CHAPTER 13

Corporate Valuation, Value-Based Management and Corporate Governance

The year 2008 was a grim one for many companies, with the average stock (as measured by the NYSE Composite Index) losing about 40% of its value. There are only three possible explanations for this decline.

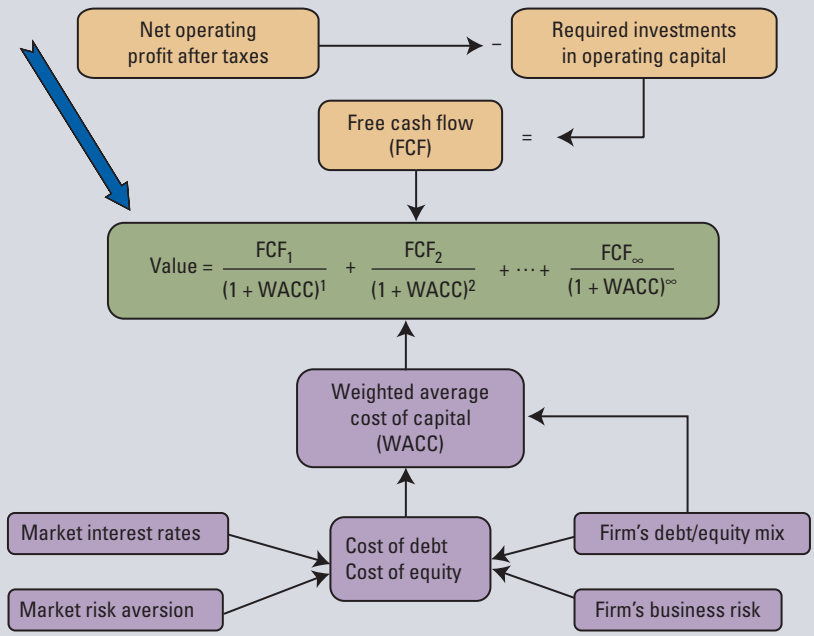
1. *The market price did not reflect intrinsic value—at the beginning of the year, at the end of the year, or possibly both. In other words, the market might have been overvalued in early 2008, undervalued at the end of 2008, or both. This implies that investors were (and perhaps still are) irrational.*
2. *Companies' expected future free cash flows fell sharply when investors revised their estimates downward as information about the pending economic crisis unfolded.*
3. *The cost of capital went up, which could have been due to an increase in investors' risk aversion.*

These explanations aren't mutually exclusive, so the explanation for the market decline is likely some mix of the three reasons. Keep the stock market's performance in mind as you read the first half of this chapter, which explains how the intrinsic values of a company and its stock are determined.

The global economic crisis also has caused widespread attention on corporate governance, with governments now taking ownership/leadership positions at many companies ranging from Fannie Mae to Citigroup to General Motors. As we write this, governments all over the world are struggling to determine the type and degree of regulation that will prevent future meltdowns yet still promote innovation. CEOs and board directors are in the news daily, with many poorly performing CEOs being replaced and many boards assuming additional responsibilities. There is a spotlight on executive compensation, with the federal government limiting compensation to bailout recipients and Congress proposing laws to "claw back" some compensation already paid. In summary, there is a worldwide focus on corporate governance, so think about these examples when reading the second half of this chapter.

Corporate Valuation: Putting the Pieces Together

The intrinsic value of a firm is determined by the size, timing, and risk of its expected future free cash flows (FCF). Chapter 12 showed how to project financial statements, and Chapter 2 showed how to calculate free cash flows. Chapter 9 explained how to estimate the weighted average cost of capital. This chapter puts the pieces together and shows how to calculate the value of a firm. It also shows how to use the valuation model as a guide for choosing among different corporate strategies and operating tactics.



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The textbook's Web site contains an Excel *file that will guide you through the chapter's calculations. The file for this chapter is* **Ch13 Tool Kit.xls**, *and we encourage you to open the file and follow along as you read the chapter.*

As we have emphasized throughout the book, maximizing intrinsic value should be management's primary objective. However, to maximize value, managers need a tool for estimating the effects of alternative strategies. In this chapter, we develop and illustrate such a tool—the **corporate valuation model**, which is the present value of expected future free cash flows discounted at the weighted average cost of capital. In a sense, the corporate valuation model is the culmination of all the material covered thus far, because it pulls together financial statements, cash flows, financial projections, time value of money, risk, and the cost of capital. Some companies practice **value-based management** by systematically using the corporate valuation model to guide their decisions. The degree to which a company employs principles of value-based management often depends on its **corporate governance**, which is the set of laws, rules, and procedures that influence its operations and the decisions made by its managers. This chapter addresses all these topics, beginning with corporate valuation.

13.1 Overview of Corporate Valuation

As stated earlier, managers should evaluate the effects of alternative strategies on their firms' values. This really means forecasting financial statements under alternative strategies, finding the present value of each strategy's cash flow stream, and then choosing the strategy that provides the maximum value. The financial statements should be projected using the techniques and procedures discussed in Chapter 12, and the discount rate should be the risk-adjusted cost of capital as discussed in Chapter 9. But what model should managers use to discount the cash flows? One possibility is the dividend growth model from Chapter 7. However, that model is often unsuitable for managerial purposes. For example, suppose a start-up company is formed to develop and market a new product. Its managers will focus on product development, marketing, and raising capital. They will probably be thinking about an eventual IPO, or perhaps the sale of the company to a larger firm—Cisco, Microsoft, Intel, IBM, or another of the industry leaders that buy hundreds of successful new companies each year. For the managers of such a start-up, the decision to initiate dividend payments in the foreseeable future will be totally off the radar screen. Thus, the dividend growth model is not useful for valuing most start-up companies.

Also, many established firms pay no dividends. Investors may expect them to pay dividends sometime in the future—but when, and how much? As long as internal opportunities and acquisitions are so attractive, the initiation of dividends will be postponed, and this makes the dividend growth model of little use. Even Microsoft, one of the world's most successful companies, paid no dividends until 2003.

Finally, the dividend growth model is generally of limited use for internal management purposes, even for a dividend-paying company. If the firm consisted of just one big asset and if that asset produced all of the cash flows used to pay dividends, then alternative strategies could be judged through the use of the dividend growth model. However, most firms have several different divisions with many assets, so the corporation's value depends on the cash flows from many different assets and on the actions of many managers. These managers need a way to measure the effects of their decisions on corporate value, but the discounted dividend model isn't very useful because individual divisions don't pay dividends.

Fortunately, the corporate valuation model does not depend on dividends, and it can be applied to divisions and subunits as well as to the entire firm.

Another important aspect of value-based management is the concept of corporate governance. The corporate valuation model shows how corporate decisions affect *stockholders*. However, corporate decisions are made by managers, not stockholders, and maximizing shareholder wealth is not the same as individual managers maximizing their own "satisfaction." Thus, a key aspect of value-based management is making sure that managers focus on the goal of maximizing stockholder wealth. The set of laws, rules, and procedures that influence a company's operations and motivate its managers falls under the general heading of *corporate governance*.

This chapter discusses the corporate valuation model, value-based management, and corporate governance, beginning with the corporate valuation model.

Self-Test

Why is the corporate valuation model applicable in more circumstances than the dividend growth model?

What is value-based management?

What is corporate governance?

13.2 The Corporate Valuation Model

There are two types of corporate assets: **operating** and **nonoperating**. Operating assets, in turn, take two forms: **assets-in-place** and **growth options**. Assets-in-place include such tangible assets as land, buildings, machines, and inventory as well as intangible assets such as patents, customer lists, reputation, and general know-how. Growth options are opportunities to expand that arise from the firm's current operating knowledge, experience, and other resources. The assets-in-place provide an expected stream of cash flows, and so do the growth options. For instance, Wal-Mart has stores, inventory, widespread name recognition, a reputation for low prices, and considerable expertise in business processes. These tangible and intangible assets produce current sales and cash flows, and they also provide opportunities for new investments that will produce additional cash flows in the future. Similarly, Merck owns manufacturing plants, patents, and other real assets; it also has a knowledge base that facilitates the development of new drugs and thus new cash flow streams.

Most companies also own some nonoperating assets, which come in two forms. The first is a marketable securities portfolio over and above the cash needed to operate the business. For example, Ford Motor Company's automotive operation held about $9.2 billion in marketable securities at the end of December 2008, and this was in addition to $6.4 billion in cash. Second, Ford also had $1.1 billion of investments in other businesses, which were reported on the asset side of the balance sheet as "Equity in Net Assets of Affiliated Companies." In total, Ford had $9.2 + $1.1 = $10.3 billion of nonoperating assets, amounting to 14% of its $73.8 billion of total automotive assets. For most companies, the percentage is much lower. For example, as of the end of January, 2009, Wal-Mart's percentage of nonoperating assets was less than 1%, which is more typical.

We see, then, that for most companies operating assets are far more important than nonoperating assets. Moreover, companies can influence the values of their operating assets, whereas the values of nonoperating assets are largely beyond their direct control. Therefore, value-based management—and hence this chapter—focuses on operating assets.

Estimating the Value of Operations

Tables 13-1 and 13-2 contain the actual 2010 and projected 2011 to 2014 financial statements for MagnaVision Inc., which produces optical systems for use in medical photography. (See Chapter 12 for more details on how to project financial statements.) Growth has been rapid in the past, but the market is becoming saturated, so the sales growth rate is expected to decline from 21% in 2011 to a sustainable rate of 5% in 2014 and beyond. Profit margins are expected to improve as the production process becomes more efficient and because MagnaVision will no longer be incurring marketing costs associated with the introduction of a major product. All items on the financial statements are projected to grow at a 5% rate after 2014. Note that the company does not pay a dividend, but it is expected to start paying out about 75% of its earnings beginning in 2013. (Chapter 14 explains in more detail how companies decide how much to pay out in dividends.)

Recall that free cash flow (FCF) is the cash from operations that is actually available for distribution to investors, including stockholders, bondholders, and preferred stockholders. The value of operations is the present value of the free cash flows the firm is expected to generate out into the future. Therefore, MagnaVision's value can be calculated as the present value of its expected future free cash flows from operations, discounted at its weighted average cost of capital (WACC), plus the value of its

TABLE 13-1 MagnaVision Inc.: Income Statements (Millions of Dollars, Except for Per Share Data)

	ACTUAL	PROJECTED			
	2010	2011	2012[a]	2013	2014
Net sales	$700.0	$850.0	$1,000.0	$1,100.0	$1,155.0
Costs (except depreciation)	599.0	734.0	911.0	935.0	982.0
Depreciation	28.0	31.0	34.0	36.0	38.0
Total operating costs	$627.0	$765.0	$ 945.0	$ 971.0	$1,020.0
Earnings before interest and taxes (EBIT)	$ 73.0	$ 85.0	$ 55.0	$ 129.0	$ 135.0
Less: Net interest[b]	13.0	15.0	16.0	17.0	19.0
Earnings before taxes	$ 60.0	$ 70.0	$ 39.0	$ 112.0	$ 116.0
Taxes (40%)	24.0	28.0	15.6	44.8	46.4
Net income before preferred dividends	$ 36.0	$ 42.0	$ 23.4	$ 67.2	$ 69.6
Preferred dividends	6.0	7.0	7.4	8.0	8.3
Net income available for common dividends	$ 30.0	$ 35.0	$ 16.0	$ 59.2	$ 61.3
Common dividends	—	—	—	$ 44.2	$ 45.3
Addition to retained earnings	$ 30.0	$ 35.0	$ 16.0	$ 15.0	$ 16.0
Number of shares	100.0	100.0	100.0	100.0	100.0
Dividends per share	—	—	—	$ 0.442	$ 0.453

Notes:
[a]Net income is projected to decline in 2012. This is due to the projected cost for a one-time marketing program in that year.
[b]"Net interest" is interest paid on debt minus interest earned on marketable securities. Both items could be shown separately on the income statements, but for this example we combine them and show net interest. MagnaVision pays more interest than it earns; hence its net interest is subtracted.

nonoperating assets. Here is the equation for the value of operations, which is the firm's value as a going concern:

$$\text{Value of operations} = V_{op} = \text{PV of expected future free cash flows}$$
$$= \frac{FCF_1}{(1+WACC)^1} + \frac{FCF_2}{(1+WACC)^2} + \cdots + \frac{FCF_\infty}{(1+WACC)^\infty} \quad (13\text{-}1)$$
$$= \sum_{t=1}^{\infty} \frac{FCF_t}{(1+WACC)^t}$$

MagnaVision's cost of capital is 10.84%. To find its value of operations as a going concern, we use an approach similar to the nonconstant dividend growth model for stocks in Chapter 7 and proceed as follows.

1. Assume that the firm will experience nonconstant growth for N years, after which it will grow at some constant rate.
2. Calculate the expected free cash flow for each of the N nonconstant growth years.
3. Recognize that growth after Year N will be constant, so we can use the constant growth formula to find the firm's value at Year N. This is the sum of the PVs for year N + 1 and all subsequent years, discounted back to Year N.
4. Find the PV of the free cash flows for each of the N nonconstant growth years. Also, find the PV of the firm's value at Year N.

TABLE 13-2 MagnaVision Inc.: Balance Sheets (Millions of Dollars)

	ACTUAL	PROJECTED			
	2010	2011	2012	2013	2014
Assets					
Cash	$ 17.0	$ 20.0	$ 22.0	$ 23.0	$ 24.0
Marketable securities[a]	63.0	70.0	80.0	84.0	88.0
Accounts receivable	85.0	100.0	110.0	116.0	121.0
Inventories	170.0	200.0	220.0	231.0	243.0
Total current assets	$335.0	$390.0	$432.0	$454.0	$476.0
Net plant and equipment	279.0	310.0	341.0	358.0	376.0
Total assets	$614.0	$700.0	$773.0	$812.0	$852.0
Liabilities and Equity					
Accounts payable	$ 17.0	$ 20.0	$ 22.0	$ 23.0	$ 24.0
Notes payable	123.0	140.0	160.0	168.0	176.0
Accruals	43.0	50.0	55.0	58.0	61.0
Total current liabilities	$183.0	$210.0	$237.0	$249.0	$261.0
Long-term bonds	124.0	140.0	160.0	168.0	176.0
Preferred stock	62.0	70.0	80.0	84.0	88.0
Common stock[b]	200.0	200.0	200.0	200.0	200.0
Retained earnings	45.0	80.0	96.0	111.0	127.0
Common equity	$245.0	$280.0	$296.0	$311.0	$327.0
Total liabilities and equity	$614.0	$700.0	$773.0	$812.0	$852.0

Notes:
[a]All assets except marketable securities are operating assets required to support sales. The marketable securities are financial assets not required in operations.
[b]Par plus paid-in capital.

5. Now sum all the PVs, those of the annual free cash flows during the nonconstant period plus the PV of the Year-N value, to find the firm's value of operations.

