

CHAPTER 14

Distributions to Shareholders: Dividends and Repurchases

*M*ature companies with stable cash flows and limited growth opportunities tend to return large amounts of their cash flows to shareholders, either by paying dividends or by using the cash to repurchase common stock. In contrast, rapidly growing companies with good investment opportunities are prone to invest most of their available cash flows in new projects and thus are less likely to pay dividends or repurchase stock. Microsoft, which was long regarded as the epitome of a growth company, illustrates this pattern. Its sales grew from \$786 million in 1989 to \$28.365 billion as of June 30, 2002, which translates to an annual growth rate of nearly 32%. Much of this growth came from investments in new products and technology, and given its emphasis on growth, Microsoft paid no dividends.

Market saturation and competition (including piracy) have caused its sales growth to slow. In May, 2009, Microsoft reported annual sales growth during the previous 12 months of about 5.6%, far short of its spectacular earlier growth rates. As growth slowed, Microsoft's cash flows increased, and its cash flow from operating activities was on pace to reach about \$18 billion for 2009.

As companies tend to do when growth slows and cash flows increase, Microsoft first began paying a regular dividend in 2003. It stunned the world with a huge special dividend in 2005, which—when combined with its regular dividend—totaled more than \$36 billion. Perhaps not coincidentally, Microsoft's decision to pay dividends coincided with a change in the Tax Code that lowered the tax rate on dividends from 35% to 15% for most investors.

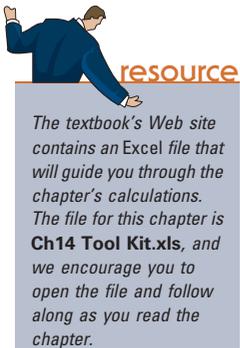
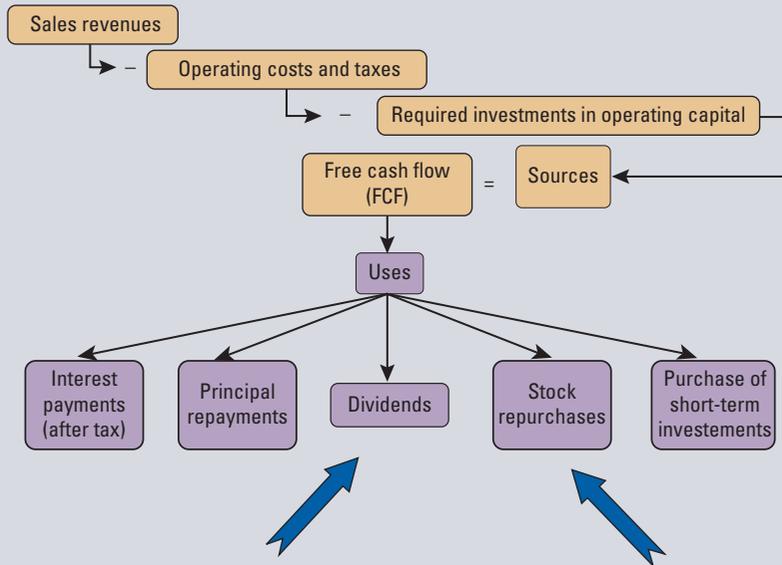
In the first three quarters of its 2009 fiscal year, Microsoft paid regular dividends of \$3.3 billion and also repurchased \$8.9 billion in stock, for a total cash flow to shareholders of \$12.2 billion. Microsoft still had over \$25 billion in cash and marketable securities on its balance sheets, so investors might expect more large cash distributions in the future.

As you read this chapter, think about Microsoft's decisions to initiate regular dividend payments, occasionally use special dividends, and frequently repurchase stocks.

Uses of Free Cash Flow: Distributions to Shareholders

Free cash flow is generated from operations and is available for distribution to all investors. This chapter

focuses on the distributions of FCF to shareholders in the form of dividends and stock repurchases.



Because a company's value depends on its ability to generate free cash flow (FCF), most of this book has focused on aspects of FCF generation, including measurement, forecasts, and risk analysis. In contrast, this chapter focuses on the use of FCF for cash distributions to shareholders. Here are the central issues addressed in this chapter: Can a company increase its value through its choice of **distribution policy**, defined as (1) the *level* of distributions, (2) the *form* of distributions (cash dividends versus stock repurchases), and (3) the *stability* of distributions? Do different groups of shareholders prefer one form of distribution over the other? Do shareholders perceive distributions as signals regarding a firm's risk and expected future free cash flows?

Before addressing these questions, let's take a look at the big picture regarding cash distributions.

14.1 AN OVERVIEW OF CASH DISTRIBUTIONS

At the risk of stating the obvious, a company must have cash before it can make a cash distribution to shareholders. Occasionally the cash comes from a recapitalization or the sale of an asset, but in most cases it comes from the company's internally generated free cash flow. Recall that FCF is defined as the amount of cash flow available for distribution to investors after expenses, taxes, and the necessary investments in operating capital. Thus, the *source* of FCF depends on a company's investment opportunities and its effectiveness in turning those opportunities into realities. Notice that a company with many opportunities will have large investments in operating capital and might have negative FCF even if the company is profitable. But when growth begins to slow, a profitable company's FCF will be positive and very large.

Home Depot and Microsoft are good examples of once-fast-growing companies that are now generating large amounts of free cash flows.

After FCF becomes positive, how should a company use it? There are only five potentially “good” ways to use free cash flow: (1) pay interest expenses, (2) pay down the principal on debt, (3) pay dividends, (4) repurchase stock, or (5) buy non-operating assets such as Treasury bills or other marketable securities.¹ Let’s examine each of these uses.

A company’s capital structure choice determines its payments for interest expenses and debt principal. A company’s value typically increases over time, even if the company is mature, which implies its debt will also increase over time if the company maintains a target capital structure. If a company instead were to pay off its debt, then it would lose valuable tax shields associated with the deductibility of interest expenses. Therefore, most companies make net additions to debt over time rather than net repayments, even if FCF is positive. This “negative use” of FCF provides even more FCF for the other uses. We discuss capital structure choices in more detail in Chapter 15.

A company’s working capital policies determine its level of marketable securities. Chapter 16 discusses marketable securities in more detail, but for now you should recognize that the decision involves a trade-off between the benefits and costs of having a large investment in marketable securities. In terms of benefits, a large investment in marketable securities reduces the risk of financial distress should there be an economic downturn. Also, if investment opportunities turn out to be better than expected, marketable securities provide a ready source of funding that will not incur the flotation or signaling costs due to raising external funds. However, there is a potential agency cost: If a company has a large investment in marketable securities, then managers might be tempted to squander the money on perks (such as corporate jets) or high-priced acquisitions.

In summary, a company’s investment opportunities and operating plans determine its level of FCF. The company’s capital structure policy determines the amount of debt and interest payments. Working capital policy determines the investment in marketable securities. The remaining FCF should be distributed to shareholders, with the only question being how much to distribute in the form of dividends versus stock repurchases.

