012.									
2		**Gross book value of long-term assets at historical cost**	**×**	**Construction cost index in 2012**	**÷**	**Construction cost index in year of construction**	**=**	**Gross book value of long-term assets at current cost at end of 2012**		
3	San Francisco	$1,400,000	×	(180	÷	100)	=	$2,520,000		
4	Chicago	$2,100,000	×	(180	÷	144)	=	$2,625,000		
5	New Orleans	$2,730,000	×	(180	÷	160)	=	$3,071,250		
6										
7	**Step 2:** Derive net book value of long-term assets at current cost as of the end of 2012. (Assume estimated useful life of each hotel is 14 years.)									
8		**Gross book value of long-term assets at current cost at end of 2012**	**×**	**Estimated remaining useful life**	**÷**	**Estimated total useful life**	**=**	**Net book value of long-term assets at current cost at end of 2012**		
9	San Francisco	$2,520,000	×	(6	÷	14)	=	$1,080,000		
10	Chicago	$2,625,000	×	(10	÷	14)	=	$1,875,000		
11	New Orleans	$3,071,250	×	(12	÷	14)	=	$2,632,500		
12										
13	**Step 3:** Compute current cost of total assets in 2012. (Assume current assets of each hotel are expressed in 2012 dollars.)									
14		**Current assets at end of 2012 (from Exhibit 23-1)**	**+**	**Long-term assets from Step 2**	**=**	**Current cost of total assets at end of 2012**				
15	San Francisco	$400,000	+	$1,080,000	=	$1,480,000				
16	Chicago	$500,000	+	$1,875,000	=	$2,375,000				
17	New Orleans	$660,000	+	$2,632,500	=	$3,292,500				
18										
19	**Step 4:** Compute current-cost depreciation expense in 2012 dollars.									
20		**Gross book value of long-term assets at current cost at end of 2012 (from Step 1)**	**÷**	**Estimated total useful life**	**=**	**Current-cost depreciation expense in 2012 dollars**				
21	San Francisco	$2,520,000	÷	14	=	$180,000				
22	Chicago	$2,625,000	÷	14	=	$187,500				
23	New Orleans	$3,071,250	÷	14	=	$219,375				
24										
25	**Step 5:** Compute 2012 operating income using 2012 current-cost depreciation expense.									
26		**Historical-cost operating income**	**–**	**Current-cost depreciation expense in 2012 dollars (from Step 4)**	**–**	**Historical-cost depreciation expense**	**=**	**Operating income for 2012 using current-cost depreciation expense in 2012 dollars**		
27	San Francisco	$240,000	–	($180,000	–	$100,000)	=	$160,000		
28	Chicago	$300,000	–	($187,500	–	$150,000)	=	$262,500		
29	New Orleans	$510,000	–	($219,375	–	$195,000)	=	$485,625		
30										
31	**Step 6:** Compute ROI using current-cost estimates for long-term assets and depreciation expense.									
32		**Operating income for 2012 using current-cost depreciation expense in 2012 dollars (from Step 5)**	**÷**	**Current cost of total assets at end of 2012 (from Step 3)**	**=**	**ROI using current-cost estimate**				
33	San Francisco	$160,000	÷	$1,480,000	=	10.8%				
34	Chicago	$262,500	÷	$2,375,000	=	11.1%				
35	New Orleans	$485,625	÷	$3,292,500	=	14.7%				

Decision Point

Over what time frame should companies measure performance, and what are the alternative choices for calculating the components of each performance measure?

gross-book-value calculations, the return on the original plant-and-equipment investment is higher for the newer New Orleans hotel than for the older San Francisco hotel. This difference probably reflects the decline in earning power of the San Francisco hotel. Using the net book value masks this decline in earning power because the constantly decreasing investment base results in a higher ROI for the San Francisco hotel—24% in this example. This higher rate may mislead decision makers into thinking that the earning power of the San Francisco hotel has not decreased.

The proponents of using net book value as an investment base maintain that it is less confusing because (1) it is consistent with the amount of total assets shown in the conventional balance sheet, and (2) it is consistent with income computations that include deductions for depreciation expense. Surveys report net book value to be the dominant measure of assets used by companies for internal performance evaluation.

Target Levels of Performance and Feedback

Learning Objective 4

Study the choice of performance targets and design of feedback mechanisms

. . . carefully crafted budgets and sufficient feedback for timely corrective action

Now that we have covered the different types of measures and how to choose them, let us turn our attention to how mangers set and measure target levels of performance.

Choosing Target Levels of Performance

We next consider target-setting for accounting-based measures of performance against which actual performance can be compared. Historical-cost-based accounting measures are usually inadequate for evaluating economic returns on new investments, and in some cases, they create disincentives for expansion. Despite these problems, historical-cost ROIs can be used to evaluate current performance by establishing *target* ROIs. For Hospitality Inns, we need to recognize that the hotels were built in different years, which means they were built at different construction-price levels. Top management could adjust the target historical-cost-based ROIs accordingly, say, by setting San Francisco's ROI at 26%, Chicago's at 18%, and New Orleans' at 19%.

This useful alternative of comparing actual results with target or budgeted performance is frequently overlooked. The budget should be carefully negotiated with full knowledge of historical-cost accounting pitfalls. *Companies should tailor a budget to a particular subunit, a particular accounting system, and a particular performance measure.* For example, many problems of asset valuation and income measurement can be resolved if top management can get subunit managers to focus on what is attainable in the forthcoming budget period—whether ROI, RI, or EVA is used and whether the financial measures are based on historical cost or some other measure, such as current cost.

A popular way to establish targets is to set continuous improvement targets. If a company is using EVA as a performance measure, top management can evaluate operations on year-to-year changes in EVA, rather than on absolute measures of EVA. Evaluating performance on the basis of *improvements* in EVA makes the initial method of calculating EVA less important.

In establishing targets for financial performance measures, companies using the balanced scorecard simultaneously determine targets in the customer, internal-business-process, and learning-and-growth perspectives. For example, Hospitality Inns will establish targets for employee training and employee satisfaction, customer-service time for reservations and check-in, quality of room service, and customer satisfaction that each hotel must reach to achieve its ROI and EVA targets.

Choosing the Timing of Feedback

A final critical step in designing accounting-based performance measures is the timing of feedback. Timing of feedback depends largely on (a) how critical the information is for the success of the organization, (b) the specific level of management receiving the feedback, and (c) the sophistication of the organization's information technology. For example, hotel managers responsible for room sales want information on the number of rooms sold (rented) on a daily or weekly basis, because a large percentage of hotel costs are fixed costs. Achieving high room sales and taking quick action to reverse any

declining sales trends are critical to the financial success of each hotel. Supplying managers with daily information about room sales is much easier if Hospitality Inns has a computerized room-reservation and check-in system. Top management, however, may look at information about daily room sales only on a monthly basis. In some instances, for example, because of concern about the low sales-to-total-assets ratio of the Chicago hotel, management may want the information weekly.

The timing of feedback for measures in the balanced scorecard varies. For example, human resources managers at each hotel measure employee satisfaction annually because satisfaction is best measured over a longer horizon. However, housekeeping department managers measure the quality of room service over much shorter time horizons, such as a week, because poor levels of performance in these areas for even a short period of time can harm a hotel's reputation for a long period. Moreover, housekeeping problems can be detected and resolved over a short time period.

Decision Point

What targets should companies use and when should they give feedback to managers regarding their performance relative to these targets?

Performance Measurement in Multinational Companies

Learning Objective 5

Indicate the difficulties that occur when the performance of divisions operating in different countries is compared

. . . adjustments needed for differences in inflation rates and changes in exchange rates

Our discussion so far has focused on performance evaluation of different divisions of a company operating within a single country. We next discuss the additional difficulties created when the performance of divisions of a company operating in different countries is compared. Several issues arise.[9]

- The economic, legal, political, social, and cultural environments differ significantly across countries.
- Governments in some countries may limit selling prices of, and impose controls on, a company's products. For example, some countries in Asia, Latin America, and Eastern Europe impose tariffs and custom duties to restrict imports of certain goods.
- Availability of materials and skilled labor, as well as costs of materials, labor, and infrastructure (power, transportation, and communication), may also differ significantly across countries.
- Divisions operating in different countries account for their performance in different currencies. Issues of inflation and fluctuations in foreign-currency exchange rates affect performance measures.

As a result of these differences, adjustments need to be made to compare performance measures across countries.

Calculating the Foreign Division's ROI in the Foreign Currency

Suppose Hospitality Inns invests in a hotel in Mexico City. The investment consists mainly of the costs of buildings and furnishings. Also assume the following:

- The exchange rate at the time of Hospitality's investment on December 31, 2011, is 10 pesos = $1.
- During 2012, the Mexican peso suffers a steady decline in its value. The exchange rate on December 31, 2012, is 15 pesos = $1.
- The average exchange rate during 2012 is [(10 + 15) ÷ 2] = 12.5 pesos = $1.
- The investment (total assets) in the Mexico City hotel is 30,000,000 pesos.
- The operating income of the Mexico City hotel in 2012 is 6,000,000 pesos.

What is the historical-cost-based ROI for the Mexico City hotel in 2012?

To answer this question, Hospitality Inns' managers first have to determine if they should calculate the ROI in pesos or in dollars. If they calculate the ROI in dollars, what exchange rate should they use? The managers may also be interested in how the

[9] See M. Z. Iqbal, *International Accounting—A Global Perspective* (Cincinnati: South-Western College Publishing, 2002).