Figure 13-1 calculates free cash flow for each year, using procedures discussed in Chapter 2. Line 1, with data for 2010 from the balance sheets in Table 13-2, shows the required net operating working capital, or operating current assets minus operating current liabilities, for 2010:

$$\begin{aligned}\text{Required net operating working capital} &= \begin{pmatrix}\text{Cash}\\ +\ \text{Accounts receivable}\\ +\ \text{Inventories}\end{pmatrix} - \begin{pmatrix}\text{Accounts payable}\\ +\ \text{Accruals}\end{pmatrix}\\ &= (\$17.00 + \$85.00 + \$170.00) - (\$17.00 + \$43.00)\\ &= \$212.00\end{aligned}$$

Line 2 shows required net plant and equipment; Line 3, which is the sum of Lines 1 and 2, shows the required net operating assets, also called total net operating capital or just operating capital. For 2010, operating capital is $212 + $279 = $491 million.

Line 4 shows the required annual addition to operating capital, found as the change in operating capital from the previous year. For 2011, the required investment in operating capital is $560 – $491 = $69 million.

FIGURE 13-1 Calculating MagnaVision's Expected Free Cash Flow (Millions of Dollars)

	A	B	C	D	E	F	G
72			Actual	Projected			
73	Step 1: Calculate FCF		2010	2011	2012	2013	2014
74	1. Net operating working capital		$212.00	$250.00	$275.00	$289.00	$303.00
75	2. Net plant and equipment		279.00	310.00	341.00	358.00	376.00
76	3. Net operating capital		$491.00	$560.00	$616.00	$647.00	$679.00
77	4. Investment in operating capital			69.00	56.00	31.00	32.00
78	5. NOPAT		$43.80	$51.00	$33.00	$77.40	$81.00
79	6. Less: Investment in op. capital			69.00	56.00	31.00	32.00
80	7. Free cash flow			–$18.00	–$23.00	$46.40	$49.00

[a]We use the terms "total net operating capital," "operating capital," and "net operating assets" interchangeably.
[b]NOPAT declines in 2012 because of a marketing expenditure projected for that year. See Note a in Table 13-1.

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Line 5 shows NOPAT, or net operating profit after taxes. Note that EBIT is operating earnings *before* taxes, while NOPAT is operating earnings *after* taxes. Therefore, NOPAT = EBIT(1 – T). With a 2011 EBIT of $85 million (as shown in Table 13-1) and a tax rate of 40%, the NOPAT projected for 2011 is $51 million:

$$\text{NOPAT} = \text{EBIT}(1 - \text{T}) = \$85(1.0 - 0.4) = \$51 \text{ million}$$

Although MagnaVision's operating capital is projected to produce $51 million of after-tax profits in 2011, the company must invest $69 million in new operating capital in 2011 to support its growth plan. Therefore, the free cash flow for 2011, shown on Line 7, is a negative $18 million:

$$\text{Free cash flow (FCF)} = \$51 - \$69 = -\$18 \text{ million}$$

This negative free cash flow in the early years is typical for young, high-growth companies. Even though net operating profit after taxes (NOPAT) is positive in all years, free cash flow is negative because of the need to invest in operating assets. The negative free cash flow means the company will have to obtain new funds from investors, and the balance sheets in Table 13-2 show that notes payable, long-term bonds, and preferred stock all increase from 2010 to 2011. Stockholders will also help fund MagnaVision's growth—they will receive no dividends until 2013, so all of the net income from 2011 and 2012 will be reinvested. However, as growth slows, free cash flow will become positive, and MagnaVision plans to use some of its FCF to pay dividends beginning in 2013.[1]

A variant of the constant growth dividend model is shown as Equation 13-2. This equation can be used to find the value of MagnaVision's operations at time N, when its free cash flows stabilize and begin to grow at a constant rate. This is the value of all FCFs beyond time N, discounted back to time N (which is 2014 for MagnaVision):

$$V_{\text{op(at time N)}} = \sum_{t=N+1}^{\infty} \frac{FCF_t}{(1 + WACC)^{t-N}} = \frac{FCF_{N+1}}{WACC - g} = \frac{FCF_N(1 + g)}{WACC - g} \quad (13\text{-}2)$$

[1]Magna Vision plans to increase its debt and preferred stock each year so as to maintain a constant capital structure. We discuss capital structure in detail in Chapter 15.

Based on a 10.84% cost of capital, $49 million of free cash flow in 2014, and a 5% growth rate, the value of MagnaVision's operations as of December 31, 2014, is forecasted to be $880.99 million:

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$$V_{op(12/31/14)} = \frac{FCF_{12/31/14}(1+g)}{WACC - g} = \frac{\$49(1+0.05)}{0.1084-0.05} = \frac{\$51.45}{0.1084-0.05} = \$880.99 \quad (13\text{-}2a)$$

This $880.99 million figure is called the company's **terminal**, or **horizon, value**, because it is the value at the end of the forecast period. It is also sometimes called a **continuing value**. It is the amount that MagnaVision could expect to receive if it sold its operating assets on December 31, 2014.

Figure 13-2 shows the free cash flow for each year during the nonconstant growth period along with the horizon value of operations in 2014. To find the value of operations as of "today," December 31, 2010, we find the PV of the horizon value and each annual free cash flow in Figure 13-2, discounting at the 10.84% cost of capital:

$$V_{op(12/31/10)} = \frac{-\$18.00}{(1+0.1084)^1} + \frac{-\$23.00}{(1+0.1084)^2} + \frac{\$46.40}{(1+0.1084)^3} + \frac{\$49.00}{(1+0.1084)^4} + \frac{\$880.99}{(1+0.1084)^4} = \$615.27$$

The sum of the PVs is approximately $615 million, and it represents an estimate of the price MagnaVision could expect to receive if it sold its operating assets "today," December 31, 2010.

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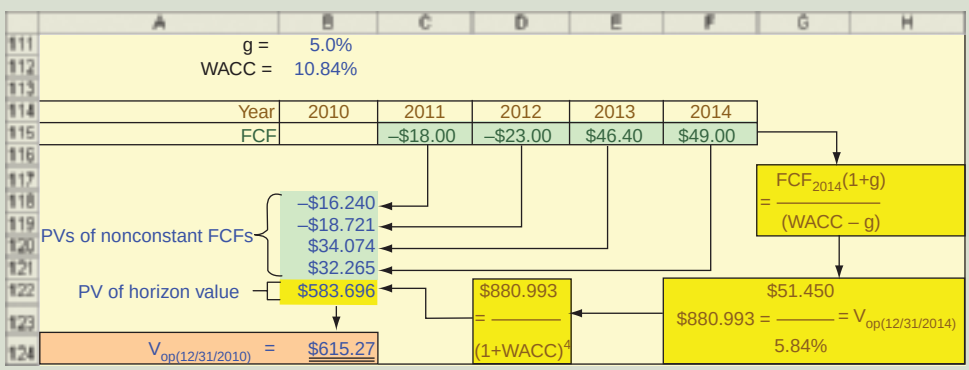
Estimating the Price Per Share

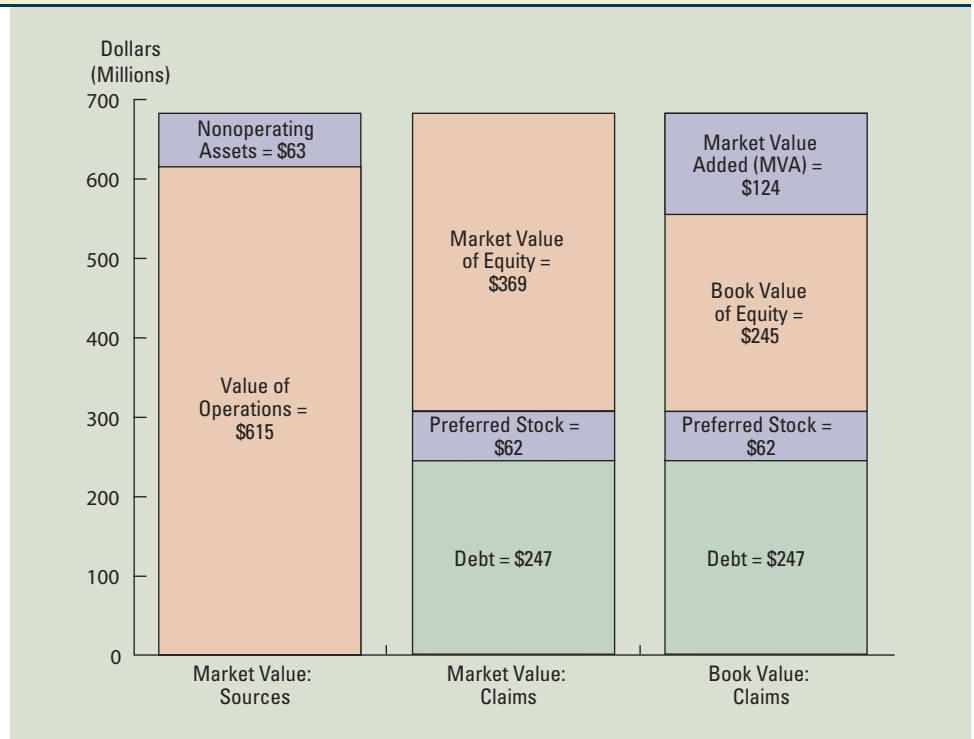
The total value of any company is the value of its operations plus the value of its nonoperating assets.[2] As the shown in the Table 13-2 balance sheet for December 31,

FIGURE 13-2 MagnaVision's Value of Operations (Millions of Dollars)



[2]The total value also includes the value of growth options not associated with assets-in-place, but MagnaVision has no such options.

FIGURE 13-3 MagnaVision's Value as of December 31, 2010



2010, MagnaVision had $63 million of marketable securities on that date. Unlike for operating assets, we don't need to calculate a present value for marketable securities because short-term financial assets as reported on the balance sheet are at (or close to) their market value. Therefore, MagnaVision's total value on December 31, 2010, is $615.27 + $63 = $678.27 million.

If the company's total value on December 31, 2010, is $678.27 million, then what is the value of its common equity? First, the sum of notes payable and long-term debt is $123 + $124 = $247 million, and these securities have the first claim on assets and income.[3] The preferred stock has a claim of $62 million, and it also ranks above the common. Therefore, the value left for common stockholders is $678.27 – $247 – $62 = $369.27 million.

Figure 13-3 is a bar chart that provides a breakdown of MagnaVision's value. The left bar shows the company's total value as the sum of its nonoperating assets and its value of operations. Next, the middle bar shows the claim of each class of investors on that total value. Debtholders have the highest priority claim, and MagnaVision owes $123 million on notes payable and $124 million on long-term bonds for a total of $247 million. The preferred stockholders have the next claim, $62 million. The remaining value belongs to the common equity, and it amounts to $678.27 – $247 – $62 = $369.27 million.[4] This is MagnaVision's intrinsic value of equity.

[3]Accounts payable and accruals were part of the calculation of FCF, so their impact on value is already incorporated into the valuation of the company's operations. It would be double-counting to subtract them now from the value of operations.

[4]When estimating the intrinsic market value of equity, it would be better to subtract the market values of debt and preferred stock rather than their book values. However, in most cases (including this one), the book values of fixed-income securities are close to their market values. When this is true, one can simply use book values.

FIGURE 13-4 Finding the Value of MagnaVision's Intrinsic Stock Price (Millions, Except for Per Share Data)

	A	B	C	D
184		Process	MagnaVision	
185		Value of operations	$615.27	
186		+ Value of nonoperating assets	63.00	
187		Total intrinsic value of firm	$678.27	
188		− Debt	247.00	
189		− Preferred stock	62.00	
190		Intrinsic value of equity	$369.27	
191		÷ Number of shares	100.00	
192				
193				
194		Intrinsic stock price per share =	$3.69	

In Chapter 2, we defined the Market Value Added (MVA) as the difference between the market value of equity and the book value of equity capital supplied by shareholders. Here we focus on the *intrinsic* MVA, which is the difference between the intrinsic market value of stock and the book value of equity. The bar on the right side of Figure 13-3 divides the estimated market value of equity into these two components.

Figure 13-4 summarizes the calculations used to find MagnaVision's stock value. There are 100 million shares outstanding, and their total intrinsic value is $369.27 million. Therefore, the intrinsic value of a single share is $369.27/100 = $3.69.

The Dividend Growth Model Applied to MagnaVision

MagnaVision has not yet begun to pay dividends. However, as we saw in Table 13-1, a cash dividend of $0.442 per share is forecasted for 2013. The dividend is expected to grow by about 2.5% in 2014 and at a constant 5% rate thereafter. MagnaVision's cost of equity is 14%. In this situation, we can apply the nonconstant dividend growth model as developed earlier in Chapter 7. Figure 13-5 shows that the value of MagnaVision's stock, based on this model, is $3.70 per share, which is the same (except for a rounding difference) as the value found using the corporate valuation model.[5]

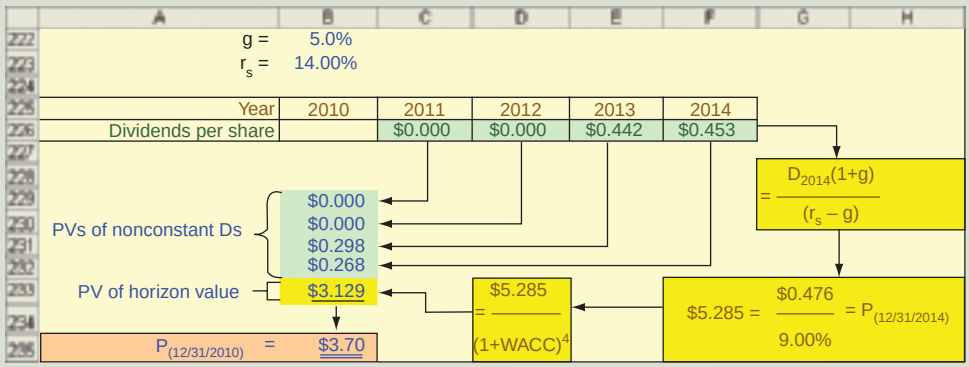
Comparing the Corporate Valuation and Dividend Growth Models

Because the corporate valuation and dividend growth models give the same answer, does it matter which model you choose? In general, it does. For example, if you were a financial analyst estimating the value of a mature company whose dividends are expected to grow steadily in the future, it would probably be more efficient to use the dividend growth model. In this case you would need to estimate only the growth rate in dividends, not the entire set of forecasted financial statements.

However, if a company is paying a dividend but is still in the high-growth stage of its life cycle, you would need to project the future financial statements before you could make a reasonable estimate of future dividends. Then, because you would have already estimated future financial statements, it would be a toss-up as to whether the corporate valuation model or the dividend growth model would be easier to apply. Intel, which pays a dividend of about 52 cents per share on earnings of about $1.25 per share, is an example of a company to which you could apply either model.

[5]The small difference is due to rounding the cost of capital to four significant digits.

FIGURE 13-5 Using the DCF Dividend Model to Find MagnaVision's Stock Value



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Now suppose you were trying to estimate the value of a company that has never paid a dividend, or a new firm that is about to go public, or a division that GE or some other large company is planning to sell. In each of these situations there would be no choice: You would have to estimate future financial statements and use the corporate valuation model.

Actually, much can be learned from the corporate valuation model even if a company is paying steady dividends; hence, many analysts today use it for all valuation analyses. The process of projecting future financial statements can reveal quite a bit about a company's operations and financing needs. Also, such an analysis can provide insights into actions that might be taken to increase the company's value. This is the essence of value-based management, which we discuss in the next section.[6]

Self-Test

Give some examples of assets-in-place, growth options, and nonoperating assets.