Obviously this is a simplification, since companies (1) sometimes scale back their operating plans for sales and asset growth if such reductions are needed to maintain an existing dividend, (2) temporarily adjust their current financing mix in response to market conditions, and (3) often use marketable securities as shock absorbers for fluctuations in short-term cash flows. Still, there is an interdependence among operating plans (which have the biggest impact on free cash flow), financing plans (which have the biggest impact on the cost of capital), working capital policies (which determine the target level of marketable securities), and shareholder distributions.

Self-Test

What are the five uses of free cash flows?

How do a company’s investment opportunities, capital structure, and working capital policies affect its distributions to shareholders?

¹Recall from Chapter 2 that the company’s cost of paying interest is on an after-tax basis. Recall also that a company doesn’t *spend* FCF on operating assets (such as the acquisition of another company), because those expenditures were already deducted when calculating FCF. In other words, the purchase of an operating asset (even if it is another company) is not a *use* of FCF; instead, it is a *source* of FCF (albeit a “negative source”).

14.2 PROCEDURES FOR CASH DISTRIBUTIONS

Companies can distribute cash to shareholders via cash dividends or stock repurchases. In this section we describe the actual procedures used to make cash distributions.

Dividend Payment Procedures

Dividends are normally paid quarterly, and, if conditions permit, the dividend is increased once each year. For example, Katz Corporation paid a \$0.50 dividend per share in each quarter of 2010, for an annual dividend per share of \$2.00. In common financial parlance, we say that in 2010 Katz's *regular quarterly dividend* was \$0.50, and its *annual dividend* was \$2.00. In late 2010, Katz's board of directors met, reviewed projections for 2011, and decided to keep the 2011 dividend at \$2.00. The directors announced the \$2 rate, so stockholders could count on receiving it unless the company experienced unanticipated operating problems.

The actual payment procedure is as follows.

1. **Declaration date.** On the **declaration date**—say, on Thursday, November 11—the directors meet and declare the regular dividend, issuing a statement similar to the following: “On November 11, 2010, the directors of Katz Corporation met and declared the regular quarterly dividend of 50 cents per share, payable to holders of record as of Friday, December 10, payment to be made on Friday, January 7, 2011.” For accounting purposes, the declared dividend becomes an actual liability on the declaration date. If a balance sheet were constructed, an amount equal to $\$0.50 \times n_0$, where n_0 is the number of shares outstanding, would appear as a current liability, and retained earnings would be reduced by a like amount.
2. **Holder-of-record date.** At the close of business on the **holder-of-record date**, December 10, the company closes its stock transfer books and makes up a list of shareholders as of that date. If Katz Corporation is notified of the sale before 5 p.m. on December 10, then the new owner receives the dividend. However, if notification is received after 5 p.m. on December 10, the previous owner gets the dividend check.
3. **Ex-dividend date.** Suppose Jean Buyer buys 100 shares of stock from John Seller on December 7. Will the company be notified of the transfer in time to list Buyer as the new owner and thus pay the dividend to her? To avoid conflict, the securities industry has set up a convention under which the right to the dividend remains with the stock until two business days prior to the holder-of-record date; on the second day before that date, the right to the dividend no longer goes with the shares. The date when the right to the dividend leaves the stock is called the **ex-dividend date**. In this case, the ex-dividend date is two days prior to December 10, which is December 8:

Dividend goes with stock: Tuesday, December 7

Ex-dividend date: Wednesday, December 8

Thursday, December 9

Holder-of-record date: Friday, December 10

Therefore, if Buyer is to receive the dividend, she must buy the stock on or before December 7. If she buys it on December 8 or later, Seller will receive the dividend because he will be the official holder of record.

Katz's dividend amounts to \$0.50, so the ex-dividend date is important. Barring fluctuations in the stock market, we would normally expect the price of

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An excellent source of recent dividend news for major corporations is available on the Web site of Corporate Financials Online at <http://cfonews.com/scs>. By clicking the down arrow of the “News Category” box on the left side of the screen, you may select “Dividends” to receive a list of companies with dividend news. Click on any company, and you will see its latest dividend news.

a stock to drop by approximately the amount of the dividend on the ex-dividend date. Thus, if Katz closed at \$30.50 on December 7, it would probably open at about \$30 on December 8.

4. *Payment date.* The company actually pays the dividend on January 7, the **payment date**, to the holders of record.

Stock Repurchase Procedures

Stock repurchases occur when a company buys back some of its own outstanding stock.² Three situations can lead to stock repurchases. First, a company may decide to increase its leverage by issuing debt and using the proceeds to repurchase stock; we discuss recapitalizations in more detail in Chapter 15. Second, many firms have given their employees stock options, and companies often repurchase their own stock to sell to employees when employees exercise the options. In this case, the number of outstanding shares reverts to its pre-repurchase level after the options are exercised. Third, a company may have excess cash. This may be due to a one-time cash inflow, such as the sale of a division, or the company may simply be generating more free cash flow than it needs to service its debt.³

Stock repurchases are usually made in one of three ways. (1) A publicly owned firm can buy back its own stock through a broker on the open market.⁴ (2) The firm can make a tender offer, under which it permits stockholders to send in (that is, “tender”) shares in exchange for a specified price per share. In this case, the firm generally indicates it will buy up to a specified number of shares within a stated time period (usually about two weeks). If more shares are tendered than the company wants to buy, purchases are made on a pro rata basis. (3) The firm can purchase a block of shares from one large holder on a negotiated basis. This is a targeted stock repurchase, as discussed in Chapter 13.

Patterns of Cash Distributions

The occurrence of dividends versus stock repurchases has changed dramatically during the past 30 years. First, total cash distributions as a percentage of net income have remained fairly stable at around 26% to 28%, but the mix of dividends and repurchases has changed.⁵ The average dividend payout ratio fell from 22.3% in 1974 to 13.8% in 1998, while the average repurchase payout as a percentage of net income rose from 3.7% to 13.6%. Since 1985, large companies have repurchased more shares than they have

²The repurchased stock is called “treasury stock” and is shown as a negative value on the company’s detailed balance sheet. On the consolidated balance sheet, treasury shares are deducted to find shares outstanding, and the price paid for the repurchased shares is deducted when determining common equity.

³See Benton Gup and Doowoo Nam, “Stock Buybacks, Corporate Performance, and EVA,” *Journal of Applied Corporate Finance*, Spring 2001, pp. 99–110. The authors show that the firms that repurchase stock have superior operating performance to those that do not buy back stock, which is consistent with the notion that firms buy back stock when they generate additional free cash flow. They also show that operating performance improves in the year after the buyback, indicating that the superior performance is sustainable.

⁴Many firms announce their plans to repurchase stock on the open market. For example, a company might announce it plans to repurchase 4 million shares of stock. However, companies usually don’t buy back all the shares they announce but instead repurchase only about 80% of the announced number. See Clifford Stephens and Michael Weisbach, “Actual Share Repurchases in Open-Market Repurchase Programs,” *Journal of Finance*, February 1998, pp. 313–333.

⁵See Gustavo Grullon and Roni Michaely, “Dividends, Share Repurchases, and the Substitution Hypothesis,” *Journal of Finance*, August 2002, pp. 1649–1684; and Eugene Fama and Kenneth French, “Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay?” *Journal of Applied Corporate Finance*, Spring 2001, pp. 67–79.