ROI of Hospitality Inns Mexico City (HIMC) compares with the ROI of Hospitality Inns New Orleans (HINO), which is also a relatively new hotel of approximately the same size. The answers to these questions yield information that will be helpful when making future investment decisions.

$$\text{HIMC's } \textit{ROI} \text{ (calculated using pesos)} = \frac{\text{Operating income}}{\text{Total assets}} = \frac{\text{6,000,000 pesos}}{\text{30,000,000 pesos}} = 0.20, \text{ or } 20\%$$

HIMC's ROI of 20% is higher than HINO's ROI of 17% (p. 809). Does this mean that HIMC outperformed HINO based on the ROI criterion? Not necessarily. That's because HIMC operates in a very different economic environment than HINO.

The peso has declined in value relative to the dollar in 2012. This decline has led to higher inflation in Mexico than in the United States. As a result of the higher inflation in Mexico, HIMC will charge higher prices for its hotel rooms, which will increase HIMC's operating income and lead to a higher ROI. Inflation clouds the real economic returns on an asset and makes historical-cost-based ROI higher. Differences in inflation rates between the two countries make a direct comparison of HIMC's peso-denominated ROI with HINO's dollar-denominated ROI misleading.

Calculating the Foreign Division's ROI in U.S. Dollars

One way to make a comparison of historical-cost-based ROIs more meaningful is to restate HIMC's performance in U.S. dollars. But what exchange rate should be used to make the comparison meaningful? Assume operating income was earned evenly throughout 2012. Hospitality Inns' managers should use the average exchange rate of 12.5 pesos = $1 to convert operating income from pesos to dollars: 6,000,000 pesos ÷ 12.5 pesos per dollar = $480,000. The effect of dividing the operating income in pesos by the higher pesos-to-dollar exchange rate prevailing during 2012, rather than the 10 pesos = $1 exchange rate prevailing on December 31, 2011, is that any increase in operating income in pesos as a result of inflation during 2012 is eliminated when converting back to dollars.

At what rate should HIMC's total assets of 30,000,000 pesos be converted? The 10 pesos = $1 exchange rate prevailing when the assets were acquired on December 31, 2011, because HIMC's assets are recorded in pesos at the December 31, 2011, cost, and they are not revalued as a result of inflation in Mexico in 2012. Because the cost of assets in HIMC's financial accounting records is unaffected by subsequent inflation, the exchange rate prevailing when the assets were acquired should be used to convert the assets into dollars. Using exchange rates after December 31, 2011, would be incorrect because these exchange rates incorporate the higher inflation in Mexico in 2012. Total assets are converted to 30,000,000 pesos ÷ 10 pesos per dollar = $3,000,000.

Then,

$$\text{HIMC's } \textit{ROI} \text{ (calculated using dollars)} = \frac{\text{Operating income}}{\text{Total assets}} = \frac{\$480{,}000}{\$3{,}000{,}000} = 0.16, \text{ or } 16\%$$

As we have discussed, these adjustments make the historical-cost-based ROIs of the Mexico City and New Orleans hotels comparable because they negate the effects of any differences in inflation rates between the two countries. HIMC's ROI of 16% is less than HINO's ROI of 17%.

Residual income calculated in pesos suffers from the same problems as ROI calculated using pesos. Calculating HIMC's RI in dollars adjusts for changes in exchange rates and makes for more-meaningful comparisons with Hospitality's other hotels:

Decision Point

How can companies compare the performance of divisions operating in different countries?

$$\begin{aligned}\text{HIMC's } \textit{RI} &= \$480{,}000 - (0.12 \times \$3{,}000{,}000)\\ &= \$480{,}000 - \$360{,}000 = \$120{,}000\end{aligned}$$

which is also less than HINO's RI of $150,000. In interpreting HIMC's and HINO's ROI and RI, keep in mind that they are historical-cost-based calculations. They do, however, pertain to relatively new hotels.

Distinction Between Managers and Organization Units[10]

Learning Objective 6

Understand the roles of salaries and incentives when rewarding managers

. . . balancing risk and performance-based rewards

Our focus has been on how to evaluate the performance of a subunit of a company, such as a division. However, is evaluating the performance of a subunit manager the same as evaluating the performance of the subunit? If the subunit performed well, does it mean the manager performed well? In this section, we argue that the performance evaluation of a *manager* should be distinguished from the performance evaluation of that manager's *subunit*. For example, companies often put the most skillful division manager in charge of the division producing the poorest economic return in an attempt to improve it. The division may take years to show improvement. Furthermore, the manager's efforts may result merely in bringing the division up to a minimum acceptable ROI. The division may continue to be a poor performer in comparison with other divisions, but it would be a mistake to conclude from the poor performance of the division that the manager is performing poorly. The division's performance may be adversely affected by economic conditions over which the manager has no control.

As another example, consider again the Hospitality Inns Mexico City (HIMC) hotel. Suppose, despite the high inflation in Mexico, HIMC could not increase room prices because of price-control regulations imposed by the government. HIMC's performance in dollar terms would be very poor because of the decline in the value of the peso. But should top management conclude from HIMC's poor performance that the HIMC manager performed poorly? Probably not. Most likely, the poor performance of HIMC is largely the result of regulatory factors beyond the manager's control.

In the following sections, we show the basic principles for evaluating the performance of an individual subunit manager. These principles apply to managers at all organization levels. Later sections consider examples at the individual-worker level and the top-management level. We illustrate these principles using the RI performance measure.

The Basic Trade-Off: Creating Incentives Versus Imposing Risk

How the performance of managers and other employees is measured and evaluated affects their rewards. Compensation arrangements range from a flat salary with no direct performance-based incentive (or bonus), as in the case of many government employees, to rewards based on only performance, as in the case of real estate agents who are compensated only via commissions paid on the properties they sell. Most managers' total compensation includes some combination of salary and performance-based incentive. In designing compensation arrangements, we need to consider the *trade-off between creating incentives and imposing risk*. We illustrate this trade-off in the context of our Hospitality Inns example.

Sally Fonda owns the Hospitality Inns chain of hotels. Roger Brett manages the Hospitality Inns San Francisco (HISF) hotel. Assume Fonda uses RI to measure performance. To improve RI, Fonda would like Brett to increase sales, control costs, provide prompt and courteous customer service, and reduce working capital. But even if Brett did all those things, high RI is not guaranteed. HISF's RI is affected by many factors beyond Fonda's and Brett's control, such as a recession in the San Francisco economy, an earthquake that might negatively affect HISF, or even road construction near competing hotels which would drive customers to HISF. Uncontrollable factors make HISF's profitability uncertain and, therefore, risky.

As an entrepreneur, Fonda expects to bear risk. But Brett does not like being subject to risk. One way of "insuring" Brett against risk is to pay Brett a flat salary, regardless of the actual amount of RI earned. All the risk would then be borne by Fonda. This arrangement creates a problem, however, because Brett's effort is difficult to monitor. The absence of performance-based compensation means that Brett has no direct incentive to work harder or to undertake extra physical and mental effort beyond what is necessary to retain his job or to uphold his own personal values.

[10]The presentations here draw (in part) from teaching notes prepared by S. Huddart, N. Melumad, and S. Reichelstein.

Moral hazard describes a situation in which an employee prefers to exert less effort (or to report distorted information) compared with the effort (or accurate information) desired by the owner, because the employee's effort (or validity of the reported information) cannot be accurately monitored and enforced.[11] In some repetitive jobs, such as in electronic assembly, a supervisor can monitor the workers' actions, and the moral-hazard problem may not arise. However, a manager's job is to gather and interpret information and to exercise judgment on the basis of the information obtained. Monitoring a manager's effort is more difficult.

Paying no salary and rewarding Brett *only* on the basis of some performance measure—RI in our example—raises different concerns. In this case, Brett would be motivated to strive to increase RI because his rewards would increase with increases in RI. But compensating Brett on RI also subjects him to risk, because HISF's RI depends not only on Brett's effort, but also on factors such as local economic conditions over which Brett has no control.

Brett does not like being subject to risk. To compensate Brett for taking risk, Fonda must pay him extra compensation. That is, using performance-based bonuses will cost Fonda more money, *on average*, than paying Brett a flat salary. Why "on average"? Because Fonda's compensation payment to Brett will vary with RI outcomes. When averaged over these outcomes, the RI-based compensation will cost Fonda more than paying Brett a flat salary. The motivation for having some salary and some performance-based bonus in compensation arrangements is to balance the benefit of incentives against the extra cost of imposing risk on the manager.

Intensity of Incentives and Financial and Nonfinancial Measurements

What affects the intensity of incentives? That is, how large should the incentive component of a manager's compensation be relative to the salary component? To answer these questions, we need to understand how much the performance measure is affected by actions the manager takes to further the owner's objectives.

Preferred performance measures are those that are sensitive to or that change significantly with the manager's performance. They do not change much with changes in factors that are beyond the manager's control. Sensitive performance measures motivate the manager as well as limit the manager's exposure to risk, reducing the cost of providing incentives. Less-sensitive performance measures are not affected by the manager's performance and fail to induce the manager to improve. The more that owners have sensitive performance measures available to them, the more they can rely on incentive compensation for their managers.