Write out the equation for the value of operations.

What is the *terminal,* or *horizon, value?* Why is it also called the *continuing value?*

Explain how to estimate the price per share using the corporate valuation model.

A company expects FCF of –$10 million at Year 1 and FCF of $20 million at Year 2; after Year 2, FCF is expected to grow at a 5% rate. If the WACC is 10%, then what is the horizon value of operations, $V_{op(Year\ 2)}$? **($420 million)** What is the current value of operations, $V_{op(Year\ 0)}$? **($354.55 million)**

A company has a current value of operations of $800 million, and it holds $100 million in short-term investments. If the company has $400 million in debt and has 10 million shares outstanding, what is the price per share? **($50.00)**

13.3 Value-Based Management

Bell Electronics Inc. has two divisions, Memory and Instruments, with total sales of $1.5 billion and operating capital of $1.07 billion. Based on its current stock and bond prices, the company's total market value is about $1.215 billion, giving it an MVA of $145 million: $1.215 – $1.070 = $0.145 billion = $145 million. Because it has a positive MVA, Bell has created value for its investors. Even so, management is considering several new strategic plans in its efforts to increase the firm's value. All of Bell's assets are used in operations.

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[6]For a more detailed explanation of corporate valuation, see P. Daves, M. Ehrhardt, and R. Shrieves, *Corporate Valuation: A Guide for Managers and Investors* (Mason, OH: Thomson/South-Western, 2004).

TABLE 13-3 2010 Financial Results for Bell Electronics Inc. (Millions of Dollars, Except for Percentages)

	DIVISION 1: BELL MEMORY	DIVISION 2: BELL INSTRUMENTS	TOTAL COMPANY
Sales	$1,000.0	$500.0	$1,500.0
Operating capital	870.0	200.0	1,070.0
Earnings before interest and taxes (EBIT)	131.0	60.0	191.0
Net operating profit after taxes (NOPAT)	78.6	36.0	114.6
Operating profitability (NOPAT/Sales)	7.9%	7.2%	7.6%

The Memory division produces memory chips for such handheld electronic devices as cellular phones and PDAs (personal digital assistants), while the Instruments division produces devices for measuring and controlling sewage and water treatment facilities. Table 13-3 shows the latest financial results for the two divisions and for the company as a whole.

As the table shows, Bell Memory is the larger of the two divisions, with higher sales and more operating capital. Bell Memory is also more profitable, with a NOPAT/Sales ratio of 7.9% versus 7.2% for Bell Instruments. This year, as in other recent years, the focus of the initial strategic planning sessions was on the Memory division. Bell Memory has grown rapidly because of the phenomenal growth in consumer electronics, and this division rocketed past Instruments several years ago. Although Memory's growth has tapered off, senior management generally agreed that this division should receive the lion's share of corporate attention and resources because it is larger, more profitable, and, frankly, more exciting. After all, Bell Memory is associated with the glamorous market for telecommunications and personal electronic devices, whereas Bell Instruments is associated with sewage and sludge.

The financial assumptions and projections associated with the preliminary strategic plans for the two divisions are shown in Tables 13-4 and 13-5. The initial strategic plans project that each division will have 5% annual growth for the next 5 years and thereafter. These plans also assume that the cost structures of the two divisions will remain unchanged from the current year, 2010. Only partial financial projections are shown in Tables 13-4 and 13-5. However, when Bell's management decides on a final strategic plan, it will develop complete financial statements for the company as a whole and use them to determine financing requirements, as described in Chapter 12.

To evaluate the plans, Bell's management applied the corporate valuation model to each division, thus valuing them using the free cash flow valuation technique. Each division has a WACC of 10.5%, and Table 13-6 shows the results. The three key items are NOPAT, the required investment in operating capital, and the resulting free cash flows for each year. In addition, the table shows each division's horizon value of operations at 2015, which is the end of the 5 years of explicit forecasts, as calculated via Equation 13-2. The value of operations at 2010 is the present value of the free cash flows and the horizon value, discounted at the weighted average cost of capital. As expected, Bell Memory has the greater value of operations, $709.6 million versus $505.5 million for Bell Instruments. However, the managers were surprised to see that Bell Memory's Market Value Added (MVA) is *negative:* $709.6 value of operations

TABLE 13-4 Initial Projections for the Bell Memory Division (Millions of Dollars, Except for Percentages)

	ACTUAL	PROJECTED[a]				
	2010	2011	2012	2013	2014	2015
Panel A: Inputs						
Sales growth rate		5%	5%	5%	5%	5%
Costs/Sales	81%	81	81	81	81	81
Depreciation/Net plant	10	10	10	10	10	10
Cash/Sales	1	1	1	1	1	1
Accounts receivable/Sales	8	8	8	8	8	8
Inventories/Sales	30	30	30	30	30	30
Net plant/Sales	59	59	59	59	59	59
Accounts payable/Sales	5	5	5	5	5	5
Accruals/Sales	6	6	6	6	6	6
Tax rate	40	40	40	40	40	40
Panel B: Partial Income Statement						
Net sales	$1,000.0	$1,050.0	$1,102.5	$1,157.6	$1,215.5	$1,276.3
Costs (except depreciation)	$ 810.0	$ 850.5	$ 893.0	$ 937.7	$ 984.6	$1,033.8
Depreciation	59.0	62.0	65.0	68.3	71.7	75.3
Total operating costs	$ 869.0	$ 912.5	$ 958.1	$1,006.0	$1,056.3	$1,109.1
EBIT	$ 131.0	$ 137.6	$ 144.4	$ 151.6	$ 159.2	$ 167.2
Panel C: Partial Balance Sheets						
Operating Assets						
Cash	$ 10.0	$ 10.5	$ 11.0	$ 11.6	$ 12.2	$ 12.8
Accounts receivable	80.0	84.0	88.2	92.6	97.2	102.1
Inventories	300.0	315.0	330.8	347.3	364.7	382.9
Operating current assets	$ 390.0	$ 409.5	$ 430.0	$ 451.5	$ 474.0	$ 497.7
Net plant and equipment	$ 590.0	$ 619.5	$ 650.5	$ 683.0	$ 717.1	$ 753.0
Operating Liabilities						
Accounts payable	$ 50.0	$ 52.5	$ 55.1	$ 57.9	$ 60.8	$ 63.8
Accruals	60.0	63.0	66.2	69.5	72.9	76.6
Operating current liabilities	$ 110.0	$ 115.5	$ 121.3	$ 127.3	$ 133.7	$ 140.4

[a]Projected figures may not total exactly because of rounding.

– $870.0 operating capital = –$160.4 million.[7] In contrast, Bell Instruments' MVA is positive: $505.5 value of operations – $200 operating capital = $305.5 million.

[7]Earlier in this chapter we estimated MVA as the estimated value of equity minus the book value of equity. We can also define MVA as

MVA = Total market value – Total capital

(see Chapter 2). By subtracting the value of any short-term investments from total market value, we get the value of operations. If we subtract short-term investments from total capital, we get investor-supplied operating capital. Therefore, MVA can be estimated as

MVA = Value of operations – Investor-supplied operating capital

Recall from Chapter 2 that investor-supplied operating capital is equal to total net operating capital, which we also call total capital. Therefore, we can estimate MVA for a division or for a privately held company as

MVA = Value of operations – Total capital

TABLE 13-5 Initial Projections for the Bell Instruments Division (Millions of Dollars, Except for Percentages)

	ACTUAL	PROJECTED[a]				
	2010	2011	2012	2013	2014	2015
Panel A: Inputs						
Sales growth rate		5%	5%	5%	5%	5%
Costs/Sales	85%	85	85	85	85	85
Depreciation/Net plant	10	10	10	10	10	10
Cash/Sales	1	1	1	1	1	1
Accounts receivable/Sales	5	5	5	5	5	5
Inventories/Sales	15	15	15	15	15	15
Net plant/Sales	30	30	30	30	30	30
Accounts payable/Sales	5	5	5	5	5	5
Accruals/Sales	6	6	6	6	6	6
Tax rate	40	40	40	40	40	40
Panel B: Partial Income Statement						
Net sales	$500.0	$525.0	$551.3	$578.8	$607.8	$638.1
Costs (except depreciation)	$425.0	$446.3	$468.6	$492.0	$516.6	$542.4
Depreciation	15.0	15.8	16.5	17.4	18.2	19.1
Total operating costs	$440.0	$462.0	$485.1	$509.4	$534.8	$561.6
EBIT	$ 60.0	$ 63.0	$ 66.2	$ 69.5	$ 72.9	$ 76.6
Panel C: Partial Balance Sheets						
Operating Assets						
Cash	$ 5.0	$ 5.3	$ 5.5	$ 5.8	$ 6.1	$ 6.4
Accounts receivable	25.0	26.3	27.6	28.9	30.4	31.9
Inventories	75.0	78.8	82.7	86.8	91.2	95.7
Operating current assets	$105.0	$110.3	$115.8	$121.6	$127.6	$134.0
Net plant and equipment	$150.0	$157.5	$165.4	$173.6	$182.3	$191.4
Operating Liabilities						
Accounts payable	$ 25.0	$ 26.3	$ 27.6	$ 28.9	$ 30.4	$ 31.9
Accruals	30.0	31.5	33.1	34.7	36.5	38.3
Operating current liabilities	$ 55.0	$ 57.8	$ 60.6	$ 63.7	$ 66.9	$ 70.2

[a]Projected figures may not total exactly because of rounding.

See **Ch13 Tool Kit.xls** *on the textbook's Web site.*

A second strategic planning meeting was called to address this unexpected result. In it, Bell Memory's managers proposed a $20 million marketing campaign to boost their sales growth rate from 5% to 6%. They argued that because Bell Memory is so profitable, its value would be much higher if they could push up sales. Before accepting this proposal, though, the proposed changes were run through the valuation model. The managers changed the Bell Memory division's growth rate from 5% to 6%; see the file ***Ch13 Tool Kit.xls*** on the textbook's Web site for details. To their surprise, the division's value of operations fell to $691.5 million, and its MVA also declined, from –$160.4 million to –$178.5 million. Although Bell Memory was profitable, increasing its sales growth actually reduced its value!

TABLE 13-6 Initial FCF Valuation of Each Division (Millions of Dollars, Except for Percentages)

	ACTUAL	PROJECTED				
	2010	2011	2012	2013	2014	2015
Panel A: FCF Valuation of the Bell Memory Division						
Calculation of FCF						
Net operating working capital	$ 280.0	$294.0	$308.7	$ 324.1	$ 340.3	$ 357.4
Net plant	590.0	619.5	650.5	683.0	717.1	753.0
Net operating capital	$ 870.0	$913.5	$959.2	$1,007.1	$1,057.5	$1,110.4
Investment in operating capital		$ 43.5	$ 45.7	$ 48.0	$ 50.4	$ 52.9
NOPAT	$ 78.6	$ 82.5	$ 86.7	$ 91.0	$ 95.5	$ 100.3
Free cash flow		$ 39.0	$ 41.0	$ 43.0	$ 45.2	$ 47.4
Growth in FCF			5.0%	5.0%	5.0%	5.0%
Value of Operations						
Horizon value						$ 905.7
Value of operations	$ 709.6					
Divisional MVA (Value of operations – Capital)	($160.4)					
Panel B: FCF Valuation of the Bell Instruments Division						
Calculation of FCF						
Net operating working capital	$ 50.0	$ 52.5	$ 55.1	$ 57.9	$ 60.8	$ 63.8
Net plant	150.0	157.5	165.4	173.6	182.3	191.4
Net operating capital	$ 200.0	$210.0	$220.5	$ 231.5	$ 243.1	$ 255.3
Investment in operating capital		$ 10.0	$ 10.5	$ 11.0	$ 11.6	$ 12.2
NOPAT	$ 36.0	$ 37.8	$ 39.7	$ 41.7	$ 43.8	$ 45.9
Free cash flow		$ 27.8	$ 29.2	$ 30.6	$ 32.2	$ 33.8
Growth in FCF			5.0%	5.0%	5.0%	5.0%
Value of Operations						
Horizon value						$ 645.1
Value of operations	$ 505.5					
Divisional MVA (Value of operations – Capital)	$ 305.5					

Notes: The WACC is 10.5% for each division. The horizon value (HV) at 2015 is calculated using Equation 13-2, the constant growth formula for free cash flows:

$$HV_{2015} = [FCF_{2015}(1 + g)] \div (WACC - g)$$

The value of operations is the present value of the horizon value and the free cash flows discounted at the WACC; it is calculated in a manner similar to Figure 13-1. Projected figures may not total exactly because of rounding. See ***Ch13 Tool Kit.xls*** on the textbook's Web site for all calculations.

To better understand these results, we can express the firm's value in terms of four fundamental wealth drivers:

$$\begin{aligned} g &= \text{Growth in sales} \\ OP &= \text{Operating profitability (OP)} = \text{NOPAT/Sales} \\ CR &= \text{Capital requirements (CR)} = \text{Operating capital/Sales} \\ WACC &= \text{Weighted average cost of capital} \end{aligned}$$

How do these drivers affect the value of a firm? First, the sales growth rate usually (but not always) has a positive effect on value, provided the company is profitable enough. However, the effect can be negative if growth requires a great deal of capital and if the cost of capital is high. Second, operating profitability, which measures the after-tax profit per dollar of sales, always has a positive effect—the higher the better. Third, the capital requirements ratio, which measures how much operating capital is needed to generate a dollar of sales, also has a consistent effect: the lower the CR the better, since a low CR means that the company can generate new sales with smaller amounts of new capital. Finally, the fourth factor, the WACC, also has a consistent effect: the lower it is, the higher the firm's value.

Another important metric in the corporate valuation model is the **expected return on invested capital (EROIC)**, defined as the expected NOPAT for the coming year divided by the amount of operating capital at the beginning of the year (which is the end of the preceding year). It can also be defined in terms of the fundamental value drivers for profitability (OP) and capital requirements (CR). Thus, EROIC represents the expected return on the capital that has already been invested:

$$\begin{aligned} EROIC_N &= \frac{NOPAT_{N+1}}{Capital_N} \\ &= \frac{OP_{N+1}}{CR_N} \end{aligned} \qquad (13\text{-}3)$$

To illustrate, the EROIC of the Bell Memory division for 2015, the last year in the forecast period, is

$$EROIC_{2015} = \frac{NOPAT_{2016}}{Capital_{2015}} = \frac{NOPAT_{2015}(1+g)}{Capital_{2015}} = \frac{\$100.3(1.05)}{\$1{,}110.4} = 9.5\%$$

See **Ch13 Tool Kit.xls** *on the textbook's Web site for details.*

To see exactly how the four value drivers and EROIC determine value for a constant growth firm, we can start with Equation 13-2 (which we repeat here),

$$V_{op(\text{at time } N)} = \frac{FCF_{N+1}}{WACC - g} \qquad (13\text{-}2)$$

and rewrite it in terms of the value drivers:

$$V_{op(\text{at time } N)} = Capital_N + \left\{ \left[\frac{Sales_N(1+g)}{WACC - g} \right] \left[OP - WACC\left(\frac{CR}{1+g} \right) \right] \right\} \qquad (13\text{-}4)$$

Equation 13-4 shows that the value of operations can be divided into two components: (1) the dollars of operating capital that investors have provided; and (2) the additional value that management has added or subtracted, which is equivalent to MVA.