TABLE 14-1 Dividend Payouts (March 2009)

| COMPANY | INDUSTRY | DIVIDEND PAYOUT | DIVIDEND YIELD |
|--------------------------------|--------------------------|-----------------|----------------|
| Empire District Electric (EDE) | Electric utility | 109% | 8.7% |
| Rayonier Inc. (RYN.N) | Forest products | 99 | 6.7 |
| Regions Financial Corp. (RF) | Regional banks | NM | 8.5 |
| Reynolds American Inc. (RAI) | Tobacco products | 74 | 9.0 |
| WD-40 Company (WDFC) | Household products | 56 | 4.2 |
| Harley-Davidson Inc. (HOG) | Recreational products | 46 | 2.8 |
| Ingles Markets Inc. (IMKTA) | Retail (grocery) | 30 | 4.1 |
| Microsoft Corp. (MSFT) | Software and programming | 25 | 2.9 |
| Tiffany and Company (TIF) | Specialty retail | 38 | 3.0 |
| Aaron Rents Inc. (RNT) | Rental and leasing | 4 | 0.3 |
| Papa John's Intl. Inc. (PZZA) | Restaurants | 0 | NM |

Source: <http://www.reuters.com>, March 2009.

Notes: Regions Financial's payout ratio is not meaningful (NM) because Regions has negative net income. Papa John's dividend yield is not meaningful because it pays no dividend.

issued. Since 1998, more cash has been returned to shareholders in repurchases than as dividend payments.

Second, companies today are less likely to pay a dividend. In 1978, about 66.5% of NYSE, AMEX, and Nasdaq firms paid a dividend. In 1999, only 20.8% paid a dividend. Part of this reduction can be explained by the large number of IPOs in the 1990s, since young firms rarely pay a dividend. However, that doesn't explain the entire story, as many mature firms now do not pay dividends. For example, consider the way in which a maturing firm will make its first cash distribution. In 1973, 73% of firms making an initial distribution did so with a dividend. By 1998, only 19% initiated distributions with dividends.⁶

Third, the aggregate dividend payouts have become more concentrated in the sense that a relatively small number of older, more established, and more profitable firms accounts for most of the cash distributed as dividends.⁷

Fourth, Table 14-1 shows there is considerable variation in distribution policies, with some companies paying a high percentage of their income as dividends and others paying none. The next section discusses some theories about distribution policies.

Self-Test

Explain the procedures used to actually pay the dividend.

Why is the ex-dividend date important to investors?

What are the three ways in which a company can repurchase stock?

14.3 CASH DISTRIBUTIONS AND FIRM VALUE

A company can change its value of operations only if it changes the cost of capital or investors' perceptions regarding expected free cash flow. This is true for all corporate

⁶See Gustavo Grullon and David Ikenberry, "What Do We Know about Stock Repurchases?" *Journal of Applied Corporate Finance*, Spring 2000, pp. 31–51.

⁷For example, see Harry DeAngelo, Linda DeAngelo, and Douglas J. Skinner, "Are Dividends Disappearing? Dividend Concentration and the Consolidation of Earnings," *Journal of Financial Economics*, June 2004, pp. 425–456.

decisions, including the distribution policy. Is there an **optimal distribution policy** that maximizes a company's intrinsic value?

The answer depends in part on investors' preferences for returns in the form of dividend yields versus capital gains. The relative mix of dividend yields and capital gains is determined by the **target distribution ratio**, which is the percentage of net income distributed to shareholders through cash dividends or stock repurchases, and the **target payout ratio**, which is the percentage of net income paid as a cash dividend. Notice that the payout ratio must be less than the distribution ratio because the distribution ratio includes stock repurchases as well as cash dividends.

A high distribution ratio and a high payout ratio mean that a company pays large dividends and has small (or zero) stock repurchases. In this situation, the dividend yield is relatively high and the expected capital gain is low. If a company has a large distribution ratio but a small payout ratio, then it pays low dividends but regularly repurchases stock, resulting in a low dividend yield but a relatively high expected capital gain yield. If a company has a low distribution ratio, then it must also have a relatively low payout ratio, again resulting in a low dividend yield and, it is hoped, a relatively high capital gain.

In this section, we examine three theories of investor preferences for dividend yield versus capital gains: (1) the dividend irrelevance theory, (2) the dividend preference theory (also called the "bird in the hand" theory), and (3) the tax effect theory.

Dividend Irrelevance Theory

The original proponents of the **dividend irrelevance theory** were Merton Miller and Franco Modigliani (MM).⁸ They argued that the firm's value is determined only by its basic earning power and its business risk. In other words, MM argued that the value of the firm depends only on the income produced by its assets, not on how this income is split between dividends and retained earnings.

To understand MM's argument, recognize that any shareholder can in theory construct his own dividend policy. For example, if a firm does not pay dividends, a shareholder who wants a 5% dividend can "create" it by selling 5% of his stock. Conversely, if a company pays a higher dividend than an investor desires, the investor can use the unwanted dividends to buy additional shares of the company's stock. If investors could buy and sell shares and thus create their own dividend policy without incurring costs, then the firm's dividend policy would truly be irrelevant.

In developing their dividend theory, MM made a number of important assumptions, especially the absence of taxes and brokerage costs. If these assumptions are not true, then investors who want additional dividends must incur brokerage costs to sell shares and must pay taxes on any capital gains. Investors who do not want dividends must incur brokerage costs to purchase shares with their dividends. Because taxes and brokerage costs certainly exist, dividend policy may well be relevant. We will discuss empirical tests of MM's dividend irrelevance theory shortly.

Dividend Preference (Bird-in-the-Hand) Theory

The principal conclusion of MM's dividend irrelevance theory is that dividend policy does not affect a stock's value or risk. Therefore, it does not affect the required rate of return on equity, r_s . In contrast, Myron Gordon and John Lintner both argued

⁸See Merton H. Miller and Franco Modigliani, "Dividend Policy, Growth, and the Valuation of Shares," *Journal of Business*, October 1961, pp. 411–433. However, their conclusion is valid only if investors expect managers eventually to pay out the equivalent of the present value of all future free cash flows; see Harry DeAngelo and Linda DeAngelo, "The Irrelevance of the MM Dividend Irrelevance Theorem," *Journal of Financial Economics*, Vol. 79, 2006, pp. 293–315.

that a stock's risk declines as dividends increase: A return in the form of dividends is a sure thing, but a return in the form of capital gains is risky. In other words, a **bird in the hand** is worth more than two in the bush. Therefore, shareholders prefer dividends and are willing to accept a lower required return on equity.⁹

The possibility of agency costs leads to a similar conclusion. First, high payouts reduce the risk that managers will squander cash because there is less cash on hand. Second, a high-payout company must raise external funds more often than a low-payout company, all else held equal. If a manager knows that the company will receive frequent scrutiny from external markets, then the manager will be less likely to engage in wasteful practices. Therefore, high payouts reduce the risk of agency costs. With less risk, shareholders are willing to accept a lower required return on equity.