The salary component of compensation dominates when performance measures that are sensitive to managers' actions are not available. This is the case, for example, for some corporate staff and government employees. A high salary component, however, does not mean incentives are completely absent. Promotions and salary increases do depend on some overall measure of performance, but the incentives are less direct. The incentive component of compensation is high when sensitive performance measures are available and when monitoring the employee's effort is difficult, such as in real estate agencies.

In evaluating Brett, Fonda uses measures from multiple perspectives of the balanced scorecard because nonfinancial measures on the balanced scorecard—employee satisfaction and the time taken for check-in, cleaning rooms, and providing room service—are more sensitive to Brett's actions. Financial measures such as RI are less sensitive to Brett's actions because they are affected by external factors such as local economic conditions beyond Brett's control. Residual income may be a very good measure of the economic viability of the hotel, but it is only a partial measure of Brett's performance.

Another reason for using nonfinancial measures in the balanced scorecard is that these measures follow Hospitality Inns' strategy and are drivers of future performance. Evaluating managers on these nonfinancial measures motivates them to take actions that will sustain long-run performance. Therefore, evaluating performance in all four perspectives of the balanced scorecard promotes both short- and long-run actions.

[11] The term *moral hazard* originated in insurance contracts to represent situations in which insurance coverage caused insured parties to take less care of their properties than they might otherwise. One response to moral hazard in insurance contracts is the system of deductibles (that is, the insured parties pay for damages below a specified amount).

Benchmarks and Relative Performance Evaluation

Owners often use financial and nonfinancial benchmarks to evaluate performance. Benchmarks representing "best practice" may be available inside or outside an organization. For HISF, benchmarks could be from similar hotels, either within or outside the Hospitality Inns chain. Suppose Brett has responsibility for revenues, costs, and investments. In evaluating Brett's performance, Fonda would want to use as a benchmark a hotel of a similar size influenced by the same uncontrollable factors, such as location, demographic trends, or economic conditions, that affect HISF. If all these factors were the same, *differences* in performances of the two hotels would occur only because of differences in the two managers' performances. Benchmarking, which is also called *relative performance evaluation*, filters out the effects of the common uncontrollable factors.

Can the performance of two managers responsible for running similar operations within a company be benchmarked against each other? Yes, but this approach could create a problem: The use of these benchmarks may reduce incentives for these managers to help one another, because a manager's performance-evaluation measure improves either by doing a better job or as a result of the other manager doing poorly. When managers do not cooperate, the company suffers. In this case, using internal benchmarks for performance evaluation may not lead to goal congruence.

Performance Measures at the Individual Activity Level

There are two issues when evaluating performance at the individual-activity level:

1. Designing performance measures for activities that require multiple tasks
2. Designing performance measures for activities done in teams

Performing Multiple Tasks

Most employees perform more than one task as part of their jobs. Marketing representatives sell products, provide customer support, and gather market information. Manufacturing workers are responsible for both the quantity and quality of their output. Employers want employees to allocate their time and effort intelligently among various tasks or aspects of their jobs.

Consider mechanics at an auto repair shop. Their jobs have two distinct aspects: repair work—performing more repair work generates more revenues for the shop—and customer satisfaction—the higher the quality of the job, the more likely the customer will be pleased. If the employer wants an employee to focus on both aspects, then the employer must measure and compensate performance on both aspects.

Suppose that the employer can easily measure the quantity, but not the quality, of auto repairs. If the employer rewards workers on a by-the-job rate, which pays workers only on the basis of the number of repairs actually performed, mechanics will likely increase the number of repairs they make and quality will likely suffer. Sears experienced this problem when it introduced by-the-job rates for its mechanics. To resolve the problem, Sears' managers took three steps to motivate workers to balance both quantity and quality: (1) They dropped the by-the-job rate system and paid mechanics an hourly salary, a step that deemphasized the quantity of repairs. Management determined mechanics' bonuses, promotions, and pay increases on the basis of an assessment of each mechanic's overall performance regarding quantity and quality of repairs. (2) Sears evaluated employees, in part, using data such as customer-satisfaction surveys, the number of dissatisfied customers, and the number of customer complaints. (3) Finally, Sears used staff from an independent outside agency to randomly monitor whether the repairs performed were of high quality.

Team-Based Compensation Arrangements

Many manufacturing, marketing, and design problems can be resolved when employees with multiple skills, knowledge, experiences, and perceptions pool their talents. A team achieves better results than individual employees acting alone.[12] Companies reward

[12] *Teams That Click: The Results-Driven Manager Series* (Boston: Harvard Business School Press, 2004).

individuals on a team based on team performance. Such team-based incentives encourage individuals to help one another as they strive toward a common goal.

The specific forms of team-based compensation vary across companies. Colgate-Palmolive rewards teams on the basis of each team's performance. Novartis, the Swiss pharmaceutical company, rewards teams on company-wide performance; a certain amount of team-based bonuses are paid only if the company reaches certain goals. To encourage the development of team skills, Eastman Chemical Company rewards team members using a checklist of team skills, such as communication and willingness to help one another. Whether team-based compensation is desirable depends, to a large extent, on the culture and management style of a particular organization. For example, one criticism of team-based compensation, especially in the United States, is that incentives for individual employees to excel are diminished, harming overall performance. Another problem is how to manage team members who are not productive contributors to the team's success but who, nevertheless, share in the team's rewards.

Executive Performance Measures and Compensation

The principles of performance evaluation described in the previous sections also apply to executive compensation plans. These plans are based on both financial and nonfinancial performance measures and consist of a mix of (1) base salary; (2) annual incentives, such as a cash bonus based on achieving a target annual RI; (3) long-run incentives, such as stock options (described later in this section) based on stock performance over, say, a five-year period; and (4) other benefits, such as medical benefits, pensions plans, and life insurance.

Well-designed plans use a compensation mix that balances risk (the effect of uncontrollable factors on the performance measure and hence compensation) with short-run and long-run incentives to achieve the organization's goals. For example, evaluating performance on the basis of annual EVA sharpens an executive's short-run focus. And using EVA and stock option plans over, say, five years motivates the executive to take a long-run view as well.

Stock options give executives the right to buy company stock at a specified price (called the exercise price) within a specified period. Suppose that on September 16, 2011, Hospitality Inns gave its CEO the option to buy 200,000 shares of the company's stock at any time before June 30, 2019, at the September 16, 2011, market price of $49 per share. Let's say Hospitality Inns' stock price rises to $69 per share on March 24, 2017, and the CEO exercises his options on all 200,000 shares. The CEO would earn $20 ($69 − $49) per share on 200,000 shares, or $4 million. If Hospitality Inns' stock price stays below $49 during the entire period, the CEO will simply forgo his right to buy the shares. By linking CEO compensation to increases in the company's stock price, the stock option plan motivates the CEO to improve the company's long-run performance and stock price. (See also the Concepts in Action feature, p. 825.)[13]

The Securities and Exchange Commission (SEC) requires detailed disclosures of the compensation arrangements of top-level executives. In complying with these rules in 2010, Starwood Hotels and Resorts, for example, disclosed a compensation table showing the salaries, bonuses, stock options, other stock awards, and other compensation earned by its top five executives during the 2007, 2008, and 2009 fiscal years. Starwood, whose brands include Sheraton, Westin, and the W Hotels, also disclosed the peer companies that it uses to set executive pay and conduct performance comparisons. These include competitors in the hotel and hospitality industry (such as Host, Marriott, and Wyndham), as well as companies with similar revenues in other industries relevant to key talent recruitment needs (including Colgate-Palmolive, Nike, and Starbucks). Investors use this information to evaluate the relationship between compensation and performance across companies generally, and across companies operating in similar industries.

[13] Although stock options can improve incentives by linking CEO pay to improvements in stock price, they have been criticized for promoting improper or illegal activities by CEOs to increase the options' value. See J. Fox, "Sleazy CEOs Have Even More Options Tricks," www.money.cnn.com/2006/11/13/magazines/fortune/options_scandals.fortune/index.htm (accessed September 5, 2007).

Concepts in Action

Government Bailouts, Record Profits, and the 2009 Wall Street Compensation Dilemma

Wall Street firms paid out near-record bonuses to their employees for 2009 and many in the public were furious, given Wall Street's role in triggering the recent economic crisis. After losing $42.8 billion in 2008 and requiring a government bailout, Wall Street firms recorded $55 billion in 2009 profits, a sum nearly three times greater than the previous record. These results begged a serious question for managers at Goldman Sachs, Morgan Stanley, JPMorgan Chase, and leading financial institutions: After requiring public support just a year earlier, just how big should bankers' paydays be?

Highly paid executives on Wall Street are virtually always investment bankers or the top executives of the firms that employ them. Wall Street firms traditionally paid their investment bankers a share of the total revenue garnered by their unit. While this system worked in previous years, many argued it led to bankers taking the excessive risks that pushed the U.S. financial system to the brink of collapse.

Moreover, 2008 Wall Street bonuses infuriated the public. Just months after government intervention totaling $700 billion, the largest Wall Street banks paid out $56.9 billion in bonuses, or 45.4% of their 2008 revenues. As a result, President Barack Obama laid out strict new regulations on compensation for the 100 highest-paid employees at firms that the government deemed "exceptional assistance recipients" (i.e., firms receiving the largest bailouts). Further, there is little question that without the government intervening to save the financial sector in late 2008, the investment banks would have had a much worse year in 2009. This created a difficult situation for the banks. As one observer noted, "It is fair to say that some of the pay schemes promoted bad behavior and led to excessive risk, but you still need some sort of short-term incentive" for good performance, which Wall Street produced in 2009.