Note that the first [bracketed] fraction in Equation 13-4 represents the present value of growing sales, discounted at the WACC. This would be the MVA of a firm that has no costs and that never needs to invest additional capital. But firms do have costs and capital requirements, and their effect is captured by the term in the second set of brackets. Here we see that, holding g constant, MVA will improve if operating profitability (OP) increases, if WACC decreases, and/or if capital requirements (CR) decrease.

Observe that an increase in growth will not necessarily increase value. OP could be positive, but if CR is quite high—meaning that a lot of new capital is needed to support a given increase in sales—then the second bracketed term can be negative. In this situation, growth causes first bracketed term to increase; however, since it's being multiplied by a negative term (the second bracket), the net result will be a decrease in MVA.

We can also rewrite Equation 13-2 in terms of EROIC (or profitability and capital requirements) as follows:

$$V_{op(\text{at time N})} = \text{Capital}_N + \frac{\text{Capital}_N(\text{EROIC}_N - \text{WACC})}{\text{WACC} - g}$$
$$= \text{Capital}_N + \frac{\text{Capital}_N\left(\frac{\text{OP}_{N+1}}{\text{CR}_N} - \text{WACC}\right)}{\text{WACC} - g} \qquad (13\text{-}5)$$

Equation 13-5 also breaks value into two components, the value of capital and the MVA, shown in the second term. This term for MVA shows that value depends on the EROIC, the WACC, and the spread between the expected return on invested capital. Notice that the EROIC in turn depends on profitability and required capital. If the combination of profitability and required capital produces an EROIC greater than WACC, then the return on capital is greater than the return investors expect and management is adding value. In this case, an increase in the growth rate causes value to go up. If EROIC is exactly equal to WACC then the firm is, in an economic sense, "breaking even." It has positive accounting profits and cash flow, but these cash flows are just sufficient to satisfy investors, causing value to exactly equal the amount of capital that has been provided. If EROIC is less than WACC then the term in parentheses is negative, management is destroying value, and growth is harmful. This is one case where the faster the growth rate, the lower the firm's value.

We should also note that the insights from Equations 13-4 and 13-5 apply to all firms, but the equations themselves can be applied only to relatively stable firms whose growth has leveled out at a constant rate. For example, in 2008 Qualcomm's sales grew at 25% per year, so we cannot apply Equations 13-4 and 13-5 directly (although we could always apply Equation 13-1). Qualcomm's NOPAT/Sales ratio was an outstanding 27.6%, but even though Qualcomm was profitable, it had a negative free cash flow of about $3.9 billion! If Qualcomm can maintain profitability as its growth slows to sustainable levels, it will generate huge amounts of FCF. This explains why its MVA was over $38 billion in 2008 even though its FCF was negative.

Table 13-7 shows the value drivers for Bell's two divisions as measured at 2015, the end of the forecast period. We report these for the *end* of the forecast period

TABLE 13-7 Bell Electronics' Forecasted Value Drivers for 2015

	DIVISION 1: BELL MEMORY	DIVISION 2:BELL INSTRUMENTS
Growth: g	5.0%	5.0%
Profitability: ($NOPAT_{2015}/Sales_{2015}$)	7.9	7.2
Capital requirement: ($Capital_{2015}/Sales_{2015}$)	87.0	40.0
WACC	10.5	10.5
Expected return on invested capital, EROIC: $NOPAT_{2015}(1 + g)/Capital_{2015}$	9.5	18.9

because ratios can change during the forecast period in response to input changes. By the end of the forecast period, however, all inputs and ratios should be stable.

Both divisions have the same growth rate and the same WACC, as shown in Table 13-7. Bell Memory is more profitable, but it also has much higher capital requirements. The result is that Bell Memory's EROIC is only 9.5%, well below its 10.5% WACC. Thus, growth doesn't help Bell Memory—indeed, it reduces the division's value.

Based on this analysis, Bell Memory's managers decided not to request funds for a marketing campaign. Instead, they developed a plan to reduce capital requirements. The new plan called for spending $50 million on an integrated supply chain information system that would allow them to cut their inventory/sales ratio from 30% to 20% and also reduce the ratio of net plant to sales from 59% to 50%. Table 13-8 shows projected operating results based on this new plan. The value of operations would increase from $709.6 million to $1.1574 billion, or by $447.8 million. Because this amount is well over the $50 million required to implement the plan, top management decided to approve it. Note also that the plan shows MVA becoming positive at $287.4 million (a substantial improvement on the preliminary plan's negative $160.4 million) and the divisional EROIC rising to 13.0%, well over the 10.5% WACC.

Bell Instruments's managers also used the valuation model to assess changes in plans for their division. Given their high EROIC, the Instruments division proposed (1) an aggressive marketing campaign and (2) an increase in inventories that would allow faster delivery and fewer stockouts. Together, these changes would boost the growth rate from 5% to 6%. The direct cost to implement the plan was $20 million, but there was also an indirect cost in that more inventories would have to be carried: The ratio of inventories to sales was forecasted to increase from 15% to 16%.

Should Instruments's new plan be implemented? Table 13-8 shows the forecasted results. The capital requirements associated with the increased inventory caused the EROIC to fall from 18.9% to 18.6%, but (1) the 18.6% return greatly exceeds the 10.5% WACC, and (2) the spread between 18.6% and 10.5% would be earned on additional capital. This caused the forecasted value of operations to increase from $505.5 to $570.1 million, or by $64.6 million. An 18.6% return on $274.3 million of capital is more valuable than an 18.9% return on $255.3 million of capital.[8] (To see this, note that you, or one of Bell's stockholders, would surely rather have an asset that provides a 50% return on an investment of $1,000 than one that provides

[8]A potential fly in the ointment is that Bell's compensation plan might be based on rates of return and not on changes in wealth. In such a plan, which is fairly typical, the managers might reject the new proposed strategic plan if it lowers ROIC and hence their bonuses, even though the plan is good for the company's stockholders. We discuss the effect of compensation plans in more detail later in the chapter.

TABLE 13-8 Comparison of the Preliminary and Final Plans (Millions of Dollars, Except for Percentages)

	BELL MEMORY		BELL INSTRUMENTS	
	PRELIMINARY	FINAL	PRELIMINARY	FINAL
Inputs				
Sales growth rate, g	5%	5%	5%	6%
Inventories/Sales	30	20	15	16
Net plant/Sales	59	50	30	30
Results				
EROIC (2015)[a]	9.5%	13.0%	18.9%	18.6%
Invested (operating) capital (2015)[a]	$1,110.4	$ 867.9	$255.3	$274.3
Current value of operations (2010)[b]	709.6	1,157.4	505.5	570.1
Current MVA (2010)[b]	(160.4)	287.4	305.5	370.1

Notes:
[a]We report EROIC and capital for the end of the forecast period because ratios can change during the forecast period if inputs change during that period. By the end of the forecast period, however, all inputs and ratios should be stable.
[b]We report the value of operations and the MVA as of the current date, 2010, because we want to see what effect the proposed plans would have on the current value of the divisions.

a 100% return on an investment of $1.) Therefore, the new plan should be accepted, even though it lowers the Instruments division's EROIC.

Sometimes companies focus on their profitability and growth without giving adequate consideration to their capital requirements. This is a big mistake—*all* the wealth creation drivers, not just growth, must be taken into account. Fortunately for Bell's investors, the revised plan was accepted. However, as this example illustrates, it is easy for a company to mistakenly focus only on profitability and growth. They are important, but so are the other value drivers: capital requirements and the weighted average cost of capital. Value-based management explicitly includes the effects of all the value drivers because it uses the corporate valuation model, and the drivers are all embodied in that model.[9]

Self-Test

What are the four drivers of value?
How is it possible for sales growth to *decrease* the value of a profitable firm?
You are given the following forecasted information for a constant growth company: sales = $10 million, operating profitability (OP) = 5%, capital requirements (CR) = 40%, growth (g) = 6%, and the weighted average cost of capital (WACC) = 10%. What is the current level of capital? **($4 million)** What is the current level of NOPAT? **($0.5 million)** What is the EROIC? **(13.25%)** What is the value of operations? **($7.25 million)**

[9]For more on corporate valuation and value-based management, see Sheridan Titman and John D. Martin, *Valuation: The Art and Science of Corporate Investment Decisions* (Boston: Pearson/Addison-Wesley, 2008); Tim Koller, Marc Goedhart, and David Wessels, *Valuation: Measuring and Managing the Value of Companies*, 4th ed. (Hoboken, NJ: John Wiley & Sons, 2005); John D. Martin and J. William Petty, *Value Based Management: The Corporate Response to the Shareholder Revolution* (Boston: Harvard Business School Press, 2000); John D. Martin, J. William Petty, and James S. Wallace, *Value Based Management with Corporate Social Responsibility* (New York: Oxford University Press, 2009); James M. McTaggart, Peter W. Kontes, and Michael C. Mankins, *The Value Imperative* (New York: The Free Press, 1994); and G. Bennett Stewart, *The Quest for Value* (New York: Harper Collins, 1991). For an application to small-firm valuation, see Michael S. Long and Thomas A. Bryant, *Valuing the Closely Held Firm*, (New York: Oxford University Press, 2008).

13.4 Managerial Behavior and Shareholder Wealth

For excellent discussions of corporate governance, see the Web pages of CalPERS (the California Public Employees' Retirement System), **http://www.calpers.org**, *and TIAA-CREF (Teachers Insurance and Annuity Association College Retirement Equity Fund),* **http://www.tiaa-cref.org**.

Shareholders want companies to hire managers who are able and willing to take legal and ethical actions to maximize intrinsic stock prices.[10] This obviously requires managers with technical competence, but it also requires managers who are willing to put forth the extra effort necessary to identify and implement value-adding activities. However, managers are people, and people have both personal and corporate goals. Logically, therefore, managers can be expected to act in their own self-interests, and if their self-interests are not aligned with those of stockholders, then corporate value will not be maximized. There are six ways in which a manager's behavior might harm a firm's intrinsic value.

1. Managers might not expend the time and effort required to maximize firm value. Rather than focusing on corporate tasks, they might spend too much time on external activities, such as serving on boards of other companies, or on nonproductive activities, such as golfing, lunching, and traveling.
2. Managers might use corporate resources on activities that benefit themselves rather than shareholders. For example, they might spend company money on such perquisites as lavish offices, memberships at country clubs, museum-quality art for corporate apartments, large personal staffs, and corporate jets. Because these perks are not actually cash payments to the managers, they are called **nonpecuniary benefits**.
3. Managers might avoid making difficult but value-enhancing decisions that harm friends in the company. For example, a manager might not close a plant or terminate a project if the manager has personal relationships with those who are adversely affected by such decisions, even if termination is the economically sound action.
4. Managers might take on too much risk or they might not take on enough risk. For example, a company might have the opportunity to undertake a risky project with a positive NPV. If the project turns out badly, then the manager's reputation will be harmed and the manager might even be fired. Thus, a manager might choose to avoid risky projects even if they are desirable from a shareholder's point of view. On the other hand, a manager might take on projects with too much risk. Consider a project that is not living up to expectations. A manager might be tempted to invest even more money in the project rather than admit that the project is a failure. Or a manager might be willing to take on a second project with a negative NPV if it has even a slight chance of a very positive outcome, since hitting a home run with this second project might cover up the first project's poor performance. In other words, the manager might throw good money after bad.
5. If a company is generating positive free cash flow, a manager might "stockpile" it in the form of marketable securities instead of returning FCF to investors. This

[10]Notice that we said both legal and ethical actions. The accounting frauds perpetrated by Enron, WorldCom, and others that were uncovered in 2002 raised stock prices in the short run, but only because investors were misled about the companies' financial positions. Then, when the correct financial information was finally revealed, the stocks tanked. Investors who bought shares based on the fraudulent financial statements lost tens of billions of dollars. Releasing false financial statements is illegal. Aggressive earnings management and the use of misleading accounting tricks to pump up reported earnings is unethical, and executives can go to jail as a result of their shenanigans. When we speak of taking actions to maximize stock prices, we mean making operational or financial changes designed to maximize intrinsic stock value, not fooling investors with false or misleading financial reports.

potentially harms investors because it prevents them from allocating these funds to other companies with good growth opportunities. Even worse, positive FCF often tempts a manager into paying too much for the acquisition of another company. In fact, most mergers and acquisitions end up as break-even deals, at best, for the acquiring company because the premiums paid for the targets are often very large.

Why would a manager be reluctant to return cash to investors? First, extra cash on hand reduces the company's risk, which appeals to many managers. Second, a large distribution of cash to investors is an admission that the company doesn't have enough good investment opportunities. Slow growth is normal for a maturing company, but it isn't very exciting for a manager to admit this. Third, there is a lot of glamour associated with making a large acquisition, and this can provide a large boost to a manager's ego. Fourth, compensation usually is higher for executives at larger companies; cash distributions to investors make a company smaller, not larger.

6. Managers might not release all the information that is desired by investors. Sometimes, they might withhold information to prevent competitors from gaining an advantage. At other times, they might try to avoid releasing bad news. For example, they might "massage" the data or "manage the earnings" so that the news doesn't look so bad. If investors are unsure about the quality of information provided by managers, they tend to discount the company's expected free cash flows at a higher cost of capital, which reduces the company's intrinsic value.

If senior managers believe there is little chance that they will be removed, we say that they are *entrenched*. Such a company faces a high risk of being poorly run, because entrenched managers are able to act in their own interests rather than in the interests of shareholders.

Self-Test

Name six types of managerial behaviors that can reduce a firm's intrinsic value.

13.5 Corporate Governance

A key requirement for successful implementation of value-based management is to influence executives and other managers so that they do not behave in the ways described in the previous section but instead behave in a way that maximizes a firm's intrinsic value. Corporate governance can provide just such an influence. Corporate governance can be defined as the set of laws, rules, and procedures that influence a company's operations and the decisions made by its managers. At the risk of oversimplification, most corporate governance provisions come in two forms, sticks and carrots. The primary stick is the *threat of removal*, either as a decision by the board of directors or as the result of a hostile takeover. If a firm's managers are maximizing the value of the resources entrusted to them, they need not fear the loss of their jobs. On the other hand, if managers are not maximizing value, they should be removed by their own boards of directors, by dissident stockholders, or by other companies seeking to profit by installing a better management team. The main carrot is *compensation*. Managers have greater incentives to maximize intrinsic stock value if their compensation is linked to their firm's performance rather than being strictly in the form of salary.

Almost all corporate governance provisions affect either the threat of removal or compensation. Some provisions are internal to a firm and are under its control.[11]

[11]We have adapted this framework from the one provided by Stuart L. Gillan, "Recent Developments in Corporate Governance: An Overview," *Journal of Corporate Finance*, June 2006, pp. 381–402. Gillan provides an excellent discussion of the issues associated with corporate governance, and we highly recommend this article to the reader who is interested in an expanded discussion of the issues in this section.