Tax Effect Theory: Capital Gains Are Preferred

Before 2003, individual investors paid ordinary income taxes on dividends but lower rates on long-term capital gains. The Jobs and Growth Act of 2003 changed this, reducing the tax rate on dividend income to the same as on long-term capital gains.¹⁰ However, there are two reasons why stock price appreciation still is taxed more favorably than dividend income. First, the time value of money means that a dollar of taxes paid in the future has a lower effective cost than a dollar paid today. So even when dividends and gains are taxed equally, capital gains are never taxed sooner than dividends. Second, if a stock is held until the shareholder dies, then no capital gains tax is due at all: the beneficiaries who receive the stock can use its value on the date of death as their cost basis and thus completely escape the capital gains tax.

Because dividends are in some cases taxed more highly than capital gains, investors might require a higher pre-tax rate of return to induce them to buy dividend-paying stocks. Therefore, investors may prefer that companies minimize dividends. If so, then investors should be willing to pay more for low-payout companies than for otherwise similar high-payout companies.¹¹

Empirical Evidence on Distribution Policies

It is very difficult to construct a perfect empirical test of the relationship between payout policy and the required rate of return on stock. First, all factors other than distribution level should be held constant; that is, the sample companies should differ only in their distribution levels. Second, each firm's cost of equity should be measured with

⁹Myron J. Gordon, "Optimal Investment and Financing Policy," *Journal of Finance*, May 1963, pp. 264–272; and John Lintner, "Dividends, Earnings, Leverage, Stock Prices, and the Supply of Capital to Corporations," *Review of Economics and Statistics*, August 1962, pp. 243–269.

¹⁰Of course, nothing involving taxes is quite this simple. The dividend must be from a domestic company, and the investor must own the stock for more than 60 days during the 120-day period beginning 60 days before the ex-dividend date. There are other restrictions for dividends other than regular cash dividends. The Tax Increase Prevention and Reconciliation Act of 2005 cut the long-term capital gains tax rate to zero for low-income investors (that is, those whose marginal tax rate is 15% or less) and kept it at 15% for those with more income. After 2010, unless Congress again extends the provisions, the capital gains rates will revert to 10% and 20%, which were the capital gains rates in effect prior to the 2003 Act. Also, the Alternative Minimum Tax (AMT) increases the effective tax rate on dividends and capital gains by 7% for some moderately high-income earners. See Leonard Burman, William Gale, Greg Leiserson, and Jeffrey Rohaly, "The AMT: What's Wrong and How to Fix It," *National Tax Journal*, September 2007, pp. 385–405.

¹¹For more on tax-related issues, see Eli Talmor and Sheridan Titman, "Taxes and Dividend Policy," *Financial Management*, Summer 1990, pp. 32–35; and Rosita P. Chang and S. Ghon Rhee, "The Impact of Personal Taxes on Corporate Dividend Policy and Capital Structure Decisions," *Financial Management*, Summer 1990, pp. 21–31.

a high degree of accuracy. Unfortunately, we cannot find a set of publicly owned firms that differ only in their distribution levels, nor can we obtain precise estimates of the cost of equity. Therefore, no one has yet identified a completely unambiguous relationship between the distribution level and the cost of equity or firm value.

Although none of the empirical tests is perfect, recent evidence does suggest that firms with higher dividend payouts also have higher required returns.¹² This tends to support the tax effect hypothesis, although the size of the required return is too high to be fully explained by taxes.

Agency costs should be most severe in countries with poor investor protection. In such countries, companies with high dividend payouts should be more highly valued than those with low payouts because high payouts limit the extent to which managers can expropriate shareholder wealth. Recent research shows that this is the case, which supports the dividend preference hypothesis in the case of companies with severe agency problems.¹³

Although the evidence from these studies is mixed as to whether the *average* investor uniformly prefers either higher or lower distribution levels, other research does show that *individual* investors have strong preferences. Also, other research shows that investors prefer stable, predictable dividend payouts (regardless of the payout level) and that they interpret dividend changes as signals about firms' future prospects. We discuss these issues in the next several sections.

Self-Test

What did Modigliani and Miller assume about taxes and brokerage costs when they developed their dividend irrelevance theory?

How did the bird-in-the-hand theory get its name?

What have been the results of empirical tests of the dividend theories?

14.4 CLIENTELE EFFECT

As we indicated earlier, different groups, or *clienteles*, of stockholders prefer different dividend payout policies. For example, retired individuals, pension funds, and university endowment funds generally prefer cash income, so they may want the firm to pay out a high percentage of its earnings. Such investors are often in low or even zero tax brackets, so taxes are of no concern. On the other hand, stockholders in their peak earning years might prefer reinvestment, because they have less need for current investment income and would simply reinvest dividends received—after first paying income taxes on those dividends.

If a firm retains and reinvests income rather than paying dividends, those stockholders who need current income would be disadvantaged. The value of their stock might increase, but they would be forced to go to the trouble and expense of selling some of their shares to obtain cash. Also, some institutional investors (or trustees for individuals) would be legally precluded from selling stock and then “spending capital.” On the other hand, stockholders who are saving rather than spending dividends might favor the low-dividend policy: the less the firm pays out in dividends, the less these stockholders will have to pay in current taxes, and the less trouble and expense they will have to go through to reinvest their after-tax dividends. Therefore, investors who want current investment income should own shares in high-dividend

¹²See A. Naranjo, N. Nimalendran, and M. Ryngaert, “Stock Returns, Dividend Yields, and Taxes,” *Journal of Finance*, December 1998, pp. 2029–2057.

¹³See L. Pinkowitz, R. Stulz, and R. Williamson, “Does the Contribution of Corporate Cash Holdings and Dividends to Firm Value Depend on Governance? A Cross-Country Analysis,” *Journal of Finance*, December 2006, pp. 2725–2751.



For updates of industry payout ratios, go to <http://www.reuters.com/finance/stocks>. After picking a company, select Ratios.

payout firms, while investors with no need for current investment income should own shares in low-dividend payout firms. For example, investors seeking high cash income might invest in electric utilities, which averaged a 32% payout in March 2009, while those favoring growth could invest in the software industry, which paid out only 2.5% during the same time period.

To the extent that stockholders can switch firms, a firm can change from one dividend payout policy to another and then let stockholders who do not like the new policy sell to other investors who do. However, frequent switching would be inefficient because of (1) brokerage costs, (2) the likelihood that stockholders who are selling will have to pay capital gains taxes, and (3) a possible shortage of investors who like the firm's newly adopted dividend policy. Thus, management should be hesitant to change its dividend policy, because a change might cause current shareholders to sell their stock, forcing the stock price down. Such a price decline might be temporary but might also be permanent—if few new investors are attracted by the new dividend policy, then the stock price would remain depressed. Of course, the new policy might attract an even larger clientele than the firm had before, in which case the stock price would rise.

Evidence from several studies suggests that there is, in fact, a **clientele effect**.¹⁴ It's been argued by MM and others that one clientele is as good as another, so the existence of a clientele effect does not necessarily imply that one dividend policy is better than any other. However, MM may be wrong, and neither they nor anyone else can prove that the aggregate makeup of investors permits firms to disregard clientele effects. This issue, like most others in the dividend arena, is still up in the air.