Wall Street firms tried to find some middle ground in 2009 by reducing bonus pools, or the amount of revenues allocated to bonuses, and introducing more long-term compensation into the bonus mix. At Goldman Sachs, for example, top executives received no cash bonuses in 2009, and instead received shares in the company that must be held for five years. For investment bankers and other employees, the company reduced its bonus pool to 36% of company revenue (down from 44% in 2008) and increased the stock-to-cash compensation ratio. Despite these changes, the average Wall Street bonus jumped 25% in 2009 to $123,850. At Goldman Sachs, where profits hit an all-time high, employees made an average of $500,000 each in 2009, including salary and bonus.

While many observers lauded the movement towards having a higher-percentage of bonuses be deferred, the size of 2009 Wall Street bonuses outraged others and ensured that investment banker compensation will remain a hot-button issue on Wall Street, Main Street, and in Washington, DC, for many years to come.

Source: Corkery, Michael. 2009. Goldman bows to pressure, makes changes to compensation. *Wall Street Journal* "Deal Journal," blog December 10; Elliott, Douglas J. 2010. *Wall Street Pay: A Primer*. Washington, DC: The Brookings Institution; Gandel, Stephen. 2009. Wall Street, meet Ken Feinberg, the pay czar. *Time*, November 2; Phillips, Matt. 2010. Goldman: Employees don't mind record low pay ratios. *Wall Street Journal.* "MarketBeat," blog February 3; Shell, Adam. 2010. Despite recession, average Wall Street bonus leaps 25%. *USA*, February 24; *Wall Street Journal*. 2010. The easy guide to Wall Street pay and bonuses. January 20; Weisman, Jonathan and Joanna S. Lublin. 2009. Obama lays out limits on executive pay. *Wall Street Journal*, February 5.

The SEC rules also require companies to disclose the principles underlying their executive compensation plans and the performance criteria—such as profitability, revenue growth, and market share—used in determining compensation. In its financial statements, Starwood described some of these principles as promoting the company's competitive position, providing a balanced approach to incentivizing and retaining employees, and aligning senior management's interests with those of shareholders. Starwood uses earnings per share and EBITDA as performance criteria to determine annual incentives for all of its executives. In addition, each executive has an individual scorecard of financial and nonfinancial performance measures. The company's board of directors creates the overall strategic direction of the company. Individual and strategic goals for executives are then established to support the overall company goals but are tailored to each executive's area of control.

Decision Point

Why are managers compensated based on a mix of salary and incentives?

Strategy and Levers of Control[14]

Learning Objective 7

Describe the four levers of control and why they are necessary

. . . boundary, belief, and interactive control systems counterbalance diagnostic control systems

Given the management accounting focus of this book, this chapter has emphasized the role of quantitative financial and nonfinancial performance-evaluation measures that companies use to implement their strategies. These measures, such as ROI, RI, EVA, customer satisfaction, and employee satisfaction, monitor critical performance variables that help managers track progress toward achieving a company's strategic goals. Because these measures help diagnose whether a company is performing to expectations, they are collectively called **diagnostic control systems**. Companies motivate managers to achieve goals by holding them accountable for and by rewarding them for meeting these goals. The concern, however, is that the pressure to perform may cause managers to cut corners and misreport numbers to make their performance look better than it is, as happened at companies such as Enron, WorldCom, Tyco, and Health South. To prevent unethical and outright fraudulent behavior, companies need to balance the push for performance resulting from diagnostic control systems, the first of four levers of control, with three other levers: *boundary systems*, *belief systems*, and *interactive control systems*.

Boundary Systems

Boundary systems describe standards of behavior and codes of conduct expected of all employees, especially actions that are off-limits. Ethical behavior on the part of managers is paramount. In particular, numbers that subunit managers report should not be tainted by "cooking the books." They should be free of, for example, overstated assets, understated liabilities, fictitious revenues, and understated costs.

Codes of business conduct signal appropriate and inappropriate individual behaviors. The following are excerpts from Caterpillar's "Worldwide Code of Conduct":

> *While we conduct our business within the framework of applicable laws and regulations, for us, mere compliance with the law is not enough. We strive for more than that. . . . We must not engage in activities that create, or even appear to create, conflict between our personal interests and the interests of the company.*

Division managers often cite enormous pressure from top management "to make the budget" as excuses or rationalizations for not adhering to legal or ethical accounting policies and procedures. A healthy amount of motivational pressure is desirable, as long as the "tone from the top" and the code of conduct simultaneously communicate the absolute need for all managers to behave ethically at all times. Managers should train employees to behave ethically. They should promptly and severely reprimand unethical conduct, regardless of the benefits that might accrue to the company from unethical actions. Some companies, such as Lockheed-Martin, emphasize ethical behavior by routinely evaluating employees against a business code of ethics.

Many organizations also set explicit boundaries precluding actions that harm the environment. Environmental violations (such as water and air pollution) carry heavy fines and prison terms under the laws of the United States and other countries. But in many companies, environmental responsibilities extend beyond legal requirements.

Socially responsible companies set aggressive environmental goals and measure and report their performance against them. German, Swiss, Dutch, and Scandinavian companies report on environmental performance as part of a larger set of social responsibility disclosures (such as employee welfare and community development activities). Some companies, such as DuPont, make environmental performance a line item on every employee's salary appraisal report. Duke Power Company appraises employees on their performance in reducing solid waste, cutting emissions and discharges, and implementing environmental plans. The result? Duke Power has met all of its environmental goals.

[14] For a more-detailed discussion see R. Simons, *Levers of Control: How Managers Use Innovative Control Systems to Drive Strategic Renewal* (Boston: Harvard Business School Press, 1995).

Belief Systems

Belief systems articulate the mission, purpose, and core values of a company. They describe the accepted norms and patterns of behavior expected of all managers and other employees with respect to one another, shareholders, customers, and communities. For example, Johnson & Johnson describes its values and norms in a credo statement that is intended to inspire all managers and other employees to do their best.[15] Belief systems play to employees' *intrinsic motivation*, the desire to achieve self-satisfaction from good performance regardless of external rewards such as bonuses or promotion. Intrinsic motivation comes from being given greater responsibility, doing interesting and creative work, having pride in doing that work, establishing commitment to the organization, and developing personal bonds with coworkers. High intrinsic motivation enhances performance because managers and workers have a sense of achievement in doing something important, feel satisfied with their jobs, and see opportunities for personal growth.

Interactive Control Systems

Interactive control systems are formal information systems that managers use to focus the company's attention and learning on key strategic issues. Managers use interactive control systems to create an ongoing dialogue around these key issues and to personally involve themselves in subordinates' decision-making activities. An excessive focus on diagnostic control systems and critical performance variables can cause an organization to ignore emerging threats and opportunities—changes in technology, customer preferences, regulations, and industry competition that can undercut a business. Interactive control systems help prevent this problem by highlighting and tracking strategic uncertainties that businesses face, such as the emergence of digital imaging in the case of Kodak and Fujifilm, airline deregulation in the case of American Airlines, and the shift in customer preferences for mini- and microcomputers in the case of IBM. The key to this control lever is frequent face-to-face communications regarding these critical uncertainties. The result is ongoing discussion and debate about assumptions and action plans. New strategies emerge from the dialogue and debate surrounding the interactive process. Interactive control systems force busy managers to step back from the actions needed to manage the business today and to shift their focus forward to positioning the organization for the opportunities and threats of tomorrow.

Measuring and rewarding managers for achieving critical performance variables is an important driver of corporate performance. But these diagnostic control systems must be counterbalanced by the other levers of control, boundary systems, belief systems, and interactive control systems, to ensure that proper business ethics, inspirational values, and attention to future threats and opportunities are not sacrificed while achieving business results.

Decision Point

What are the four levers of control, and why does a company need to implement them?

Problems for Self-Study

The baseball division of Home Run Sports manufactures and sells baseballs. Assume production equals sales. Budgeted data for February 2011 are as follows:

Current assets	$ 400,000
Long-term assets	600,000
Total assets	$1,000,000
Production output	200,000 baseballs per month
Target ROI (Operating income ÷ Total assets)	30%
Fixed costs	$400,000 per month
Variable cost	$4 per baseball

1. Compute the minimum selling price per baseball necessary to achieve the target ROI of 30%. **Required**

[15] A full statement of the credo can be accessed at www.jnj.com/connect/about-jnj/jnj-credo/.

2. Using the selling price from requirement 1, separate the target ROI into its two components using the DuPont method.
3. Compute the RI of the baseball division for February 2011, using the selling price from requirement 1. Home Run Sports uses a required rate of return of 12% on total division assets when computing division RI.
4. In addition to her salary, Pamela Stephenson, the division manager, receives 3% of the monthly RI of the baseball division as a bonus. Compute Stephenson's bonus. Why do you think Stephenson is rewarded using both salary and a performance-based bonus? Stephenson does not like bearing risk.