These internal provisions and features can be divided into five areas: (1) monitoring and discipline by the board of directors, (2) charter provisions and bylaws that affect the likelihood of hostile takeovers, (3) compensation plans, (4) capital structure choices, and (5) accounting control systems. In addition to the corporate governance provisions that are under a firm's control, there are also environmental factors outside of a firm's control, such as the regulatory environment, block ownership patterns, competition in the product markets, the media, and litigation. Our discussion begins with the internal provisions.

Monitoring and Discipline by the Board of Directors

Shareholders are a corporation's owners, and they elect the board of directors to act as agents on their behalf. In the United States, it is the board's duty to monitor senior managers and discipline them if they do not act in the interests of shareholders, either by removal or by a reduction in compensation.[12] This is not necessarily the case outside the United States. For example, many companies in Europe are required to have employee representatives on the board. Also, many European and Asian companies have bank representatives on the board. But even in the United States, many boards fail to act in the shareholders' best interests. How can this be?

Consider the election process. The board of directors has a nominating committee. These directors choose the candidates for the open director positions, and the ballot for a board position usually lists only one candidate. Although outside candidates can run a "write-in" campaign, only those candidates named by the board's nominating committee are on the ballot.[13] At many companies, the CEO is also the chairman of the board and has considerable influence on this nominating committee. This means that in practice it often is the CEO who, in effect, nominates candidates for the board. High compensation and prestige go with a position on the board of a major company, so board seats are prized possessions. Board members typically want to retain their positions, and they are grateful to whomever helped get them on the board. Thus, the nominating process often results in a board that is favorably disposed to the CEO.

At most companies, a candidate is elected simply by having a majority of votes cast. The proxy ballot usually lists all candidates, with a box for each candidate to check if the shareholder votes "For" the candidate and a box to check if the shareholder "withholds" a vote on the candidate—you can't actually vote "No"; you can only withhold your vote. In theory, a candidate could be elected with a single "For" vote if all other votes were withheld. In practice, though, most shareholders either vote "For" or assign to management their right to vote (proxy is defined as the authority to act for another, which is why it is called a proxy statement). In practice, then, the nominated candidates virtually always receive a majority of votes and are thus elected.

Occasionally there is a "Just vote no" campaign in which a large investor (usually an institution such as a pension fund) urges stockholders to withhold their votes for one or more directors. Although such campaigns do not directly affect the director's election, they do provide a visible way for investors to express their dissatisfaction. Recent evidence shows that "Just vote no" campaigns at poorly performing firms lead to better subsequent firm performance and a greater probability that the CEO will be dismissed.[14]

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[12]There are a few exceptions to this rule. For example, some states have laws allowing the board to take into consideration the interests of other stakeholders, such as employees and members of the community.

[13]There is currently (early 2009) a movement under way to allow also shareholders to nominate candidates for the board, but only time will tell whether this movement is successful.

[14]See Diane Del Guercio, Laura Seery, and Tracie Woidtke, "Do Boards Pay Attention When Institutional Investor Activists 'Just Vote No'?" *Journal of Financial Economics*, October 2008, pp. 84–103.

Let's Go to Miami! IBM's 2009 Annual Meeting

IBM invited its stockholders to its annual meeting held on April 28, 2009, in Miami. The agenda included election of each board member for a 1-year term, ratification of PricewaterhouseCoopers as its independent auditing firm, approval of long-term incentive plans for executives, and three stockholder proposals: (1) adopt cumulative voting; (2) remove consideration of pension income that does not reflect operating performance from the measure of income used for bonuses; (3) adopt an advisory shareholder vote each year ratifying (or not) executive compensation. IBM's board recommended that shareholders vote against all three proposals.

About 8 pages of the proxy statement described nominees for the board and their compensation, about 53 pages explained executive compensation, and about 4½ pages covered the stockholders' proposals, with much of that being management's explanation for why it opposed them.

Stockholders were permitted to vote over the Web, by telephone, by mail, or in person at the meeting. When the result were tallied, IBM revealed that all board nominees had been elected by a majority and that all three stockholder proposals had been defeated, although the last two proposals garnered over 43% of the votes in their favor.[a]

IBM's annual meeting might not have been as exciting as the TV show *CSI: Miami*, but we think the evidence shows that there will be more stockholder proposals in the future and that many will win approval.

[a]IBM had not released the actual vote count for any directors at the time this was written, but the results will be in IBM's 10-Q report for the quarter ending in June 2009.

Voting procedures also affect the ability of outsiders to gain positions on the board. If the charter specifies cumulative voting, then each shareholder is given a number of votes equal to his or her shares multiplied by the number of board seats up for election. For example, the holder of 100 shares of stock will receive 1,000 votes if 10 seats are to be filled. Then, the shareholder can distribute those votes however he or she sees fit. One hundred votes could be cast for each of 10 candidates, or all 1,000 votes could be cast for one candidate. If noncumulative voting is used, our hypothetical stockholder cannot concentrate votes in this way—no more than 100 votes can be cast for any one candidate.

With noncumulative voting, if management controls 51% of the shares then they can fill every seat on the board, leaving dissident stockholders without any representation on the board. With cumulative voting, however, if 10 seats are to be filled then dissidents could elect a representative, provided they have 10% plus 1 additional share of the stock.

Note also that bylaws specify whether the entire board is to be elected annually or if directors are to have staggered terms with, say, one-third of the seats to be filled each year and directors to serve three-year terms. With staggered terms, fewer seats come up each year, making it harder for dissidents to gain representation on the board. Staggered boards are also called **classified boards**.

Many board members are "insiders"—that is, people who hold managerial positions within the company, such as the CFO. Because insiders report to the CEO, it may be difficult for them to oppose the CEO at a board meeting. To help mitigate this problem, several exchanges, such as the NYSE and Nasdaq, now require that listed companies have a majority of outside directors.

Some "outside" board members often have strong connections with the CEO through professional relationships, personal friendships, and consulting or other

fee-generating activities. In fact, outsiders sometimes have very little expert business knowledge but have "celebrity" status from nonbusiness activities. Some companies also have **interlocking boards of directors**, where Company A's CEO sits on Company B's board and B's CEO sits on A's board. In these situations, even the outside directors are not truly independent and impartial.

Large boards (those with more than about ten members) often are less effective than smaller boards. As anyone who has been on a committee can attest, individual participation tends to fall as committee size increases. Thus, there is a greater likelihood that members of a large board will be less active than those on smaller boards.

The compensation of board members has an impact on the board's effectiveness. When board members have exceptionally high compensation, the CEO also tends to have exceptionally high compensation. This suggests that such boards tend to be too lenient with the CEO.[15] The form of board compensation also affects board performance. Rather than compensating board members with only salary, many companies now include restricted stock grants or stock options in an effort to better align board members with stockholders.

Studies show that corporate governance usually improves if (1) the CEO is not also the chairman of the board, (2) the board has a majority of true outsiders who bring some type of business expertise to the board and are not too busy with other activities, (3) the board is not too large, and (4) board members are compensated appropriately (not too high and not all cash, but including exposure to equity risk through options or stock). The good news for the shareholder is that the boards at many companies have made significant improvements in these directions during the past decade. Fewer CEOs are also board chairmen and, as power has shifted from CEOs to boards as a whole, there has been a tendency to replace insiders with strong, independent outsiders. Today, the typical board has about one-third insiders and two-thirds outsiders, and most outsiders are truly independent. Moreover, board members are compensated primarily with stock or options rather than a straight salary. These changes clearly have decreased the patience of boards with poorly performing CEOs. Within the past several years the CEOs of Wachovia, Sprint Nextel, Gap, Hewlett-Packard, Home Depot, Citigroup, Pfizer, Ford and Dynegy, to name just a few, have been removed by their boards. This would have been unheard of 30 years ago.

Charter Provisions and Bylaws That Affect the Likelihood of Hostile Takeovers

Hostile takeovers usually occur when managers have not been willing or able to maximize the profit potential of the resources under their control. In such a situation, another company can acquire the poorly performing firm, replace its managers, increase free cash flow, and improve MVA. The following paragraphs describe some provisions that can be included in a corporate charter to make it harder for poorly performing managers to remain in control.[16]

A shareholder-friendly charter should ban **targeted share repurchases**, also known as **greenmail**. For example, suppose a company's stock is selling for $20 per

[15] See I. E. Brick, O. Palmon, and J. Wald, "CEO Compensation, Director Compensation, and Firm Performance: Evidence of Cronyism?" *Journal of Corporate Finance*, June 2006, pp. 403–423.

[16] Some states have laws that go further than others to protect management. This is one reason that many companies are incorporated in manager-friendly Delaware. Some companies have even shifted their state of incorporation to Delaware because their managers felt that a hostile takeover attempt was likely. Note that a "shareholder-friendly charter" could and would waive the company's right to strong anti-takeover protection, even if the state allowed it.

share. Now a hostile bidder, or raider, who plans to replace management if the takeover is successful, buys 5% of the company's stock at the $20 price.[17] The raider then makes an offer to purchase the remainder of the stock for $30 per share. The company might offer to buy back the raider's stock at a price of, say, $35 per share. This is called a targeted share repurchase since the stock will be purchased only from the raider and not from any other shareholders. A raider who paid only $20 per share for the stock would be making a quick profit of $15 per share, which could easily total several hundred million dollars. As a part of the deal, the raider would sign a document promising not to attempt to take over the company for a specified number of years; hence the buyback also is called greenmail. Greenmail hurts shareholders in two ways. First, they are left with $20 stock when they could have received $30 per share. Second, the company purchased stock from the bidder at $35 per share, which represents a direct loss by the remaining shareholders of $15 for each repurchased share.

Managers who buy back stock in targeted repurchases typically argue that their firms are worth more than the raiders offered and that, in time, the "true value" will be revealed in the form of a much higher stock price. This situation might be true if a company were in the process of restructuring itself, or if new products with high potential were in the pipeline. But if the old management had been in power for a long time and had a history of making empty promises, then one should question whether the true purpose of the buyback was to protect stockholders or management.

Another characteristic of a stockholder-friendly charter is that it does not contain a **shareholder rights provision**, better described as a **poison pill**. These provisions give the shareholders of target firms the right to buy a specified number of shares in the company at a very low price if an outside group or firm acquires a specified percentage of the firm's stock. Therefore, if a potential acquirer tries to take over a company, its other shareholders will be entitled to purchase additional shares of stock at a bargain price, thus seriously diluting the holdings of the raider. For this reason, these clauses are called poison pills, because if they are in the charter, the acquirer will end up swallowing a poison pill if the acquisition is successful. Obviously, the existence of a poison pill makes a takeover more difficult, and this helps to entrench management.

A third management entrenchment tool is a **restricted voting rights** provision, which automatically cancels the voting rights of any shareholder who owns more than a specified amount of the company's stock. The board can grant voting rights to such a shareholder, but this is unlikely if that shareholder plans to take over the company.

Using Compensation to Align Managerial and Shareholder Interests

The typical CEO today receives a fixed salary, a cash bonus based on the firm's performance, and stock-based compensation, either in the form of stock grants or option grants. Cash bonuses often are based upon short-run operating factors, such as this year's growth in earnings per share, or medium-term operating performance, such as earnings growth over the past 3 years.

Stock-based compensation is often in the form of options. Chapter 8 explains option valuation in detail, but here we discuss how a standard **stock option**

[17]Someone can, under the law, acquire up to 5% of a firm's stock without announcing the acquisition. Once the 5% limit has been hit, the acquirer has 10 days to "announce" the acquisition by filing Schedule 13D with the SEC. Schedule 13D reports not only the acquirer's number of shares but also his or her intentions, such as a passive investment or a takeover. These reports are monitored closely, so as soon as one is filed, management is alerted to the possibility of an imminent takeover.

THE GLOBAL ECONOMIC CRISIS

Would the U.S. Government Be an Effective Board Director?

In response to the global economic crisis that began with the recession of 2007, many governments are becoming major stakeholders in heretofore publicly traded companies. For example, the U.S. government has invested billions in Fannie Mae and Freddie Mac, taking them into conservatorship and having a direct say in the companies' leadership and operations, including the dismissal of former Fannie Mae CEO Daniel Mudd in 2008.

The U.S. government has made multibillon-dollar investments in banks (about $50 billion to Citigroup, $45 billion to Bank of America, and $25 billion each to JP Morgan Chase and Wells Fargo), insurance companies (almost $70 billion to AIG), and auto companies ($16 billion to GM and $7 billion to Chrysler). Much of this has been in the form of preferred stock, which does not give the government any direct voting or decision-making authority. However, the government has certainly applied moral suasion, as evidenced by the removal of GM's former CEO Rick Wagoner. The government is also imposing limits on executive compensation at firms receiving additional government funds.

For the most part, however, the government does not have voting rights at bailout recipients, nor does it have representation on their boards of directors. It will be interesting to see if this changes and if the government takes a more direct role in corporate governance.

Sources: See http://projects.nytimes.com/creditcrisis/recipients/table for updates on TARP recipients.

compensation plan works. Suppose IBM decides to grant an option to an employee, allowing her to purchase a specified number of IBM shares at a fixed price, called the **strike price** (or **exercise price**), regardless of the actual price of the stock. The strike price is usually set equal to the current stock price at the time the option is granted. Thus, if IBM's current price were $100, then the option would have an exercise price of $100. Options usually cannot be exercised until after some specified period (the **vesting period**), which is usually 1 to 5 years. Some grants have **cliff vesting**, which means that all the granted options vest at the same date, such as 3 years after the grant. Other grants have **annual vesting**, which means that a certain percentage vest each year. For example, one-third of the options in the grant might vest each year. The options have an **expiration date**, usually 10 years after issue. For our IBM example, assume that the options have cliff vesting in 3 years and have an expiration date in 10 years. Thus, the employee can exercise the option 3 years after issue or wait as long as 10 years. Of course, the employee would not exercise unless IBM's stock is above the $100 exercise price, and if the price never rose above $100, the option would expire unexercised. However, if the stock price were above $100 on the expiration date, the option would surely be exercised.

Suppose the stock price had grown to $134 after 5 years, at which point the employee decided to exercise the option. She would buy stock from IBM for $100, so IBM would get only $100 for stock worth $134. The employee would (probably) sell the stock the same day she exercised the option and hence would receive in cash the $34 difference between the $134 stock price and the $100 exercise price. There are two important points to note in this example. First, most employees sell stock soon after exercising the option. Thus, the incentive effects of an option grant typically end when the option is exercised. Second, option pricing theory shows that it is not optimal to exercise a conventional call option on stock that does not pay dividends before the option expires: An investor is always better off selling the option in the marketplace rather than exercising it. But because employee stock options are

not tradable, grantees often exercise the options well before they expire. For example, people often time the exercise of options to the purchase of a new home or some other large expenditure. But early exercise occurs not just for liquidity reasons, such as needing cash to purchase a house, but also because of behavioral reasons. For example, exercises occur more frequently after stock run-ups, which suggests that grantees view the stock as overpriced.

In theory, stock options should align a manager's interests with those of shareholders, influencing the manager to behave in a way that maximizes the company's value. But in practice there are two reasons why this does not always occur.