Self-Test

Define the clientele effect and explain how it affects dividend policy.

14.5 INFORMATION CONTENT, OR SIGNALING, HYPOTHESIS

When MM set forth their dividend irrelevance theory, they assumed that everyone—investors and managers alike—has identical information regarding a firm's future earnings and dividends. In reality, however, different investors have different views on both the level of future dividend payments and the uncertainty inherent in those payments, and managers have better information about future prospects than public stockholders.

It has been observed that an increase in the dividend is often accompanied by an increase in the price of a stock and that a dividend cut generally leads to a stock price decline. Some have argued this indicates that investors prefer dividends to capital gains. However, MM saw this differently. They noted the well-established fact that corporations are reluctant to cut dividends, which implies that corporations do not raise dividends unless they anticipate higher earnings in the future. Thus, MM argued that a higher than expected dividend increase is a signal to investors that the firm's management forecasts good future earnings. Conversely, a dividend reduction, or a smaller than expected increase, is a signal that management is forecasting poor earnings in the future. Thus, MM argued that investors' reactions to changes in dividend policy do not necessarily show that investors prefer dividends to retained earnings. Rather, they argue that price changes following dividend actions simply indicate that there is important **information**, or **signaling, content** in dividend announcements.

¹⁴For example, see R. Richardson Pettit, "Taxes, Transactions Costs and the Clientele Effect of Dividends," *Journal of Financial Economics*, December 1977, pp. 419–436.

The initiation of a dividend by a firm that formerly paid no dividend is certainly a significant change in distribution policy. It appears that initiating firms' future earnings and cash flows are less risky than before the initiation. However, the evidence is mixed regarding the future profitability of initiating firms: Some studies find slightly higher earnings after the initiation but others find no significant change in earnings.¹⁵ What happens when firms with existing dividends unexpectedly increase or decrease the dividend? Early studies, using small data samples, concluded that unexpected dividend changes did not provide a signal about future earnings.¹⁶ However, more recent data with larger samples provide mixed evidence.¹⁷ On average, firms that cut dividends had poor earnings in the years directly preceding the cut but actually improved earnings in subsequent years. Firms that increased dividends had earnings increases in the years preceding the increase but did not appear to have subsequent earnings increases. However, neither did they have subsequent declines in earnings, so it appears that the increase in dividends is a signal that past earnings increases were not temporary. Also, a relatively large number of firms that expect a large permanent increase in cash flow (as opposed to earnings) do in fact increase their dividend payouts in the year prior to the cash flow increase.

All in all, there is clearly some information content in dividend announcements: Stock prices tend to fall when dividends are cut, even if they don't always rise when dividends are increased. However, this doesn't necessarily validate the signaling hypothesis, because it is difficult to tell whether any stock price change following a change in dividend policy reflects only signaling effects or reflects both signaling and dividend preferences.

Self-Test

Define signaling content, and explain how it affects dividend policy.

14.6 IMPLICATIONS FOR DIVIDEND STABILITY

The clientele effect and the information content in dividend announcements definitely have implications regarding the desirability of stable versus volatile dividends. For example, many stockholders rely on dividends to meet expenses, and they would be seriously inconvenienced if the dividend stream were unstable. Further, reducing dividends to make funds available for capital investment could send incorrect signals to investors, who might push down the stock price because they interpret the dividend cut to mean that the company's future earnings prospects have been diminished. Thus, maximizing its stock price probably requires a firm to maintain a steady dividend policy. Because sales and earnings are expected to grow for most firms, a stable dividend policy means a company's regular cash dividends should also

¹⁵See Edward Dyl and Robert Weigand, "The Information Content of Dividend Initiations: Additional Evidence," *Financial Management*, Autumn 1998, pp. 27–35; P. Asquith and D. Mullins, "The Impact of Initiating Dividend Payments on Shareholders' Wealth," *Journal of Business*, January 1983, pp. 77–96; and P. Healy and K. Palepu, "Earnings Information Conveyed by Dividend Initiations and Omissions," *Journal of Financial Economics*, September 1988, pp. 149–175.

¹⁶For example, see N. Gonedes, "Corporate Signaling, External Accounting, and Capital Market Equilibrium: Evidence of Dividends, Income, and Extraordinary Items," *Journal of Accounting Research*, Spring 1978, pp. 26–79; and R. Watts, "The Information Content of Dividends," *Journal of Business*, April 1973, pp. 191–211.

¹⁷See Shlomo Benartzi, Roni Michaely, and Richard Thaler, "Do Changes in Dividends Signal the Future or the Past?" *Journal of Finance*, July 1997, pp. 1007–1034; and Yaron Brook, William Charlton Jr., and Robert J. Hendershott, "Do Firms Use Dividends to Signal Large Future Cash Flow Increases?" *Financial Management*, Autumn 1998, pp. 46–57.



THE GLOBAL ECONOMIC CRISIS

Will Dividends Ever Be the Same?

The global economic crisis has had dramatic effects on dividend policies. According to Standard & Poor's, companies announcing dividend increases have exceeded those announcing decreases by a factor of 15 to 1 since 1955—at least until the first 5 months of 2009. Out of 7,000 publicly traded companies, only 283 announced dividend increases in the first quarter of 2009 while 367 cut dividends, a stunning reversal in the normal ratio of increasers to decreasers. Even the S&P 500 companies weren't immune to the crisis, with only 74 increasing dividends as compared with 54 cutting dividends and 9 suspending dividend payments altogether. To put this in perspective, only *one* S&P 500 company cut its dividend during the first quarter of 2007. The dividend decreases in 2009 aren't minor cuts, either. Howard Silverblatt, a Senior Index Analyst at Standard & Poor's, estimates the cuts add up to \$77 billion.

How has the market reacted to cuts by these companies? JPMorgan Chase's stock price went up on the announcement, presumably because investors thought a stronger balance sheet at JPM would increase its intrinsic value by more than the loss investors incurred because of the lower dividend. On the other hand, GE's stock fell by more than 6% on the news of its 68% dividend cut, perhaps because investors feared this was a signal that GE's plight was worse than they had expected.

One thing is for certain, though: The days of large "permanent" dividends are over!

Source: "S&P: Q1 Worst Quarter for Dividends Since 1955; Companies Reduce Shareholder Payments by \$77 Billion," press release, April 7, 2009; also see http://www2.standardandpoors.com/spf/xls/index/INDICATED_RATE_CHANGE.xls.

grow at a steady, predictable rate.¹⁸ But as we explain in the next section, most companies will probably move toward small, sustainable, regular cash dividends that are supplemented by stock repurchases.

Self-Test

Why do the clientele effect and the information content hypotheses imply that investors prefer stable dividends?