Solution

1.
$$\begin{aligned}
\text{Target operating income} &= 30\% \text{ of } \$1{,}000{,}000 \text{ of total assets}\\
&= \$300{,}000\\
\text{Let } P &= \text{Selling price}\\
\text{Revenues} - \text{Variable costs} - \text{Fixed costs} &= \text{Operating income}\\
200{,}000P - (200{,}000 \times \$4) - \$400{,}000 &= \$300{,}000\\
200{,}000P &= \$300{,}000 + \$800{,}000 + \$400{,}000\\
&= \$1{,}500{,}000\\
P &= \$7.50 \text{ per baseball}
\end{aligned}$$

Proof:		
	Revenues, 200,000 baseballs × $7.50/baseball	$1,500,000
	Variable costs, 200,000 baseballs × $4/baseball	800,000
	Contribution margin	700,000
	Fixed costs	400,000
	Operating income	$ 300,000

2. The DuPont method describes ROI as the product of two components: return on sales (income ÷ revenues) and investment turnover (revenues ÷ investment).

$$\frac{\text{Income}}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Investment}} = \frac{\text{Income}}{\text{Investment}}$$

$$\frac{\$300{,}000}{\$1{,}500{,}000} \times \frac{\$1{,}500{,}000}{\$1{,}000{,}000} = \frac{\$300{,}000}{\$1{,}000{,}000}$$

$$0.2 \times 1.5 = 0.30, \text{ or } 30\%$$

3. $$\begin{aligned}
RI &= \text{Operating income} - \text{Required return on investment}\\
&= \$300{,}000 - (0.12 \times \$1{,}000{,}000)\\
&= \$300{,}000 - \$120{,}000\\
&= \$180{,}000
\end{aligned}$$

4. $$\begin{aligned}
\text{Stephensons bonus} &= 3\% \text{ of } RI\\
&= 0.03 \times \$180{,}000 = \$5{,}400
\end{aligned}$$

The baseball division's RI is affected by many factors, such as general economic conditions, beyond Stephenson's control. These uncontrollable factors make the baseball division's profitability uncertain and risky. Because Stephenson does not like bearing risk, paying her a flat salary, regardless of RI, would shield her from this risk. But there is a moral-hazard problem with this compensation arrangement. Because Stephenson's effort is difficult to monitor, the absence of performance-based compensation will provide her with no incentive to undertake extra physical and mental effort beyond what is necessary to retain her job or to uphold her personal values.

Paying no salary and rewarding Stephenson only on the basis of RI provides her with incentives to work hard but also subjects her to excessive risk because of uncontrollable factors that will affect RI and hence Stephenson's compensation. A compensation arrangement based only on RI would be more costly for Home Run Sports because it would have to compensate Stephenson for taking on uncontrollable risk. A compensation arrangement that consists of both a salary and an RI-based performance bonus balances the benefits of incentives against the extra costs of imposing uncontrollable risk

Decision Points

The following question-and-answer format summarizes the chapter's learning objectives. Each decision presents a key question related to a learning objective. The guidelines are the answer to that question.

Decision	Guidelines
1. What financial and nonfinancial performance measures do companies use in their balanced scorecards?	Financial measures such as return on investment and residual income measure aspects of both manager performance and organization-subunit performance. In many cases, financial measures are supplemented with nonfinancial measures of performance from the customer, internal-business-process, and learning-and-growth perspectives of the balanced scorecard—for example, customer-satisfaction, quality of products and services, and employee satisfaction.
2. What are the relative merits of return on investment (ROI), residual income (RI), and economic-value added (EVA) as performance measures for subunit managers?	Return on investment (ROI) is the product of two components: income divided by revenues (return on sales) and revenues divided by investment (investment turnover). Managers can increase ROI by increasing revenues, decreasing costs, and decreasing investment. But, ROI may induce managers of highly profitable divisions to reject projects that are in the firm's best interest because accepting the project reduces divisional ROI. Residual income (RI) is income minus a dollar amount of required return on investment. RI is more likely than ROI to promote goal congruence. Evaluating managers on RI is also consistent with the use of discounted cash flow to choose long-term projects. Economic value added (EVA) is a variation of the RI calculation. It equals after-tax operating income minus the product of (after-tax) weighted-average cost of capital and total assets minus current liabilities.
3. Over what timeframe should companies measure performance, and what are the alternative choices for calculating the components of each performance measure?	A multiyear perspective induces managers to consider the long-term consequences of their actions and prevents a myopic focus on short-run profits. When constructing accounting-based performance measures, firms must first decide on a definition of investment. They must also choose whether assets included in the investment calculations are measured at historical cost or current cost, and whether depreciable assets are calculated at gross or net book value.
4. What targets should companies use and when should they give feedback to managers regarding their performance relative to these targets?	Companies should tailor a budget to a particular subunit, a particular accounting system, and a particular performance measure. In general, problems of asset valuation and income measurement in a performance measure can be overcome by emphasizing budgets and targets that stress continuous improvement. Timely feedback is critical to enable managers to implement actions that correct deviations from target performance.
5. How can companies compare the performance of divisions operating in different countries?	Comparing the performance of divisions operating in different countries is difficult because of legal, political, social, economic, and currency differences. ROI and RI calculations for subunits operating in different countries need to be adjusted for differences in inflation between the two countries and changes in exchange rates.
6. Why are managers compensated based on a mix of salary and incentives?	Companies create incentives by rewarding managers on the basis of performance. But managers face risks because factors beyond their control may also affect their performance. Owners choose a mix of salary and incentive compensation to trade off the incentive benefit against the cost of imposing risk.
7. What are the four levers of control, and why does a company need to implement them?	The four levers of control are diagnostic control systems, boundary systems, belief systems, and interactive control systems. Implementing the four levers of control helps a company simultaneously strive for performance, behave ethically, inspire employees, and respond to strategic threats and opportunities.

Terms to Learn

This chapter and the Glossary at the end of the book contain definitions of the following important terms:

belief systems (**p. 827**)
boundary systems (**p. 826**)
current cost (**p. 815**)
diagnostic control systems (**p. 826**)
economic value added (EVA®) (**p. 812**)
imputed cost (**p. 810**)
interactive control systems (**p. 827**)
investment (**p. 808**)
moral hazard (**p. 822**)
residual income (RI) (**p. 810**)
return on investment (ROI) (**p. 809**)

Assignment Material

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Questions

23-1 Give examples of financial and nonfinancial performance measures that can be found in each of the four perspectives of the balanced scorecard.
23-2 What are the three steps in designing accounting-based performance measures?
23-3 What factors affecting ROI does the DuPont method of profitability analysis highlight?
23-4 "RI is not identical to ROI, although both measures incorporate income and investment into their computations." Do you agree? Explain.
23-5 Describe EVA.
23-6 Give three definitions of investment used in practice when computing ROI.
23-7 Distinguish between measuring assets based on current cost and historical cost.
23-8 What special problems arise when evaluating performance in multinational companies?
23-9 Why is it important to distinguish between the performance of a manager and the performance of the organization subunit for which the manager is responsible? Give an example.
23-10 Describe moral hazard.
23-11 "Managers should be rewarded only on the basis of their performance measures. They should be paid no salary." Do you agree? Explain.
23-12 Explain the role of benchmarking in evaluating managers.
23-13 Explain the incentive problems that can arise when employees must perform multiple tasks as part of their jobs.
23-14 Describe two disclosures required by the SEC with respect to executive compensation.
23-15 Describe the four levers of control.

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Exercises

23-16 ROI, comparisons of three companies. (CMA, adapted) Return on investment (ROI) is often expressed as follows:

$$\frac{\text{Income}}{\text{Investment}} = \frac{\text{Income}}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Investment}}$$

Required

1. What advantages are there in the breakdown of the computation into two separate components?
2. Fill in the following blanks:

	Companies in Same Industry		
	A	B	C
Revenues	$1,000,000	$500,000	?
Income	$ 100,000	$ 50,000	?
Investment	$ 500,000	?	$5,000,000
Income as a percentage of revenues	?	?	0.5%
Investment turnover	?	?	2
ROI	?	1%	?

After filling in the blanks, comment on the relative performance of these companies as thoroughly as the data permit.

23-17 Analysis of return on invested assets, comparison of two divisions, DuPont method. Global Data, Inc., has two divisions: Test Preparation and Language Arts. Results (in millions) for the past three years are partially displayed here:

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	A	B	C	D	E	F	G
1		Operating Income	Operating Revenues	Total Assets	Operating Income/ Operating Revenues	Operating Revenues/ Total Assets	Operating Income/ Total Assets
2	Test Preparation Division						
3	2011	$ 720	$ 9,000	$1,800	?	?	?
4	2012	920	?	?	11.5%	?	46%
5	2013	1,140	?	?	9.5%	6	?
6	Language Arts Division						
7	2011	$ 660	$ 3,000	$2,000	?	?	?
8	2012	?	3,525	2,350	20%	?	?
9	2013	?	?	2,900	?	1.6	20%
10	Global Data, Inc.						
11	2011	$1,380	$12,000	$3,800	?	?	?
12	2012	?	?	?	?	?	?
13	2013	?	?	?	?	?	?

Required

1. Complete the table by filling in the blanks.
2. Use the DuPont method of profitability analysis to explain changes in the operating-income-to-total-assets ratios over the 2011–2013 period for each division and for Global Data as a whole. Comment on the results.