First, suppose a CEO is granted options on 1 million shares. If we use the same stock prices as in our previous example then the grantee would receive $34 for each option, or a total of $34 million. Keep in mind that this is in addition to an annual salary and cash bonuses. The logic behind employee options is that they motivate people to work harder and smarter, thus making the company more valuable and benefiting shareholders. But take a closer look at this example. If the risk-free rate is 5.5%, the market risk premium is 6%, and IBM's beta is 1.19, then the expected return, based on the CAPM, is 5.5% + 1.19(6%) = 12.64%. IBM's dividend yield is only 0.8%, so the expected annual price appreciation must be about 11.84% (12.64% – 0.8% = 11.84%). Now note that if IBM's stock price grew from $100 to $134 over 5 years, that would translate to an annual growth rate of only 6%, not the 11.84% shareholders expected. Thus, the executive would receive $34 million for helping run a company that performed below shareholders' expectations. As this example illustrates, standard stock options do not necessarily link executives' wealth with that of shareholders.

Second, and even worse, the events of the early 2000s showed that some executives were willing to illegally falsify financial statements in order to drive up stock prices just prior to exercising their stock options.[18] In some notable cases, the subsequent stock price drop and loss of investor confidence have forced firms into bankruptcy. Such behavior is certainly not in shareholders' best interests!

As a result, companies today are experimenting with different types of compensation plans that involve different vesting periods and different measures of performance. For example, from a legal standpoint it is more difficult to manipulate EVA (Economic Value Added) than earnings per share.[19] Therefore, many companies incorporate EVA-type measures in their compensation systems. Also, many companies have quit granting options and instead are granting restricted stock that cannot be sold until it has vested.

Just as "all ships rise in a rising tide," so too do most stocks rise in a bull market such as that of 2003–2007. In a strong market, even the stocks of companies whose performance ranks in the bottom 10% of their peer group can rise and thus trigger handsome executive bonuses. This situation is leading to compensation plans that are based on *relative* as opposed to *absolute* stock price performance. For example, some

[18]Several academic studies show that option-based compensation leads to a greater likelihood of earnings restatements (which means having to refile financial statements with the SEC because there was a material error) and outright fraud. See A. Agrawal and S. Chadha, "Corporate Governance and Accounting Scandals," *Journal of Law and Economics*, 2006, pp. 371–406; N. Burns and S. Kedia, "The Impact of Performance-Based Compensation on Misreporting," *Journal of Financial Economics*, January 2006, pp. 35–67; and D. J. Denis, P. Hanouna, and A. Sarin, "Is There a Dark Side to Incentive Compensation?" *Journal of Corporate Finance*, June 2006, pp. 467–488.

[19]For a discussion of EVA, see Al Ehrbar, *EVA: The Real Key to Creating Wealth* (New York: John Wiley & Sons, 1998); and Pamela P. Peterson and David R. Peterson, *Company Performance and Measures of Value Added* (The Research Foundation of the Institute of Chartered Financial Analysts, 1996).

THE GLOBAL ECONOMIC CRISIS

Shareholder Reactions to the Crisis

It is safe to say that shareholders were dismayed by the market's decline in 2008, and it looks like they are seeking more control. RiskMetrics Group provides data on the shareholder proposals that are included in proxy statements, with votes tallied at the annual meetings. The 2009 proxy season saw an enormous number of proposals related to corporate governance, especially compensation, as shown below.

It will be interesting to see how companies respond to these votes and whether more shareholder power translates into better performance.

Sources: RiskMetrics Group, **http://www.riskmetrics.com/knowledge/proxy_season_scorecard_2009.**

	Number of proposals
Executive Pay Issues	
Advisory vote on compensation	85
Vote on golden parachutes	9
Anti–gross-ups policy	2
Vote on executive death benefits	12
Retention period for stock awards	14
Establish bonus banks	3
Board Issues	
Independent board chairman	33
Allow for cumulative voting	34
Require majority vote to elect directors	51
Takeover Defenses/Other	
Right to call special meeting	61
End supermajority vote requirement	15
Repeal classified board	71

compensation plans have indexed options whose exercise prices depend on the performance of the market or a subset of competitors.

Finally, the empirical results from academic studies show that the correlation between executive compensation and corporate performance is mixed. Some studies suggest that the type of compensation plan used affects company performance, while others find little effect, if any. But we can say with certainty that managerial compensation plans will continue to receive lots of attention from researchers, the popular press, and boards of directors.

Capital Structure and Internal Control Systems

Capital structure decisions can affect managerial behavior. As the debt level increases, so does the probability of bankruptcy. This increased threat of bankruptcy brings with it two effects on behavior. First, as discussed earlier in this chapter, managers may waste money on unnecessary expenditures and perquisites. This behavior is more likely when times are good and firms are flush with cash; it is less likely in the

face of high debt levels and possible bankruptcy. Thus high levels of debt tend to reduce managerial waste. Second, however, high levels of debt may also reduce a manager's willingness to undertake positive-NPV but risky projects. Most managers have their personal reputation and wealth tied to a single company. If that company has a lot of debt then a particularly risky project, even if it has a positive-NPV, may be just too risky for the manager to tolerate because a bad outcome could lead to bankruptcy and loss of the manager's job. Stockholders, on the other hand, are diversified and would want the manager to invest in positive-NPV projects even if they are risky. When managers forgo risky but value-adding projects, the resulting **underinvestment problem** reduces firm value. So increasing debt might increase firm value by reducing wasteful expenditures, but it also might reduce value by inducing underinvestment by managers. Empirical tests have not been able to establish exactly which effect dominates.

Internal control systems have become an increasingly important issue since the passage of the Sarbanes-Oxley Act of 2002. Section 404 of the act requires companies to establish effective internal control systems. The Securities and Exchange Commission, which is charged with the implementation of Sarbanes-Oxley, defines an effective internal control system as one that provides "reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles." In other words, investors should be able to trust a company's reported financial statements.

Environmental Factors Outside of a Firm's Control

As noted earlier, corporate governance is also affected by environmental factors that are outside of a firm's control, including the regulatory/legal environment, block ownership patterns, competition in the product markets, the media, and litigation.

Regulations and Laws. The regulatory/legal environment includes the agencies that regulate financial markets, such as the SEC. Even though the fines and penalties levied on firms for financial misrepresentation by the SEC are relatively small, the damage to a firm's reputation can have significant costs, leading to extremely large reductions in the firm's value.[20] Thus, the regulatory system has an enormous impact on corporate governance and firm value.

The regulatory/legal environment also includes the laws and legal system under which a company operates. These vary greatly from country to country. Studies show that firms located in countries with strong legal protection for investors have stronger corporate governance and that this is reflected in better access to financial markets, a lower cost of equity, increases in market liquidity, and less noise in stock prices.[21]

Block Ownership Patterns. Prior to the 1960s, most U.S. stock was owned by a large number of individual investors, each of whom owned a diversified portfolio of stocks. Because each individual owned a small amount of any given company's stock, there was little that he or she could do to influence its operations. Also, with such a small investment, it was not cost effective for the investor to monitor companies closely. Indeed dissatisfied stockholders would typically just "vote with their feet" by selling the stock. This situation began to change as institutional investors such

[20]For example, see Jonathan M. Karpoff, D. Scott Lee, and Gerald S. Martin, "The Cost to Firms of Cooking the Books," *Journal of Financial and Quantitative Analysis*, September 2008, pp. 581–612.

[21]For example, see R. La Porta, F. Lopez-de-Silanes, A. Shleifer, and R. Vishny, "Legal Determinants of External Finance," *Journal of Finance*, January 1997, pp. 1131–1150; Hazem Daouk, Charles M. C. Lee, and David Ng, "Capital Market Governance: How Do Security Laws Affect Market Performance?" *Journal of Corporate Finance*, June 2006, pp. 560–593; and Li Jin and Stewart C. Myers, "R^2 Around the World: New Theory and New Tests," *Journal of Financial Economics*, February 2006, pp. 257–292.

The Sarbanes-Oxley Act of 2002 and Corporate Governance

In 2002 Congress passed the Sarbanes-Oxley Act, known in the industry as SOX, as a measure to improve transparency in financial accounting and to prevent fraud. SOX consists of eleven chapters, or *titles*, which establish wide-ranging new regulations for auditors, CEOs and CFOs, boards of directors, investment analysts, and investment banks. These regulations are designed to ensure that (a) companies that perform audits are sufficiently independent of the companies that they audit, (b) a key executive in each company *personally* certifies that the financial statements are complete and accurate, (c) the board of directors' audit committee is relatively independent of management, (d) financial analysts are relatively independent of the companies they analyze, and (e) companies publicly and promptly release all important information about their financial condition. The individual titles are briefly summarized below.

Title I establishes the Public Company Accounting Oversight Board, whose charge is to oversee auditors and establish quality control and ethical standards for audits.

Title II requires that auditors be independent of the companies that they audit. Basically this means they can't provide consulting services to the companies they audit. The purpose is to remove financial incentives for auditors to help management cook the books.

Title III requires that the board of directors' audit committee must be composed of "independent" members. Section 302 requires that the CEO and CFO must review the annual and quarterly financial statements and reports and personally certify that they are complete and accurate. Penalties for certifying reports that executives know are false range up to a $5 million fine, 20 years in prison, or both. Under Section 304, if the financial statements turn out to be false and must be *restated,* then certain bonuses and equity-based compensation that executives earn must be reimbursed to the company.

Title IV's Section 401(a) requires prompt disclosure and more extensive reporting on off–balance sheet transactions. Section 404 requires that management evaluate its internal financial controls and report whether they are "effective." The external auditing firm must also indicate whether it agrees with management's evaluation of its internal controls. Section 409 requires that a company disclose to the public promptly and *in plain English* any material changes to its financial condition. Title IV also places restrictions on the loans that a company can make to its executives.

Title V addresses the relationship between financial analysts, the investment banks they work for, and the companies they cover. It requires that analysts and brokers who make stock recommendations disclose any conflicts of interest they might have concerning the stocks they recommend.

Titles VI and VII are technical in nature, dealing with the SEC's budget and powers and requiring that several studies be undertaken by the SEC.

Title VIII establishes penalties for destroying or falsifying audit records. It also provides "whistle-blower protection" for employees who report fraud.

Title IX increases the penalties for a variety of white-collar crimes associated with securities fraud, such as mail and wire fraud. Section 902 also makes it a crime to alter, destroy, or hide documents that might be used in an investigation. It also makes it a crime to conspire to do so.

Title X requires that the CEO sign the company's federal income tax return.

Title XI provides penalties for obstructing an investigation and grants the SEC authority to remove officers or directors from a company if they have committed fraud.

as pension funds and mutual funds gained control of larger and larger shares of investment capital—and as they then acquired larger and larger percentages of all outstanding stock. Given their large block holdings, it now makes sense for institutional investors to monitor management, and they have the clout to influence the board. In some cases, they have actually elected their own representatives to the board. For example, when TIAA-CREF, a huge private pension fund, became frustrated with the performance and leadership of Furr's/Bishop, a cafeteria chain, the fund led a fight that ousted the entire board and then elected a new board consisting only of outsiders.

In general, activist investors with large blocks in companies have been good for all shareholders. They have searched for firms with poor profitability and then replaced management with new teams that are well versed in value-based management techniques, thereby improving profitability. Not surprisingly, stock prices usually rise on the news that a well-known activist investor has taken a major position in an underperforming company.

Note that activist investors can improve performance even if they don't go so far as to take over a firm. More often, they either elect their own representatives to the board or simply point out the firm's problems to other board members. In such cases, boards often change their attitudes and become less tolerant when they realize that the management team is not following the dictates of value-based management. Moreover, the firm's top managers recognize what will happen if they don't whip the company into shape, and they go about doing just that.

Competition in Product Markets. The degree of competition in a firm's product market has an impact on its corporate governance. For example, companies in industries with lots of competition don't have the luxury of tolerating poorly performing CEOs. As might be expected, CEO turnover is higher in competitive industries than in those with less competition.[22] When most firms in an industry are fairly similar, you might expect it to be easier to find a qualified replacement from another firm for a poorly performing CEO. This is exactly what the evidence shows: As industry homogeneity increases, so does the incidence of CEO turnover.[23]

The Media and Litigation. Corporate governance, especially compensation, is a hot topic in the media. The media can have a positive impact by discovering or reporting corporate problems, such as the Enron scandal. Another example is the extensive coverage that was given to option backdating, in which the exercise prices of executive stock options were set *after* the options officially were granted. Because the exercise prices were set at the lowest stock price during the quarter in which the options were granted, the options were in-the-money and more valuable when their "official" lives began. Several CEOs have already lost their jobs over this practice, and more firings are likely.

However, the media can also hurt corporate governance by focusing too much attention on a CEO. Such "superstar" CEOs often command excessive compensation packages and spend too much time on activities outside the company, resulting in too much pay for too little performance.[24]

In addition to penalties and fines from regulatory bodies such as the SEC, civil litigation also occurs when companies are suspected of fraud. Recent research indicates that such suits lead to improvements in corporate governance.[25]

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[22]See M. De Fond and C. Park, "The Effect of Competition on CEO Turnover," *Journal of Accounting and Economics*, Vol. 27, 1999, pp. 35–56; and T. Fee and C. Hadlock, "Management Turnover and Product Market Competition: Empirical Evidence from the U.S. Newspaper Industry," *Journal of Business*, April 2000, pp. 205–243.

[23]See R. Parrino, "CEO Turnover and Outside Succession: A Cross-Sectional Analysis," *Journal of Financial Economics*, Vol. 46, 1997, pp. 165–197.

[24]See U. Malmendier and G. A. Tate, "Superstar CEOs," *Quarterly Journal of Economics*, forthcoming.

[25]For example, see D. B. Farber, "Restoring Trust after Fraud: Does Corporate Governance Matter?" *Accounting Review*, April 2005, pp. 539–561; and Stephen P. Ferris, Tomas Jandik, Robert M. Lawless, and Anil Makhija, "Derivative Lawsuits as a Corporate Governance Mechanism: Empirical Evidence on Board Changes Surrounding Filings," *Journal of Financial and Quantitative Analysis*, March 2007, pp. 143–166.

International Corporate Governance

Corporate governance includes the following factors: (1) the likelihood that a poorly performing firm can be taken over; (2) whether the board of directors is dominated by insiders or outsiders; (3) the extent to which most of the stock is held by a few large "blockholders" versus many small shareholders; and (4) the size and form of executive compensation. An interesting study compared corporate governance in Germany, Japan, and the United States.

First, note from the accompanying table that the threat of a takeover serves as a stick in the United States but not in Japan or Germany. This threat, which reduces management entrenchment, should benefit shareholders in the United States relative to the other two countries. Second, German and Japanese boards are larger than those in the United States. Japanese boards consist primarily of insiders, unlike German and American boards, which have similar inside/outside mixes. It should be noted, though, that the boards of most large German corporations include representatives of labor, whereas U.S. boards represent only shareholders. Thus, it would appear that U.S. boards, with a higher percentage of outsiders, would have interests most closely aligned with those of shareholders.