14.7 SETTING THE TARGET DISTRIBUTION LEVEL: THE RESIDUAL DISTRIBUTION MODEL

When deciding how much cash to distribute to stockholders, two points should be kept in mind: (1) The overriding objective is to maximize shareholder value, and (2) the firm's cash flows really belong to its shareholders, so a company should refrain from retaining income unless its managers can reinvest that income to produce returns higher than shareholders could themselves earn by investing the cash in investments of equal risk. On the other hand, recall from Chapter 9 that internal equity (reinvested earnings) is cheaper than external equity (new common stock issues)

¹⁸For more on announcements and stability, see Jeffrey A. Born, "Insider Ownership and Signals—Evidence from Dividend Initiation Announcement Effects," *Financial Management*, Spring 1988, pp. 38–45; Chinmoy Ghosh and J. Randall Woolridge, "An Analysis of Shareholder Reaction to Dividend Cuts and Omissions," *Journal of Financial Research*, Winter 1988, pp. 218–294; C. Michael Impson and Imre Karafiath, "A Note on the Stock Market Reaction to Dividend Announcements," *Financial Review*, May 1992, pp. 259–271; James W. Wansley, C. F. Sirmans, James D. Shilling, and Young-jin Lee, "Dividend Change Announcement Effects and Earnings Volatility and Timing," *Journal of Financial Research*, Spring 1991, pp. 37–49; and J. Randall Woolridge and Chinmoy Ghosh, "Dividend Cuts: Do They Always Signal Bad News?" *Midland Corporate Finance Journal*, Summer 1985, pp. 20–32.

because it avoids flotation costs and adverse signals. This encourages firms to retain earnings so as to avoid having to issue new stock.

When establishing a distribution policy, one size does not fit all. Some firms produce a lot of cash but have limited investment opportunities—this is true for firms in profitable but mature industries in which few opportunities for growth exist. Such firms typically distribute a large percentage of their cash to shareholders, thereby attracting investment clientele that prefer high dividends. Other firms generate little or no excess cash because they have many good investment opportunities. Such firms generally don't distribute much cash but do enjoy rising earnings and stock prices, thereby attracting investors who prefer capital gains.

As Table 14-1 suggests, dividend payouts and dividend yields for large corporations vary considerably. Generally, firms in stable, cash-producing industries such as utilities, financial services, and tobacco pay relatively high dividends, whereas companies in rapidly growing industries such as computer software tend to pay lower dividends.

For a given firm, the optimal distribution ratio is a function of four factors: (1) investors' preferences for dividends versus capital gains, (2) the firm's investment opportunities, (3) its target capital structure, and (4) the availability and cost of external capital. The last three elements are combined in what we call the **residual distribution model**. Under this model a firm follows these four steps when establishing its target distribution ratio: (1) it determines the optimal capital budget; (2) it determines the amount of equity needed to finance that budget, given its target capital structure (we explain the choice of target capital structures in Chapter 15); (3) it uses reinvested earnings to meet equity requirements to the extent possible; and (4) it pays dividends or repurchases stock only if more earnings are available than are needed to support the optimal capital budget. The word *residual* implies "leftover," and the residual policy implies that distributions are paid out of "leftover" earnings.

If a firm rigidly follows the residual distribution policy, then distributions paid in any given year can be expressed as follows:

$$\begin{aligned} \text{Distributions} &= \text{Net income} - \text{Retained earnings needed to} \\ &\quad \text{finance new investments} \\ &= \text{Net income} - [(\text{Target equity ratio}) \times (\text{Total capital budget})] \end{aligned} \quad (14-1)$$

As an illustration, consider the case of Texas and Western (T&W) Transport Company, which has \$60 million in net income and a target capital structure of 60% equity and 40% debt.

If T&W forecasts poor investment opportunities, then its estimated capital budget will be only \$40 million. To maintain the target capital structure, 40% (\$16 million) of this capital must be raised as debt and 60% (\$24 million) must be equity. If it followed a strict residual policy, T&W would retain \$24 million of its \$60 million earnings to help finance new investments and then distribute the remaining \$36 million to shareholders:

$$\begin{aligned} \text{Distributions} &= \text{Net income} - [(\text{Target equity ratio})(\text{Total capital budget})] \\ &= \$60 - [(60\%)(\$40)] \\ &= \$60 - \$24 = \$36 \end{aligned}$$

Under this scenario, the company's distribution ratio would be \$36 million ÷ \$60 million = 0.6 = 60%. These results are shown in Table 14-2.

TABLE 14-2

T&W's Distribution Ratio with \$60 Million of Net Income and a 60% Target Equity Ratio When Faced with Different Investment Opportunities (Millions of Dollars)

| | INVESTMENT OPPORTUNITIES | | |
|--|--------------------------|-----------|--------------------|
| | POOR | AVERAGE | GOOD |
| Capital budget | \$40 | \$70 | \$150 |
| Net income | 60 | 60 | 60 |
| Required equity ($0.6 \times$ Capital budget) | <u>24</u> | <u>42</u> | <u>90</u> |
| Distributions paid (NI - Required equity) | \$36 | \$18 | -\$30 ^a |
| Distribution ratio (Dividend/NI) | 60% | 30% | 0% |

^aWith a \$150 million capital budget, T&W would retain all of its earnings and also issue \$30 million of new stock.

In contrast, if the company's investment opportunities are average, its optimal capital budget would rise to \$70 million. Here it would require \$42 million of retained earnings, so distributions would be $\$60 - \$42 = \$18$ million, for a ratio of $\$18/\$60 = 30\%$. Finally, if investment opportunities are good then the capital budget would be \$150 million, which would require $0.6(\$150) = \90 million of equity. In this case, T&W would retain all of its net income (\$60 million) and thus make no distributions. Moreover, since the required equity exceeds the retained earnings, the company would have to issue some new common stock to maintain the target capital structure.

Because investment opportunities and earnings will surely vary from year to year, a strict adherence to the residual distribution policy would result in unstable distributions. One year the firm might make no distributions because it needs the money to finance good investment opportunities, but the next year it might make a large distribution because investment opportunities are poor and so it does not need to retain much. Similarly, fluctuating earnings could also lead to variable distributions, even if investment opportunities were stable. Until now, we have not said whether distributions should be in the form of dividends, stock repurchases, or some combination. The next sections discuss specific issues associated with dividend payments and stock repurchases; this is followed by a comparison of their relative advantages and disadvantages.

Self-Test

Explain the logic of the residual dividend model and the steps a firm would take to implement it.

Hamilton Corporation has a target equity ratio of 65%, and its capital budget is \$2 million. If Hamilton has net income of \$1.6 million and follows a residual distribution model, how much will its distribution be? **(\$300,000)**

14.8 THE RESIDUAL DISTRIBUTION MODEL IN PRACTICE

If distributions were solely in the form of dividends, then rigidly following the residual policy would lead to fluctuating, unstable dividends. Since investors dislike volatile regular dividends, r_s would be high and the stock price low. Therefore, firms should proceed as follows:

1. Estimate earnings and investment opportunities, on average, for the next 5 or so years.
2. Use this forecasted information and the target capital structure to find the average residual model distributions and dollars of dividends during the planning period.
3. Set a *target payout ratio* based on the average projected data.