23-18 ROI and RI. (D. Kleespie, adapted) The Outdoor Sports Company produces a wide variety of outdoor sports equipment. Its newest division, Golf Technology, manufactures and sells a single product—AccuDriver, a golf club that uses global positioning satellite technology to improve the accuracy of golfers' shots. The demand for AccuDriver is relatively insensitive to price changes. The following data are available for Golf Technology, which is an investment center for Outdoor Sports:

Total annual fixed costs	$30,000,000
Variable cost per AccuDriver	$ 500
Number of AccuDrivers sold each year	150,000
Average operating assets invested in the division	$48,000,000

Required

1. Compute Golf Technology's ROI if the selling price of AccuDrivers is $720 per club.
2. If management requires an ROI of at least 25% from the division, what is the minimum selling price that the Golf Technology Division should charge per AccuDriver club?
3. Assume that Outdoor Sports judges the performance of its investment centers on the basis of RI rather than ROI. What is the minimum selling price that Golf Technology should charge per AccuDriver if the company's required rate of return is 20%?

23-19 ROI and RI with manufacturing costs. Superior Motor Company makes electric cars and has only two products, the Simplegreen and the Superiorgreen. To produce the Simplegreen, Superior Motor employed assets of $13,500,000 at the beginning of the period, and $13,400,000 of assets at the end of the period. Other costs to manufacture the Simplegreen include the following:

Direct materials	$3,000 per unit
Setup	$1,300 per setup-hour
Production	$415 per machine-hour

General administration and selling costs total $7,340,000 for the period. In the current period, Superior Motor produced 10,000 Simplegreen cars using 6,000 setup-hours and 175,200 machine-hours. Superior Motor sold these cars for $12,000 each.

Required

1. Assuming that Superior Motor defines investment as average assets during the period, what is the return on investment for the Simplegreen division?
2. Calculate the residual income for the Simplegreen if Superior Motor has a required rate of return of 12% on investments.

23-20 Financial and nonfinancial performance measures, goal congruence. (CMA, adapted) Summit Equipment specializes in the manufacture of medical equipment, a field that has become increasingly competitive. Approximately two years ago, Ben Harrington, president of Summit, decided to revise the bonus plan (based, at the time, entirely on operating income) to encourage division managers to focus on areas

that were important to customers and that added value without increasing cost. In addition to a profitability incentive, the revised plan includes incentives for reduced rework costs, reduced sales returns, and on-time deliveries. Bonuses are calculated and awarded semiannually on the following basis: A base bonus is calculated at 2% of operating income; this amount is then adjusted as follows:

a. (i) Reduced by excess of rework costs over and above 2% of operating income
(ii) No adjustment if rework costs are less than or equal to 2% of operating income
b. (i) Increased by $5,000 if more than 98% of deliveries are on time, and by $2,000 if 96% to 98% of deliveries are on time
(ii) No adjustment if on-time deliveries are below 96%
c. (i) Increased by $3,000 if sales returns are less than or equal to 1.5% of sales
(ii) Decreased by 50% of excess of sales returns over 1.5% of sales

Note: If the calculation of the bonus results in a negative amount for a particular period, the manager simply receives no bonus, and the negative amount is not carried forward to the next period.

Results for Summit's Charter division and Mesa division for 2012, the first year under the new bonus plan, follow. In 2011, under the old bonus plan, the Charter division manager earned a bonus of $27,060 and the Mesa division manager, a bonus of $22,440.

	Charter Division		Mesa Division	
	January 1, 2012, to June 30, 2012	July 1, 2012, to Dec. 31, 2012	January 1, 2012, to June 30, 2012	July 1, 2012, to Dec. 31, 2012
Revenues	$4,200,000	$4,400,000	$2,850,000	$2,900,000
Operating income	$462,000	$440,000	$342,000	$406,000
On-time delivery	95.4%	97.3%	98.2%	94.6%
Rework costs	$11,500	$11,000	$6,000	$8,000
Sales returns	$84,000	$70,000	$44,750	$42,500

Required

1. Why did Harrington need to introduce these new performance measures? That is, why does Harrington need to use these performance measures in addition to the operating-income numbers for the period?
2. Calculate the bonus earned by each manager for each six-month period and for 2012.
3. What effect did the change in the bonus plan have on each manager's behavior? Did the new bonus plan achieve what Harrington desired? What changes, if any, would you make to the new bonus plan?

23-21 Goal incongruence and ROI. Bleefl Corporation manufactures furniture in several divisions, including the patio furniture division. The manager of the patio furniture division plans to retire in two years. The manager receives a bonus based on the division's ROI, which is currently 11%.

One of the machines that the patio furniture division uses to manufacture the furniture is rather old, and the manager must decide whether to replace it. The new machine would cost $30,000 and would last 10 years. It would have no salvage value. The old machine is fully depreciated and has no trade-in value. Bleefl uses straight-line depreciation for all assets. The new machine, being new and more efficient, would save the company $5,000 per year in cash operating costs. The only difference between cash flow and net income is depreciation. The internal rate of return of the project is approximately 11%. Bleefl Corporation's weighted average cost of capital is 6%. Bleefl is not subject to any income taxes.

Required

1. Should Bleefl Corporation replace the machine? Why or why not?
2. Assume that "investment" is defined as average net long-term assets after depreciation. Compute the project's ROI for each of its first five years. If the patio furniture manager is interested in maximizing his or her bonus, would the manager replace the machine before he or she retires? Why or why not?
3. What can Bleefl do to entice the manager to replace the machine before retiring?

23-22 ROI, RI, EVA. Performance Auto Company operates a new car division (that sells high performance sports cars) and a performance parts division (that sells performance improvement parts for family cars). Some division financial measures for 2011 are as follows:

	A	B	C
1		New Car Division	Performance Parts Division
2	Total assets	$33,000,000	$28,500,000
3	Current liabilities	$ 6,600,000	$ 8,400,000
4	Operating income	$ 2,475,000	$ 2,565,000
5	Required rate of return	12%	12%

Required

1. Calculate return on investment (ROI) for each division using operating income as a measure of income and total assets as a measure of investment.
2. Calculate residual income (RI) for each division using operating income as a measure of income and total assets minus current liabilities as a measure of investment.
3. William Abraham, the New Car Division manager, argues that the performance parts division has "loaded up on a lot of short-term debt" to boost its RI. Calculate an alternative RI for each division that is not sensitive to the amount of short-term debt taken on by the performance parts division. Comment on the result.
4. Performance Auto Company, whose tax rate is 40%, has two sources of funds: long-term debt with a market value of $18,000,000 at an interest rate of 10%, and equity capital with a market value of $12,000,000 and a cost of equity of 15%. Applying the same weighted-average cost of capital (WACC) to each division, calculate EVA for each division.
5. Use your preceding calculations to comment on the relative performance of each division.

23-23 ROI, RI, measurement of assets. (CMA, adapted) Carter Corporation recently announced a bonus plan to be awarded to the manager of the most profitable division. The three division managers are to choose whether ROI or RI will be used to measure profitability. In addition, they must decide whether investment will be measured using gross book value or net book value of assets. Carter defines income as operating income and investment as total assets. The following information is available for the year just ended:

Division	Gross Book Value of Assets	Accumulated Depreciation	Operating Income
Radnor	$1,200,000	$645,000	$142,050
Easttown	1,140,000	615,000	137,550
Marion	750,000	420,000	92,100

Carter uses a required rate of return of 10% on investment to calculate RI.

Required

Each division manager has selected a method of bonus calculation that ranks his or her division number one. Identify the method for calculating profitability that each manager selected, supporting your answer with appropriate calculations. Comment on the strengths and weaknesses of the methods chosen by each manager.

23-24 Multinational performance measurement, ROI, RI. The Seaside Corporation manufactures similar products in the United States and Norway. The U.S. and Norwegian operations are organized as decentralized divisions. The following information is available for 2012; ROI is calculated as operating income divided by total assets:

	U.S. Division	Norwegian Division
Operating income	?	6,840,000 kroner
Total assets	$7,500,000	72,000,000 kroner
ROI	9.3%	?

Both investments were made on December 31, 2011. The exchange rate at the time of Seaside's investment in Norway on December 31, 2011, was 9 kroner = $1. During 2012, the Norwegian kroner decreased steadily in value so that the exchange rate on December 31, 2012, is 10 kroner = $1. The average exchange rate during 2012 is [(9 + 10) ÷ 2] = 9.5 kroner = $1.

Required

1a. Calculate the U.S. division's operating income for 2012.
b. Calculate the Norwegian division's ROI for 2012 in kroner.
2. Top management wants to know which division earned a better ROI in 2012. What would you tell them? Explain your answer.
3. Which division do you think had the better RI performance? Explain your answer. The required rate of return on investment (calculated in U.S. dollars) is 8%.

23-25 ROI, RI, EVA and Performance Evaluation. Eva Manufacturing makes fashion products and competes on the basis of quality and leading-edge designs. The company has $3,000,000 invested in assets in its clothing manufacturing division. After-tax operating income from sales of clothing this year is $600,000. The cosmetics division has $10,000,000 invested in assets and an after-tax operating income this year of $1,600,000. Income for the clothing division has grown steadily over the last few years. The weighted-average cost of capital for Eva is 10% and the previous period's after-tax return on investment for each division was 15%. The CEO of Eva has told the manager of each division that the division that "performs best" this year will get a bonus.