German and Japanese firms are also more likely to be controlled by large blocks of stock than those in the United States. Although pension and mutual funds, as well as other institutional investors, are increasingly important in the United States, block ownership is still less prevalent than in Germany and Japan. In both Germany and Japan, banks often own large blocks of stock, something that is not permitted by law in the United States, and corporations also own large blocks of stock in other corporations. In Japan, combinations of companies, called **keiretsus**, have cross-ownership of stock among the member companies, and these interlocking blocks distort the definition of an outside board member. For example, when the performance of a company in a keiretsu deteriorates, new directors are often appointed from the staffs of other members of the keiretsu. Such appointees might be classified officially as insiders, but they represent interests other than those of the troubled company's CEO.

In general, large blockholders are better able to monitor management than are small investors, so one might expect the blockholder factor to favor German and Japanese shareholders. However, these blockholders have other relationships with the company that might be detrimental to outside shareholders. For example, if one company buys from another, transfer pricing might be used to shift wealth to a favored company, or a company might be forced to buy from a sister company in spite of the availability of lower-cost resources from outside the group.

Executive compensation packages differ dramatically across the three countries, with U.S. executives receiving by far the highest compensation. However, compensation plans are remarkably similar in terms of how sensitive total compensation is to corporate performance.

Which country's system of corporate governance is best from the standpoint of a shareholder whose goal is stock price maximization? There is no definitive answer. U.S. stocks have had the best performance in recent years. Moreover, German and Japanese companies are slowly moving toward the U.S. system with respect to size of compensation, and compensation plans in all three countries are being linked ever more closely to performance. At the same time, however, U.S. companies are moving toward the others in the sense of having larger ownership blocks; because those blocks are primarily held by pension and mutual funds (rather than banks and related corporations), they better represent the interests of shareholders.

Sources: Steven N. Kaplan, "Top Executive Incentives in Germany, Japan, and the USA: A Comparison," in *Executive Compensation and Shareholder Value,* Jennifer Carpenter and David Yermack, eds. (Boston: Kluwer Academic Publishers, 1999), pp. 3–12. Reprinted by permission of Springer Science and Business Media.

International Characteristics of Corporate Governance

	Germany	Japan	United States
Threat of a takeover	Moderate	Low	High
Board of directors			
Size of board	26	21	14
Percent insiders	27%	91%	33%
Percent outsiders	73%	9%	67%
Are large blocks of stock typically owned by			
A controlling family?	Yes	No	No
Another corporation?	Yes	Yes	No
A bank?	Yes	Yes	No
Executive compensation			
Amount of compensation	Moderate	Low	High
Sensitivity to performance	Low to moderate	Low to moderate	Low to moderate

Self-Test

What are the two primary forms of corporate governance provisions that correspond to the stick and the carrot?
What factors improve the effectiveness of a board of directors?
What are three provisions in many corporate charters that deter takeovers?
Describe how a typical stock option plan works. What are some problems with a typical stock option plan?

13.6 Employee Stock Ownership Plans (ESOPs)

See **http://www.esopassociation.org** *for more on ESOPs.*

Studies show that 90% of the employees who receive stock under option plans sell the stock as soon as they exercise their options, so the plans motivate employees only for a limited period.[26] Moreover, many companies limit their stock option plans to key managers and executives. To help provide long-term productivity gains and improve retirement incomes for all employees, Congress authorized the use of **Employee Stock Ownership Plans (ESOPs)**. Today about 9,000 privately held companies and 1,000 publicly held firms have ESOPs, and more are being created every day. Typically, the ESOP's major asset is shares of the common stock of the company that created it, and of the 10,000 total ESOPs, about 2,500 of them actually own a majority of their company's stock.[27]

To illustrate how an ESOP works, consider Gallagher & Abbott Inc. (G&A), a construction company located in Knoxville, Tennessee. G&A's simplified balance sheet is shown below:

[26]See Gary Laufman, "To Have and Have Not," *CFO*, March 1998, pp. 58–66.

[27]See Eugene Pilotte, "Employee Stock Ownership Plans, Management Motives, and Shareholder Wealth: A Review of the Evidence," *Journal of Financial Education*, Spring 1997, pp. 41–46; and Daniel Eisenberg, "No ESOP Fable," *Time*, May 10, 1999, p. 95.

G&A's Balance Sheet prior to ESOP (Millions of Dollars)

Assets		Liabilities and Equity	
Cash	$ 10	Debt	$100
Other	190	Equity (1 million shares)	100
Total	$200	Total	$200

Now G&A creates an ESOP, which is a new legal entity. The company issues 500,000 shares of new stock at $100 per share, or $50 million in total, which it sells to the ESOP. The company's employees are the ESOP's stockholders, and each employee receives an ownership interest based on the size of his or her salary and years of service. The ESOP borrows the $50 million to buy the newly issued stock.[28] Financial institutions are willing to lend the ESOP the money because G&A signs a guarantee for the loan. Here is the company's new balance sheet:

G&A's Balance Sheet after the ESOP (Millions of Dollars)

Assets		Liabilities and Equity	
Cash	$ 60	Debt[a]	$100
Other	190	Equity (1.5 million shares)	150
Total	$250	Total	$250

[a]The company has guaranteed the ESOP's loan, and it has promised to make payments to the ESOP sufficient to retire the loan, but this does not show up on the balance sheet.

The company now has an additional $50 million of cash and $50 million more of book equity, but it has a de facto liability owing to its guarantee of the ESOP's debt. It could use the cash to finance an expansion, but many companies use the cash to repurchase their own common stock, so we assume that G&A will do likewise. The company's new balance sheets, and that of the ESOP, are shown below:

G&A's Balance Sheet after the ESOP and Share Repurchase (Millions of Dollars)

Assets		Liabilities and Equity	
Cash	$ 10	Debt	$100
Other	190	Equity (1 million shares)	150
		Treasury stock	(50)
Total	$200	Total	$200

ESOP's Initial Balance Sheet (Millions of Dollars)

Assets		Liabilities and Equity	
G&A stock	$50	Debt	$50
		Equity	0
Total	$50	Total	$50

[28]Our description is somewhat simplified. Technically, the stock would be placed in a suspense account and then be allocated to employees as the debt is repaid.

Note that although the company's balance sheet looks exactly as it did initially, there is actually a huge difference—the company has guaranteed the ESOP's debt and hence it has an off–balance sheet liability of $50 million. Moreover, because the ESOP has no equity, the guarantee is very real indeed. Finally, observe that operating assets have not been increased at all, but the total debt outstanding supported by those assets has increased by $50 million.[29]

If this were the whole story, then there would be no reason to have an ESOP. However, G&A has promised to make payments to the ESOP in sufficient amounts to enable the ESOP to pay interest and principal charges on the debt, amortizing it over 15 years. Thus, after 15 years, the debt will be paid off and the ESOP's equity holders (the employees) will have equity with a book value of $50 million and a market value that could be much higher if G&A's stock increases, as it should over time. Then, as employees retire, the ESOP will distribute a pro rata amount of the G&A stock to each employee, who can then use it as a part of his or her retirement plan.

An ESOP is clearly beneficial for employees, but why would a company want to establish one? There are five primary reasons.

1. Congress passed the enabling legislation in hopes of enhancing employees' productivity and thus making the economy more efficient. In theory, employees who have equity in the enterprise will work harder and smarter. Note too that if employees are more productive and creative then this will benefit outside shareholders, because productivity enhancements that benefit ESOP shareholders also benefit outside shareholders.
2. The ESOP represents additional compensation to employees: in our example, there is a $50 million (or more) transfer of wealth from existing shareholders to employees over the 15-year period. Presumably, if the ESOP were not created then some other form of compensation would have been required, and that alternative compensation might not have the secondary benefit of enhancing productivity. Also note that the ESOP's payments to employees (as opposed to the payment by the company) come primarily at retirement, and Congress wanted to boost retirement incomes.
3. Depending on when an employee's rights to the ESOP are vested, the ESOP may help the firm retain employees.
4. There are strong tax incentives that encourage a company to form an ESOP. First, Congress decreed that when the ESOP owns 50% or more of the company's common stock, financial institutions that lend money to ESOPs can exclude from taxable income 50% of the interest they receive on the loan. This improves the financial institutions' after-tax returns, which allows them to lend to ESOPs at below-market rates. Therefore, a company that establishes an ESOP can borrow through the ESOP at a lower rate than would otherwise be available—in our example, the $50 million of debt would be at a reduced rate.

   There is also a second tax advantage. If the company were to borrow directly, it could deduct interest but not principal payments from its taxable income. However, companies typically make the required payments to their ESOPs in the form of cash dividends. Dividends are not normally deductible from taxable income, but *cash dividends paid on ESOP stock are deductible if the dividends are paid to plan participants or are used to repay the loan*. Thus, companies whose ESOPs

[29]We assumed that the company used the $50 million paid to it by the ESOP to repurchase common stock and thus to increase its de facto debt. It could have used the $50 million to retire debt, in which case its true debt ratio would remain unchanged, or it could have used the money to support an expansion.

own 50% of their stock can in effect borrow on ESOP loans at subsidized rates and then deduct both the interest and principal payments made on the loans. American Airlines and Publix Supermarkets are two of the many firms that have used ESOPs to obtain this benefit, along with motivating employees by giving them an equity interest in the enterprise.

5. A less desirable use of ESOPs is to help companies avoid being acquired by another company. The company's CEO, or someone appointed by the CEO, typically acts as trustee for its ESOP, and the trustee is supposed to vote the ESOP's shares according to the will of the plan participants. Moreover, the participants, who are the company's employees, usually oppose takeovers because they frequently involve labor cutbacks. Therefore, if an ESOP owns a significant percentage of the company's shares, then management has a powerful tool for warding off takeovers. This is not good for outside stockholders.

Are ESOPs good for a company's shareholders? In theory, ESOPs motivate employees by providing them with an ownership interest. That should increase productivity and thereby enhance stock values. Moreover, tax incentives mitigate the costs associated with some ESOPs. However, an ESOP can be used to help entrench management, and that could hurt stockholders. How do the pros and cons balance out? The empirical evidence is not entirely clear, but certain findings are worth noting. First, if an ESOP is established to help defend against a takeover, then the firm's stock price typically falls when plans for the ESOP are announced. The market does not like the prospect of entrenching management and having to give up the premium normally associated with a takeover. However, if the ESOP is established for tax purposes and/or to motivate employees, the stock price generally goes up at the time of the announcement. In these cases, the company typically has a subsequent improvement in sales per employee and other long-term performance measures, which stimulates the stock price. Indeed, a study showed that companies with ESOPs enjoyed a 26% average annual stock return compared to a return of only 19% for peer companies without ESOPs.[30] It thus appears that ESOPs, if used appropriately, can be a powerful tool for creating shareholder value.

Self-Test

What are ESOPs? What are some of their advantages and disadvantages?

Summary

- **Corporate assets** consist of operating assets and financial, or nonoperating, assets.
- **Operating assets** take two forms: assets-in-place and growth options.
- **Assets-in-place** include the land, buildings, machines, and inventory that the firm uses in its operations to produce products and services.
- **Growth options** refer to opportunities the firm has to increase sales. They include opportunities arising from R&D expenditures, customer relationships, and the like.
- **Financial**, or **nonoperating**, **assets** are distinguished from operating assets and include items such as investments in marketable securities and noncontrolling interests in the stock of other companies.
- The **value of nonoperating assets** is usually close to the figure reported on the balance sheet.

[30] See Daniel Eisenberg, "No ESOP Fable," *Time*, May 10, 1999, p. 95.

- The **value of operations** is the present value of all the future free cash flows expected from operations when discounted at the weighted average cost of capital:

$$V_{op(\text{at time } 0)} = \sum_{t=1}^{\infty} \frac{FCF_t}{(1 + WACC)^t}$$

- The **terminal**, or **horizon**, **value** is the value of operations at the end of the explicit forecast period. It is also called the **continuing value**, and it is equal to the present value of all free cash flows beyond the forecast period, discounted back to the end of the forecast period at the weighted average cost of capital:

$$\text{Continuing value} = V_{op(\text{at time } N)} = \frac{FCF_{N+1}}{WACC - g} = \frac{FCF_N(1 + g)}{WACC - g}$$

- The **corporate valuation model** can be used to calculate the total value of a company by finding the value of operations plus the value of nonoperating assets.
- The intrinsic **value of equity** is the total value of the company minus the value of the debt and preferred stock. The intrinsic **price per share** is the total value of the equity divided by the number of shares.
- **Value-based management** involves the systematic use of the corporate valuation model to evaluate a company's potential decisions.
- The four **value drivers** are (1) the growth rate (g) of sales; (2) operating profitability (OP), which is measured by the ratio of NOPAT to sales; (3) capital requirements (CR), as measured by the ratio of operating capital to sales; and (4) the weighted average cost of capital (WACC).
- **Expected return on invested capital (EROIC)** is equal to expected NOPAT divided by the amount of capital that is available at the beginning of the year.
- A company creates value when the spread between EROIC and WACC is positive—that is, when EROIC – WACC > 0.
- **Corporate governance** involves the manner in which shareholders' objectives are implemented, and it is reflected in a company's policies and actions.
- The two primary mechanisms used in corporate governance are (1) the threat of removal of a poorly performing CEO and (2) the type of plan used to compensate executives and managers.
- Poorly performing managers can be removed either by a takeover or by the company's own board of directors. Provisions in the corporate charter affect the difficulty of a successful takeover, and the composition of the board of directors affects the likelihood of a manager being removed by the board.
- **Managerial entrenchment** is most likely when a company has a weak board of directors coupled with strong anti-takeover provisions in its corporate charter. In this situation, the likelihood that badly performing senior managers will be fired is low.
- **Nonpecuniary benefits** are noncash perks such as lavish offices, memberships at country clubs, corporate jets, foreign junkets, and the like. Some of these expenditures may be cost effective, but others are wasteful and simply reduce profits. Such fat is almost always cut after a hostile takeover.
- **Targeted share repurchases**, also known as **greenmail**, occur when a company buys back stock from a potential acquirer at a price higher than the market price. In return, the potential acquirer agrees not to attempt to take over the company.

- **Shareholder rights provisions**, also known as **poison pills**, allow existing shareholders to purchase additional shares of stock at a price lower than the market value if a potential acquirer purchases a controlling stake in the company.
- A **restricted voting rights** provision automatically deprives a shareholder of voting rights if he or she owns more than a specified amount of stock.
- **Interlocking boards of directors** occur when the CEO of Company A sits on the board of Company B and also B's CEO sits on A's board.
- A **stock option** provides for the purchase of a share of stock at a fixed price, called the **exercise price**, no matter what the actual price of the stock is. Stock options have an **expiration date**, after which they cannot be exercised.
- An **Employee Stock Ownership Plan**, or **ESOP**, is a plan that facilitates employees' ownership of stock in the company for which they work.

Questions

(13–1) Define each of the following terms:
a. Assets-in-place; growth options; nonoperating assets
b. Net operating working capital; operating capital; NOPAT; free cash flow
c. Value of operations; horizon value; corporate valuation model
d. Value-based management; value drivers; EROIC
e. Managerial entrenchment; nonpecuniary benefits
f. Greenmail; poison pills; restricted voting rights
g. Stock option; ESOP

(13–2) Explain how to use the corporate valuation model to find the price per share of common equity.

(13–3) Explain how it is possible for sales growth to decrease the value of a profitable company.