Thus, *firms should use the residual policy to help set their long-run target distribution ratios, but not as a guide to the distribution in any one year.*

Companies often use financial forecasting models in conjunction with the residual distribution model discussed here to help understand the determinants of an optimal dividend policy. Most large corporations forecast their financial statements over the next 5 to 10 years. Information on projected capital expenditures and working capital requirements is entered into the model, along with sales forecasts, profit margins, depreciation, and the other elements required to forecast cash flows. The target capital structure is also specified, and the model shows the amount of debt and equity that will be required to meet the capital budgeting requirements while maintaining the target capital structure. Then, dividend payments are introduced. Naturally, the higher the payout ratio, the greater the required external equity. Most companies use the model to find a dividend pattern over the forecast period (generally 5 years) that will provide sufficient equity to support the capital budget without forcing them to sell new common stock or move the capital structure ratios outside their optimal range.

Some companies set a very low “regular” dividend and then supplement it with an “extra” dividend when times are good, such as Microsoft now does. This **low-regular-dividend-plus-extras policy** ensures that the regular dividend can be maintained “come hell or high water” and that stockholders can count on receiving that dividend under all conditions. Then, when times are good and profits and cash flows are high, the company can either pay a specially designated extra dividend or repurchase shares of stock. Investors recognize that the extras might not be maintained in the future, so they do not interpret them as a signal that the companies’ earnings are going up permanently; nor do they take the elimination of the extra as a negative signal.

Self-Test

Why is the residual model more often used to establish a long-run payout target than to set the actual year-by-year dividend payout ratio?

How do firms use planning models to help set dividend policy?

14.9 A TALE OF TWO CASH DISTRIBUTIONS: DIVIDENDS VERSUS STOCK REPURCHASES

Benson Conglomerate, a prestigious publishing house with several Nobel laureates among its authors, recently began generating positive free cash flow and is analyzing the impact of different distribution policies. Benson anticipates extremely stable cash flows and will use the residual model to determine the level of distributions, but it has not yet chosen the form of the distribution. In particular, Benson is comparing distributions via dividends versus repurchases and wants to know the impact the different methods will have on financial statements, shareholder wealth, the number of outstanding shares, and the stock price.

The Impact on Financial Statements

Consider first the case in which distributions are in the form of dividends. Figure 14-1 shows the most recent financial statements and the inputs we will use to forecast its financial statements. The forecasted financial statements for the next two years are shown in the figure. (The file *Ch14 Tool Kit.xls* shows four years of projected statements.) Benson has no debt, so its interest expense is zero.

Calculations to ensure the balance sheets do in fact balance are shown in Panel d of Figure 14-1. Required operating assets are the sum of cash, accounts receivable,

FIGURE 14-1

Projecting Benson Conglomerate's Financial Statements: Distributions as Dividends (Millions of Dollars)

| | A | B | C | D | E | F | G |
|-----|--|---|------------|------------|-----------|------------|-----------|
| 79 | <i>Panel a: Inputs</i> | | Actual | Projected | | | |
| 80 | | | 12/31/2010 | 2011 | | 2012 | |
| 81 | Sales growth rate | | | 5% | | 5% | |
| 82 | Costs / Sales | | 70% | 70% | | 70% | |
| 83 | Depreciation / Net PPE | | 10% | 10% | | 10% | |
| 84 | Cash / Sales | | 1% | 1% | | 1% | |
| 85 | Acct. rec. / Sales | | 15% | 15% | | 15% | |
| 86 | Inventories / Sales | | 12% | 12% | | 12% | |
| 87 | Net PPE / Sales | | 85% | 85% | | 85% | |
| 88 | Acct. pay. / Sales | | 8% | 8% | | 8% | |
| 89 | Accruals / Sales | | 2% | 2% | | 2% | |
| 90 | Tax rate | | 40% | 40% | | 40% | |
| 91 | | | | | | | |
| 92 | <i>Panel b: Income Statement</i> | | 12/31/2010 | 12/31/2011 | | 12/31/2012 | |
| 93 | Net Sales | | \$8,000.0 | \$8,400.0 | | \$8,820.0 | |
| 94 | Costs (except depreciation) | | 5,600.0 | 5,880.0 | | 6,174.0 | |
| 95 | Depreciation | | 680.0 | 714.0 | | 749.7 | |
| 96 | Earning before int. & tax | | \$1,720.0 | \$1,806.0 | | \$1,896.3 | |
| 97 | Interest expense ^b | | 0.0 | 0.0 | | 0.0 | |
| 98 | Earnings before taxes | | \$1,720.0 | \$1,806.0 | | \$1,896.3 | |
| 99 | Taxes | | 688.0 | 722.4 | | 758.5 | |
| 100 | Net income | | \$1,032.0 | \$1,083.6 | | \$1,137.8 | |
| 101 | | | | | | | |
| 102 | <i>Panel c: Balance Sheets</i> | | | 2011 | | 2012 | |
| 103 | <i>Assets</i> | | 12/31/2010 | 12/30 | 12/31 | 12/30 | 12/31 |
| 104 | Cash | | \$80.0 | \$84.0 | \$84.0 | \$88.2 | \$88.2 |
| 105 | Short-term investments ^c | | 0.0 | 671.6 | 0.0 | 705.2 | 0.0 |
| 106 | Accounts receivable | | 1,200.0 | 1,260.0 | 1,260.0 | 1,323.0 | 1,323.0 |
| 107 | Inventories | | 960.0 | 1,008.0 | 1,008.0 | 1,058.4 | 1,058.4 |
| 108 | Total current assets | | \$2,240.0 | \$3,023.6 | \$2,352.0 | \$3,174.8 | \$2,469.6 |
| 109 | Net plant and equipment | | 6,800.0 | 7,140.0 | 7,140.0 | 7,497.0 | 7,497.0 |
| 110 | Total assets | | \$9,040.0 | \$10,163.6 | \$9,492.0 | \$10,671.8 | \$9,966.6 |
| 111 | <i>Liabilities & Equity</i> | | | | | | |
| 112 | Accounts payable | | \$640.0 | \$672.0 | \$672.0 | \$705.6 | \$705.6 |
| 113 | Accruals | | 160.0 | 168.0 | 168.0 | 176.4 | 176.4 |
| 114 | Short-term debt | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 115 | Total current liabilities | | \$800.0 | \$840.0 | \$840.0 | \$882.0 | \$882.0 |
| 116 | Long-term debt | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 117 | Total liabilities | | \$800.0 | \$840.0 | \$840.0 | \$882.0 | \$882.0 |
| 118 | Preferred stock | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 119 | Common stock | | 2,400.0 | 2,400.0 | 2,400.0 | 2,400.0 | 2,400.0 |
| 120 | Retained earnings ^d | | 5,840.0 | 6,923.6 | 6,252.0 | 7,389.8 | 6,684.6 |
| 121 | Total common equity | | \$8,240.0 | \$9,323.6 | \$8,652.0 | \$9,789.8 | \$9,084.6 |
| 122 | Total liabilities & equity | | \$9,040.0 | \$10,163.6 | \$9,492.0 | \$10,671.8 | \$9,966.6 |
| 123 | | | | | | | |
| 124 | <i>Panel d: Plugging to balance</i> | | | 12/30/2011 | | 12/30/2012 | |
| 125 | Required operating assets: | | | \$9,492.0 | | \$9,966.6 | |
| 126 | Liabilities & equity before distribution | | | \$10,163.6 | | \$10,671.8 | |
| 127 | AFN: Addition funds needed | | | -\$671.6 | | -\$705.2 | |

Notes:

^aAll calculations are in the file **Ch14 Tool Kit.xls**. Excel uses all significant digits in calculations, but numbers in the figure are rounded and so columns may not total exactly.