Required

1. Calculate the ROI and residual income for each division of Eva Manufacturing, and briefly explain which manager will get the bonus. What are the advantages and disadvantages of each measure?
2. The CEO of Eva Manufacturing has recently heard of another measure similar to residual income called EVA. The CEO has the accountant calculate EVA adjusted incomes of clothing and cosmetics, and finds that the adjusted after-tax operating incomes are $720,000 and $1,430,000, respectively. Also, the clothing division

has $400,000 of current liabilities, while the cosmetics division has only $200,000 of current liabilities. Using the preceding information, calculate EVA, and discuss which division manager will get the bonus.

3. What nonfinancial measures could Eva use to evaluate divisional performances?

23-26 Risk sharing, incentives, benchmarking, multiple tasks. The Dexter division of AMCO sells car batteries. AMCO's corporate management gives Dexter management considerable operating and investment autonomy in running the division. AMCO is considering how it should compensate Jim Marks, the general manager of the Dexter division. Proposal 1 calls for paying Marks a fixed salary. Proposal 2 calls for paying Marks no salary and compensating him only on the basis of the division's ROI, calculated based on operating income before any bonus payments. Proposal 3 calls for paying Marks some salary and some bonus based on ROI. Assume that Marks does not like bearing risk.

Required

1. Evaluate the three proposals, specifying the advantages and disadvantages of each.
2. Suppose that AMCO competes against Tiara Industries in the car battery business. Tiara is approximately the same size as the Dexter division and operates in a business environment that is similar to Dexter's. The top management of AMCO is considering evaluating Marks on the basis of Dexter's ROI minus Tiara's ROI. Marks complains that this approach is unfair because the performance of another company, over which he has no control, is included in his performance-evaluation measure. Is Marks' complaint valid? Why or why not?
3. Now suppose that Marks has no authority for making capital-investment decisions. Corporate management makes these decisions. Is ROI a good performance measure to use to evaluate Marks? Is ROI a good measure to evaluate the economic viability of the Dexter division? Explain.
4. Dexter's salespersons are responsible for selling and providing customer service and support. Sales are easy to measure. Although customer service is important to Dexter in the long run, it has not yet implemented customer-service measures. Marks wants to compensate his sales force only on the basis of sales commissions paid for each unit of product sold. He cites two advantages to this plan: (a) It creates strong incentives for the sales force to work hard, and (b) the company pays salespersons only when the company itself is earning revenues. Do you like his plan? Why or why not?

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Problems

23-27 Residual Income and EVA; timing issues. Doorchime Company makes doorbells. It has a weighted average cost of capital of 9%, and total assets of $5,550,000. Doorchime has current liabilities of $800,000. Its operating income for the year was $630,000. Doorchime does not have to pay any income taxes. One of the expenses for accounting purposes was a $90,000 advertising campaign. The entire amount was deducted this year, although the Doorchime CEO believes the beneficial effects of this advertising will last four years.

Required

1. Calculate residual income, assuming Doorchime defines investment as total assets.
2. Calculate EVA for the year. Adjust both the assets and operating income for advertising assuming that for the purposes of economic value added the advertising is capitalized and amortized on a straight-line basis over four years.
3. Discuss the difference between the outcomes of requirements 1 and 2 and which measure is preferred.

23-28 ROI performance measures based on historical cost and current cost. Nature's Elixir Corporation operates three divisions that process and bottle natural fruit juices. The historical-cost accounting system reports the following information for 2011:

	Passion Fruit Division	Kiwi Fruit Division	Mango Fruit Division
Revenues	$1,000,000	$1,400,000	$2,200,000
Operating costs (excluding plant depreciation)	600,000	760,000	1,200,000
Plant depreciation	140,000	200,000	240,000
Operating income	$ 260,000	$ 440,000	$ 760,000
Current assets	$ 400,000	$ 500,000	$ 600,000
Long-term assets—plant	280,000	1,800,000	2,640,000
Total assets	$ 680,000	$2,300,000	$3,240,000

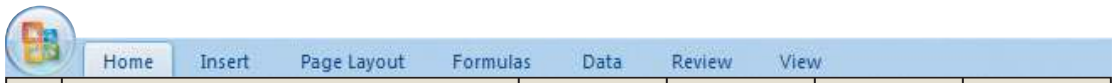
Nature's Elixir estimates the useful life of each plant to be 12 years, with no terminal disposal value. The straight-line depreciation method is used. At the end of 2011, the passion fruit plant is 10 years old, the kiwi fruit plant is 3 years old, and the mango fruit plant is 1 year old. An index of construction costs over the 10-year period that Nature's Elixir has been operating (2001 year-end = 100) is as follows:

2001	2008	2010	2011
100	136	160	170

Given the high turnover of current assets, management believes that the historical-cost and current-cost measures of current assets are approximately the same.

1. Compute the ROI ratio (operating income to total assets) of each division using historical-cost measures. Comment on the results.
2. Use the approach in Exhibit 23-2 (p. 817) to compute the ROI of each division, incorporating current-cost estimates as of 2011 for depreciation expense and long-term assets. Comment on the results.
3. What advantages might arise from using current-cost asset measures as compared with historical-cost measures for evaluating the performance of the managers of the three divisions?

23-29 ROI, measurement alternatives for performance measures P. F. Skidaddle's operates casual dining restaurants in three regions: Denver, Seattle, and Sacramento. Each geographic market is considered a separate division. The Denver division is made up of four restaurants, each built in early 2002. The Seattle division is made up of three restaurants, each built in January 2006. The Sacramento division is the newest, consisting of three restaurants built four years ago. Division managers at P. F. Skidaddle's are evaluated on the basis of ROI. The following information refers to the three divisions at the end of 2012:



	A	B	C	D	E
1		**Denver**	**Seattle**	**Sacramento**	**Total**
2	Division revenues	$8,365,000	$6,025,000	$5,445,000	$20,138,000
3	Division expenses	7,945,000	5,521,000	4,979,000	18,445,000
4	Division operating income	723,000	504,000	466,000	1,693,000
5	Gross book value of long-term assets	4,750,000	3,750,000	4,050,000	12,300,000
6	Accumulated depreciation	3,300,000	1,750,000	1,080,000	6,130,000
7	Current assets	999,800	768,200	824,600	2,592,600
8	Depreciation expense	300,000	250,000	270,000	820,000
9	Construction cost index for year of construction	100	110	118	

Required

1. Calculate ROI for each division using net book value of total assets.
2. Using the technique in Exhibit 23-2, compute ROI using current-cost estimates for long-term assets and depreciation expense. Construction cost index for 2012 is 122. Estimated useful life of operational assets is 15 years.
3. How does the choice of long-term asset valuation affect management decisions regarding new capital investments? Why might this be more significant to the Denver division manager than to the Sacramento division manager?

23-30 ROI, RI, and Multinational Firms. Konekopf Corporation has a division in the United States, and another in France. The investment in the French assets was made when the exchange rate was $1.30 per euro. The average exchange rate for the year was $1.40 per euro. The exchange rate at the end of the fiscal year was $1.45 per euro. Income and investment for the two divisions are as follows:

	United States	France
Investment in assets	$5,450,000	3,800,000 euro
Income for current year	$ 681,250	486,400 euro

Required

1. The required return for Konekopf is 12%. Calculate ROI and RI for the two divisions. For the French division, calculate these measures using both dollars and euro. Which division is doing better?
2. What are the advantages and disadvantages of translating the French division information from euro to dollars?

23-31 Multinational firms, differing risk, comparison of profit, ROI and RI. Zynga Multinational, Inc., has divisions in the United States, Germany, and New Zealand. The U.S. division is the oldest and most established of the three, and has a cost of capital of 8%. The German division was started three years ago when the exchange rate for euro was 1 euro = $1.25. It is a large and powerful division of Zynga, Inc., with a cost of capital of 12%. The New Zealand division was started this year, when the exchange rate was 1 New Zealand Dollar (NZD) = $0.60. Its cost of capital is 14%. Average exchange rates for the

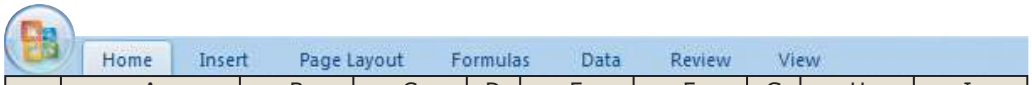
current year are 1 euro = $1.40 and 1 NZD = $0.64. Other information for the three divisions includes the following:

	United States	Germany	New Zealand
Long term assets	$23,246,112	11,939,200 euro	9,400,000 NZD
Operating revenues	$13,362,940	5,250,000 euros	4,718,750 NZD
Operating expenses	$ 8,520,000	3,200,000 euros	3,250,000 NZD
Income tax rate	40%	35%	25%

Required

1. Translate the German and New Zealand information into dollars to make the divisions comparable. Find the after-tax operating income for each division and compare the profits.
2. Calculate ROI using after-tax operating income. Compare among divisions.
3. Use after-tax operating income and the individual cost of capital of each division to calculate residual income and compare.
4. Redo requirement 2 using pretax operating income instead of net income. Why is there a big difference, and what does it mean for performance evaluation?

23-32 ROI, RI, DuPont method, investment decisions, balanced scorecard. Global Event Group has two major divisions: print and Internet. Summary financial data (in millions) for 2011 and 2012 are as follows:



	A	B	C	D	E	F	G	H	I
1		Operating Income			Revenues			Total Assets	
2		2011	2012		2011	2012		2011	2012
3	Print	$3,740	$6,120		$18,300	$20,400		$18,650	$24,000
4	Internet	565	780		25,900	30,000		11,200	12,000

The two division managers' annual bonuses are based on division ROI (defined as operating income divided by total assets). If a division reports an increase in ROI from the previous year, its management is automatically eligible for a bonus; however, the management of a division reporting a decline in ROI has to present an explanation to the Global Event Group board and is unlikely to get any bonus.