(13–4) What are some actions an entrenched management might take that would harm shareholders?

(13–5) How is it possible for an employee stock option to be valuable even if the firm's stock price fails to meet shareholders' expectations?

Self-Test Problem

Solution Appears in Appendix A

(ST–1) Corporate Valuation

Watkins Inc. has never paid a dividend, and it's not known when the firm might begin paying dividends. Its current free cash flow is $100,000, and this FCF is expected to grow at a constant 7% rate. The weighted average cost of capital is WACC = 11%. Watkins currently holds $325,000 of nonoperating marketable securities. Its long-term debt is $1,000,000, but it has never issued preferred stock. Watkins has 50,000 shares of stock outstanding.
a. Calculate Watkins's value of operations.
b. Calculate the company's total value.
c. Calculate the intrinsic value of its common equity.
d. Calculate the intrinsic per share stock price.

Problems

Answers Appear in Appendix B

EASY PROBLEMS 1–5

(13–1) Free Cash Flow

Use the following income statements and balance sheets to calculate Garnet Inc.'s free cash flow for 2011.

Garnet Inc.

Income Statement	2011	2010
Net sales	$530.0	$500.0
Costs (except depreciation)	400.0	380.0
Depreciation	30.0	25.0
Total operating costs	$430.0	$405.0
Earnings before interest and taxes (EBIT)	100.0	95.0
Less interest	23.0	21.0
Earnings before taxes	$ 77.0	$ 74.0
Taxes (40%)	30.8	29.6
Net income	$ 46.2	$ 44.4

Balance Sheet	2011	2010
Assets		
Cash	$ 28.0	$ 27.0
Marketable securities	69.0	66.0
Accounts receivable	84.0	80.0
Inventories	112.0	106.0
Total current assets	$293.0	$279.0
Net plant and equipment	281.0	265.0
Total assets	$574.0	$544.0
Liabilities and Equity		
Accounts payable	$ 56.0	$ 52.0
Notes payable	138.0	130.0
Accruals	28.0	28.0
Total current liabilities	$222.0	$210.0
Long-term bonds	173.0	164.0
Common stock	100.0	100.0
Retained earnings	79.0	70.0
Common equity	$179.0	$170.0
Total liabilities and equity	$574.0	$544.0

(13–2) Value of Operations of Constant Growth Firm

EMC Corporation has never paid a dividend. Its current free cash flow of $400,000 is expected to grow at a constant rate of 5%. The weighted average cost of capital is WACC = 12%. Calculate EMC's value of operations.

(13–3) Horizon Value

Current and projected free cash flows for Radell Global Operations are shown below. Growth is expected to be constant after 2012, and the weighted average cost of capital is 11%. What is the horizon (continuing) value at 2012?

	Actual	Projected		
	2010	2011	2012	2013
Free cash flow (millions of dollars)	$606.82	$667.50	$707.55	$750.00

(13–4) EROIC and MVA of Constant Growth Firm

A company has capital of $200 million. It has an EROIC of 9%, forecasted constant growth of 5%, and a WACC of 10%. What is its value of operations? What is its intrinsic MVA? (*Hint:* Use Equation 13-5.)

(13–5) Value Drivers and Horizon Value of Constant Growth Firm

You are given the following forecasted information for the year 2014: sales = $300,000,000, operating profitability (OP) = 6%, capital requirements (CR) = 43%, growth (g) = 5%, and the weighted average cost of capital (WACC) = 9.8%. If these values remain constant, what is the horizon value (i.e., the 2014 value of operations)? (*Hint:* Use Equation 13-4.)

INTERMEDIATE PROBLEMS 6–7

(13–6) Value of Operations

Brooks Enterprises has never paid a dividend. Free cash flow is projected to be $80,000 and $100,000 for the next 2 years, respectively; after the second year, FCF is expected to grow at a constant rate of 8%. The company's weighted average cost of capital is 12%.

a. What is the terminal, or horizon, value of operations? (*Hint:* Find the value of all free cash flows beyond Year 2 discounted back to Year 2.)
b. Calculate the value of Brooks's operations.

(13–7) Corporate Valuation

Dozier Corporation is a fast-growing supplier of office products. Analysts project the following free cash flows (FCFs) during the next 3 years, after which FCF is expected to grow at a constant 7% rate. Dozier's weighted average cost of capital is WACC = 13%.

	Year		
	1	2	3
Free cash flow ($ millions)	–$20	$30	$40

a. What is Dozier's terminal, or horizon, value? (*Hint:* Find the value of all free cash flows beyond Year 3 discounted back to Year 3.)
b. What is the current value of operations for Dozier?
c. Suppose Dozier has $10 million in marketable securities, $100 million in debt, and 10 million shares of stock. What is the intrinsic price per share?

CHALLENGING PROBLEMS 8–10

(13–8) Value of Equity

The balance sheet of Hutter Amalgamated is shown below. If the 12/31/2010 value of operations is $756 million, what is the 12/31/2010 intrinsic market value of equity?

Balance Sheet, December 31, 2010 (Millions of Dollars)

Assets		Liabilities and Equity	
Cash	$ 20.0	Accounts payable	$ 19.0
Marketable securities	77.0	Notes payable	151.0
Accounts receivable	100.0	Accruals	51.0
Inventories	200.0	Total current liabilities	$ 221.0
Total current assets	$ 397.0	Long-term bonds	190.0
Net plant and equipment	279.0	Preferred stock	76.0
		Common stock (par plus PIC)	100.0
		Retained earnings	89.0
		Common equity	$ 189.0
Total assets	$ 676.0	Total liabilities and equity	$ 676.0

(13–9) Price per Share

The balance sheet of Roop Industries is shown below. The 12/31/2010 value of operations is $651 million, and there are 10 million shares of common equity. What is the intrinsic price per share?

Balance Sheet, December 31, 2010 (Millions of Dollars)

Assets		Liabilities and Equity	
Cash	$ 20.0	Accounts payable	$ 19.0
Marketable securities	47.0	Notes payable	65.0
Accounts receivable	100.0	Accruals	51.0
Inventories	200.0	Total current liabilities	$135.0
Total current assets	$367.0	Long-term bonds	131.0
Net plant and equipment	279.0	Preferred stock	33.0
		Common stock (par plus PIC)	160.0
		Retained earnings	187.0
		Common equity	$347.0
Total assets	$646.0	Total liabilities and equity	$646.0

(13–10) Corporate Valuation

The financial statements of Lioi Steel Fabricators are shown below—both the actual results for 2010 and the projections for 2011. Free cash flow is expected to grow at a 6% rate after 2011. The weighted average cost of capital is 11%.

a. If operating capital as of 12/31/2010 is $502.2 million, what is the free cash flow for 12/31/2011?
b. What is the horizon value as of 12/31/2011?
c. What is the value of operations as of 12/31/2010?
d. What is the total value of the company as of 12/31/2010?
e. What is the intrinsic price per share for 12/31/2010?

Income Statements for the Year Ending December 31 (Millions of Dollars Except for Per Share Data)

	Actual 2010	Projected 2011
Net sales	$ 500.0	$ 530.0
Costs (except depreciation)	360.0	381.6
Depreciation	37.5	39.8
Total operating costs	$ 397.5	$ 421.4
Earnings before interest and taxes	$ 102.5	$ 108.6
Less interest	13.9	16.0
Earnings before taxes	$ 88.6	$ 92.6
Taxes (40%)	35.4	37.0
Net income before preferred dividends	$ 53.2	$ 55.6
Preferred dividends	6.0	7.4
Net income available for common dividends	$ 47.2	$ 48.2
Common dividends	$ 40.8	$ 29.7
Addition to retained earnings	$ 6.4	$ 18.5
Number of shares	10	10
Dividends per share	$ 4.08	$ 2.97

Balance Sheets for December 31 (Millions of Dollars)

	Actual 2010	Projected 2011
Assets		
Cash	$ 5.3	$ 5.6
Marketable securities	49.9	51.9
Accounts receivable	53.0	56.2
Inventories	106.0	112.4
Total current assets	$ 214.2	$ 226.1
Net plant and equipment	375.0	397.5
Total assets	$ 589.2	$ 623.6
Liabilities and Equity		
Accounts payable	$ 9.6	$ 11.2
Notes payable	69.9	74.1
Accruals	27.5	28.1
Total current liabilities	$ 107.0	$ 113.4
Long-term bonds	140.8	148.2
Preferred stock	35.0	37.1
Common stock (par plus PIC)	160.0	160.0
Retained earnings	146.4	164.9
Common equity	$ 306.4	$ 324.9
Total liabilities and equity	$ 589.2	$ 623.6

Spreadsheet Problem

(13-11)
Build a Model: Corporate Valuation

Start with the partial model in the file ***Ch13 P11 Build a Model.xls*** on the textbook's Web site. The Henley Corporation is a privately held company specializing in lawn care products and services. The most recent financial statements are shown below.

Income Statement for the Year Ending December 31 (Millions of Dollars Except for Per Share Data)

	2010
Net sales	$ 800.0
Costs (except depreciation)	576.0
Depreciation	60.0
Total operating costs	$ 636.0
Earnings before interest and taxes	$ 164.0
Less interest	32.0
Earnings before taxes	$ 132.0
Taxes (40%)	52.8
Net income before preferred dividends	$ 79.2
Preferred dividends	1.4
Net income available for common dividends	$ 77.9
Common dividends	$ 31.1
Addition to retained earnings	$ 46.7
Number of shares (in millions)	10
Dividends per share	$ 3.11

Balance Sheet for December 31 (Millions of Dollars)

	2010		2010
Assets		**Liabilities and Equity**	
Cash	$ 8.0	Accounts payable	$ 16.0
Marketable securities	20.0	Notes payable	40.0
Accounts receivable	80.0	Accruals	40.0
Inventories	160.0	Total current liabilities	$ 96.0
Total current assets	$268.0	Long-term bonds	300.0
Net plant and equipment	600.0	Preferred stock	15.0
		Common stock (par plus PIC)	257.0
		Retained earnings	200.0
		Common equity	$457.0
Total assets	$868.0	Total liabilities and equity	$868.0

Projected ratios and selected information for the current and projected years are shown below.

	Actual	Projected			
	2010	2011	2012	2013	2014
Sales growth rate		15%	10%	6%	6%
Costs/Sales	72%	72	72	72	72
Depreciation/Net PPE	10	10	10	10	10
Cash/Sales	1	1	1	1	1

	Actual	Projected			
	2010	2011	2012	2013	2014
Accounts receivable/Sales	10%	10%	10%	10%	10%
Inventories/Sales	20	20	20	20	20
Net PPE/Sales	75	75	75	75	75
Accounts payable/Sales	2	2	2	2	2
Accruals/Sales	5	5	5	5	5
Tax rate	40	40	40	40	40
Weighted average cost of capital (WACC)	10.5	10.5	10.5	10.5	10.5

a. Forecast the parts of the income statement and balance sheet that are necessary for calculating free cash flow.
b. Calculate free cash flow for each projected year. Also calculate the growth rates of free cash flow each year to ensure that there is constant growth (that is, the same as the constant growth rate in sales) by the end of the forecast period.
c. Calculate operating profitability (OP = NOPAT/Sales), capital requirements (CR = Operating capital/Sales), and expected return on invested capital (EROIC = Expected NOPAT/Operating capital at beginning of year). Based on the spread between EROIC and WACC, do you think that the company will have a positive Market Value Added (MVA = Market value of company − Book value of company = Value of operations − Operating capital)?
d. Calculate the value of operations and MVA. (*Hint*: First calculate the horizon value at the end of the forecast period, which is equal to the value of operations at the end of the forecast period.) Assume that the annual growth rate beyond the horizon is 6%.
e. Calculate the price per share of common equity as of 12/31/2010.

Mini Case

You have been hired as a consultant to Kulpa Fishing Supplies (KFS), a company that is seeking to increase its value. The company's CEO and founder, Mia Kulpa, has asked you to estimate the value of two privately held companies that KFS is considering acquiring. But first, the senior management of KFS would like for you to explain how to value companies that don't pay any dividends. You have structured your presentation around the following items.

a. List the two types of assets that companies own.
b. What are assets-in-place? How can their value be estimated?
c. What are nonoperating assets? How can their value be estimated?
d. What is the total value of a corporation? Who has claims on this value?
e. The first acquisition target is a privately held company in a mature industry owned by two brothers, each with 5 million shares of stock. The company currently has free cash flow of $20 million. Its WACC is 11%, and the FCF is expected to grow at a constant rate of 5%. The company owns marketable securities of $100 million. It is financed with $200 million of debt, $50 million of preferred stock, and $210 million of book equity.
   (1) What is its value of operations?
   (2) What is its total corporate value?
   (3) What is its intrinsic value of equity?
   (4) What is its intrinsic stock price per share?
   (5) What is its intrinsic MVA (MVA = Total corporate value − Total book value of capital supplied by investors)?

f. The second acquisition target is a privately held company in a growing industry. The target has recently borrowed $40 million to finance its expansion; it has no other debt or preferred stock. It pays no dividends and currently has no marketable securities. KFS expects the company to produce free cash flows of –$5 million in 1 year, $10 million in 2 years, and $20 million in 3 years. After 3 years, free cash flow will grow at a rate of 6%. The target's WACC is 10% and it currently has 10 million shares of stock outstanding.
   (1) What is the company's horizon value (i.e., its value of operations at Year 3)? What is its current value of operations (i.e., at Time 0)?
   (2) What is its intrinsic value of equity on a price-per-share basis?

g. KFS is also interested in applying value-based management to its own divisions. Explain what value-based management is.

h. What are the four value drivers? How does each of them affect value?

i. What is expected return on invested capital (EROIC)? Why is the spread between EROIC and WACC so important?

j. KFS has two divisions. Both have current sales of $1,000, current expected growth of 5%, and a WACC of 10%. Division A has high profitability (OP = 6%) but high capital requirements (CR = 78%). Division B has low profitability (OP = 4%) but low capital requirements (CR = 27%). Given the current growth rate of 5%, determine the intrinsic MVA of each division. What is the intrinsic MVA of each division if growth is instead 6%?

k. What is the EROIC of each division for 5% growth and for 6% growth? How is this related to intrinsic MVA?

l. List six potential managerial behaviors that can harm a firm's value.

m. The managers at KFS have heard that corporate governance can affect shareholder value. What is corporate governance? List five corporate governance provisions that are internal to a firm and are under its control.

n. What characteristics of the board of directors usually lead to effective corporate governance?

o. List three provisions in the corporate charter that affect takeovers.

p. Briefly describe the use of stock options in a compensation plan. What are some potential problems with stock options as a form of compensation?

q. What is block ownership? How does it affect corporate governance?

r. Briefly explain how regulatory agencies and legal systems affect corporate governance.

Selected Additional Cases

The following cases from Textchoice, *Cengage Learning's online library, cover many of the concepts discussed in this chapter and are available at* **http://www.textchoice2.com**.

Klein-Brigham Series:
Case 41, "Advanced Fuels Corporation," and Case 93, "Electro Technology Corporation," discuss financing and valuing a new venture.

Brigham-Buzzard Series:
Case 14, "Maris Distributing Company," discusses valuation techniques used in a court case.