Carol Mays, manager of the print division, is considering a proposal to invest $960 million in a new computerized news reporting and printing system. It is estimated that the new system's state-of-the-art graphics and ability to quickly incorporate late-breaking news into papers will increase 2013 division operating income by $144 million. Global Event Group uses a 12% required rate of return on investment for each division.

Required

1. Use the DuPont method of profitability analysis to explain differences in 2012 ROIs between the two divisions. Use 2012 total assets as the investment base.
2. Why might Mays be less than enthusiastic about accepting the investment proposal for the new system, despite her belief in the benefits of the new technology?
3. Chris Moreno, CEO of Global Event Group, is considering a proposal to base division executive compensation on division RI.
   a. Compute the 2012 RI of each division.
   b. Would adoption of an RI measure reduce Mays' reluctance to adopt the new computerized system investment proposal?
4. Moreno is concerned that the focus on annual ROI could have an adverse long-run effect on Global Event Group's customers. What other measurements, if any, do you recommend that Moreno use? Explain briefly.

23-33 Division managers' compensation, levers of control (continuation of 23-32). Chris Moreno seeks your advice on revising the existing bonus plan for division managers of Global Event Group. Assume division managers do not like bearing risk. Moreno is considering three ideas:

- Make each division manager's compensation depend on division RI.
- Make each division manager's compensation depend on company-wide RI.
- Use benchmarking, and compensate division managers on the basis of their division's RI minus the RI of the other division.

Required

1. Evaluate the three ideas Moreno has put forth using performance-evaluation concepts described in this chapter. Indicate the positive and negative features of each proposal.
2. Moreno is concerned that the pressure for short-run performance may cause managers to cut corners. What systems might Moreno introduce to avoid this problem? Explain briefly.

3. Moreno is also concerned that the pressure for short-run performance might cause managers to ignore emerging threats and opportunities. What system might Moreno introduce to prevent this problem? Explain briefly.

23-34 Executive compensation, balanced scorecard. Community Bank recently introduced a new bonus plan for its business unit executives. The company believes that current profitability and customer satisfaction levels are equally important to the bank's long-term success. As a result, the new plan awards a bonus equal to 1% of salary for each 1% increase in business unit net income or 1% increase in the business unit's customer satisfaction index. For example, increasing net income from $3 million to $3.3 million (or 10% from its initial value) leads to a bonus of 10% of salary, while increasing the business unit's customer satisfaction index from 70 to 73.5 (or 5% from its initial value) leads to a bonus of 5% of salary. There is no bonus penalty when net income or customer satisfaction declines. In 2011 and 2012, Community Bank's three business units reported the following performance results:

	Retail Banking		Business Banking		Credit Cards	
	2011	2012	2011	2012	2011	2012
Net income	$2,600,000	$2,912,000	$2,800,000	$2,940,000	$2,550,000	$2,499,000
Customer satisfaction	74	75.48	69	75.9	68	78.88

Required

1. Compute the bonus as a percent of salary earned by each business unit executive in 2012.
2. What factors might explain the differences between improvement rates for net income and those for customer satisfaction in the three units? Are increases in customer satisfaction likely to result in increased net income right away?
3. Community Bank's board of directors is concerned that the 2012 bonus awards may not actually reflect the executives' overall performance. In particular, it is concerned that executives can earn large bonuses by doing well on one performance dimension but underperforming on the other. What changes can it make to the bonus plan to prevent this from happening in the future? Explain briefly.

23-35 Ethics, manager's performance evaluation. (A. Spero, adapted) Hamilton Semiconductors manufactures specialized chips that sell for $25 each. Hamilton's manufacturing costs consist of variable cost of $3 per chip and fixed costs of $8,000,000. Hamilton also incurs $900,000 in fixed marketing costs each year.

Hamilton calculates operating income using absorption costing—that is, Hamilton calculates manufacturing cost per unit by dividing total manufacturing costs by actual production. Hamilton costs all units in inventory at this rate and expenses the costs in the income statement at the time when the units in inventory are sold. Next year, 2012, appears to be a difficult year for Hamilton. It expects to sell only 400,000 units. The demand for these chips fluctuates considerably, so Hamilton usually holds minimal inventory.

Required

1. Calculate Hamilton's operating income in 2012 (a) if Hamilton manufactures 400,000 units and (b) if Hamilton manufactures 500,000 units.
2. Would it be unethical for Randy Jones, the general manager of Hamilton Semiconductors, to produce more units than can be sold in order to show better operating results? Jones' compensation has a bonus component based on operating income. Explain your answer.
3. Would it be unethical for Jones to ask distributors to buy more product than they need? Hamilton follows the industry practice of booking sales when products are shipped to distributors. Explain your answer.

23-36 Ethics, levers of control. Monroe Moulding is a large manufacturer of wood picture frame moulding. The company operates distribution centers in Dallas and Philadelphia. The distribution centers cut frames to size (called "chops") and ship them to custom picture framers. Because of the exacting standards and natural flaws of wood picture frame moulding, the company typically produces a large amount of waste in cutting chops. In recent years, the company's average yield has been 76% of length moulding. The remaining 24% is sent to a wood recycler. Monroe's performance-evaluation system pays its distribution center managers substantial bonuses if the company achieves annual budgeted profit numbers. In the last quarter of 2010, Frank Jessup, Monroe's controller, noted a significant increase in yield percentage of the Dallas distribution center, from 74% to 85%. This increase resulted in a 5% increase in the center's profits.

During a recent trip to the Dallas center, Jessup wandered into the moulding warehouse. He noticed that much of the scrap moulding was being returned to the inventory bins rather than being placed in the discard pile. Upon further inspection, he determined that the moulding was in fact unusable. When he asked one of the workers, he was told that the center's manager had directed workers to stop scrapping all but the very shortest pieces. This practice resulted in the center over-reporting both yield and ending inventory. The overstatement of Dallas inventory will have a significant impact on Monroe's financial statements.

1. What should Jessup do? You may want to refer to the *IMA Statement of Ethical Professional Practice*, p. 16.
2. Which lever of control is Monroe emphasizing? What changes, if any, should be made?

Collaborative Learning Problem

23-37 RI, EVA, Measurement alternatives, Goal congruence. Renewal Resorts, Inc., operates health spas in Ft. Meyers, Florida, Scottsdale, Arizona, and Monterey, California. The Ft. Meyers spa was the company's first, opened in 1986. The Scottsdale spa opened in 1999, and the Monterey spa opened in 2008. Renewal Resorts has previously evaluated divisions based on residual income (RI), but the company is considering changing to an economic value added (EVA) approach. All spas are assumed to face similar risks. Data for 2012 follow:

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	A	B	C	D	E
1		**Ft. Meyers Spa**	**Scottsdale Spa**	**Monterey Spa**	**Total**
2	Revenues	$4,100,000	$4,380,000	$3,230,000	$11,710,000
3	Variable costs	1,600,000	1,630,000	955,000	4,185,000
4	Fixed costs	1,280,000	1,560,000	980,000	3,820,000
5	Operating income	1,220,000	1,190,000	1,295,000	3,705,000
6	Interest costs on long-term debt at 8%	368,000	416,000	440,000	1,224,000
5	Income before taxes at 35%	852,000	774,000	855,000	2,481,000
6	Net income	553,800	503,100	555,750	1,612,650
7					
8	Net book value at 2012 year-end:				
9	Current assets	$1,280,000	$ 850,000	$ 600,000	$ 2,730,000
10	Long-term assets	4,875,000	5,462,000	6,835,000	17,172,000
11	Total assets	6,155,000	6,312,000	7,435,000	19,902,000
12	Current liabilities	330,000	265,000	84,000	679,000
13	Long-term debt	4,600,000	5,200,000	5,500,000	15,300,000
14	Stockholders' equity	1,225,000	847,000	1,851,000	3,923,000
15	Total liabilities and stockholders' equity	6,155,000	6,312,000	7,435,000	19,902,000
16					
17	Market value of debt	$4,600,000	$5,200,000	$5,500,000	$15,300,000
18	Market value of equity	2,400,000	2,660,000	2,590,000	7,650,000
19	Cost of equity capital				17%
20	Required rate of return				11%
21	Accumulated depreciation on long-term assets	2,200,000	1,510,000	220,000	

Required

1. Calculate RI for each of the spas based on operating income and using total assets as the measure of investment. Suppose that the Ft. Meyers spa is considering adding a new group of saunas from Finland that will cost $225,000. The saunas are expected to bring in operating income of $22,000. What effect would this project have on the RI of the Ft. Meyers spa? Based on RI, would the Ft. Meyers manager accept or reject this project? Why? Without resorting to calculations, would the other managers accept or reject the project? Why?
2. Why might Renewal Resorts want to use EVA instead of RI for evaluating the performance of the three spas?
3. Refer back to the original data. Calculate the WACC for Renewal Resorts.
4. Refer back to the original data. Calculate EVA for each of the spas, using net book value of long-term assets. Calculate EVA again, this time using gross book value of long-term assets. Comment on the differences between the two methods.
5. How is goal congruence affected by the selection of asset measurement method?