^bTo simplify the example, we assume that any short-term investments are held for only part of the year and earn no interest.

^cA negative AFN means there are extra funds available. These are held as short-term investments through December 30. The funds are distributed to investors on December 31, so the balance of short-term investments goes to zero on December 31.

^dBecause no funds have been paid out in dividends as of December 30, the retained earnings balance for that date is equal to the previous year's retained earnings balance plus the current year's net income. When short-term investments are sold and their proceeds are used to make the cash dividend payments on December 31, the balance of retained earnings is reduced by the amount of the total dividend payments (which is equal to the reduction in short-term investments).



inventories, and net plant and equipment. We show balance sheets in Figure 14-1 for both December 30 and 31 of each year; this is to better illustrate the impact of the distribution, which we assume occurs once each year on December 31.¹⁹ Liabilities and equity on December 30 (before the distribution) are the sum of accounts payable, accruals, short-term debt, long-term debt, preferred stock, common stock, the previous year's retained earnings balance, and the current year's net income. The amount of additional funds needed (AFN) is equal to the required operating assets minus liabilities and equity. Notice that a *negative* AFN is projected, which indicates additional funds are available rather than needed.

We assume that the extra funds temporarily are used to purchase short-term investments to be held until the distribution to shareholders. At that time, all short-term investments will be converted to cash and paid out as dividends. Thus, the 2011 short-term investments total \$671.6 on December 30 and drop to zero on December 31, when they are distributed to investors.²⁰ Observe that the retained earnings account also drops by \$671.6 on December 31 as funds that were previously retained are paid out as dividends.

Now let's consider the case of stock repurchases. The projected income statements and asset portion of the balance sheets are the same whether the distribution is in the form of dividends or repurchases, but this is not true for the liabilities-and-equity side of the balance sheet. Figure 14-2 reports the case in which distributions are in the form of stock repurchases. As in the case of dividend distributions, the December 30 balance of the retained earnings account is equal to the previous retained earnings balance plus the year's net income, because all income is retained. However, when funds in the short-term investments account are used to repurchase stock on December 31, the repurchase is shown as negative entry in the treasury stock account.

To summarize, the projected income statements and assets are identical whether the distribution is made in the form of dividends or stock repurchases. There also is no difference in liabilities. However, distributions as dividends reduce the retained earnings account, whereas stock repurchases reduce the treasury stock account.

The Residual Distribution Model

Figures 14-1 and 14-2 illustrate the residual distribution model in Equation 14-1 as applied to entire financial statements. The projected capital budget is equal to the net

¹⁹As we noted earlier in the chapter, when dividends are declared, a new current liability called "dividends payable" would be added to current liabilities and then retained earnings would be reduced by that amount. To simplify the example, we ignore that provision and assume that there is no balance sheet effect on the declaration date.

²⁰As explained previously, there is a difference between the actual payment date and the ex-dividend date. To simplify the example, we assume that the dividends are paid on the ex-dividend date to the shareholder owning the stock the day before it goes ex-dividend.

FIGURE 14-2

Projecting Benson Conglomerate's Liabilities & Equity: Distributions as Stock Repurchases (Millions of Dollars)

| | A | B | C | D | E | F | G |
|-----|-----------------------------------|---|------------|------------|---------|----------|-----------|
| | | | | Projected | | | |
| | | | | 2011 | | 2012 | |
| | | | 12/31/2010 | 12/30 | 12/31 | 12/30 | 12/31 |
| 147 | | | | | | | |
| 148 | | | | | | | |
| 149 | Liabilities & Equity ^a | | | | | | |
| 150 | Accounts payable | | \$640.0 | \$672.0 | \$672.0 | \$705.6 | \$705.6 |
| 151 | Accruals | | 160.0 | 168.0 | 168.0 | 176.4 | 176.4 |
| 152 | Short-term debt | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 153 | Total current liabilities | | \$800.0 | \$840.0 | \$840.0 | \$882.0 | \$882.0 |
| 154 | Long-term debt | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 155 | Total liabilities | | \$800.0 | \$840.0 | 840.0 | 882.0 | 882.0 |
| 156 | Preferred stock | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 157 | Common stock | | 2,400.0 | 2,400.0 | 2,400.0 | 2,400.0 | 2,400.0 |
| 158 | Treasury stock ^b | | 0.0 | 0.0 | (671.6) | (671.6) | (1,376.8) |
| 159 | Retained earnings ^c | | 5,840.0 | 6,923.6 | 6,923.6 | 8,061.4 | 8,061.4 |
| 160 | Total common equity | | \$8,240.0 | \$9,323.6 | 8,652.0 | 9,789.8 | 9,084.6 |
| 161 | Total liabilities & equity | | \$9,040.0 | \$10,163.6 | 9,492.0 | 10,671.8 | 9,966.6 |

Notes:

^aAll calculations are in the file **Ch14 Tool Kit.xls**. Excel uses all significant digits in calculations, but numbers in the figure are rounded and so columns may not total exactly. See Figure 14-1 for income statements and assets.

^bWhen distributions are made as repurchases, the treasury stock account is reduced by the dollar value of the repurchase at the time of the repurchase, which occurs when short-term investments are liquidated and used to repurchase stock.

^cNo funds are paid out in dividends, so the retained earnings balance is equal to the previous balance plus the year's net income (all net income is being retained).



addition to total operating capital from the projected balance sheets in Figure 14-1. For example, for 2011 the capital budget is:

$$\begin{aligned}
 \text{Capital budget} &= (\Delta\text{Cash} + \Delta\text{Accounts receivable} + \Delta\text{Inventories} \\
 &\quad + \Delta\text{Net plant \& equipment}) \\
 &\quad - (\Delta\text{Accounts payable} + \Delta\text{Accruals}) \\
 &= (\$84 - \$80) + (\$1,260 - \$1,200) + (\$1,008 - \$960) \\
 &\quad + (\$7,140 - \$6,800) - (\$672 - \$640) - (\$168 - \$160) \\
 &= \$452 - \$40 = \$412
 \end{aligned}$$

With a 100% target equity ratio and net income of \$1,083.6, the residual is \$1,083.6 - \$412 = \$671.6, as shown in Figure 14-3. Notice that this is the same as the AFN we calculated in Figure 14-1.

The Impact of Distributions on Intrinsic Value

What is the impact of cash distributions on intrinsic value? We devote the rest of this section to answering that question.

Free Cash Flow. We begin by calculating expected free cash flows and performance measures as shown in Figure 14-4. Notice that Benson's expected return on invested capital is greater than the cost of capital, indicating that the managers are creating value for their shareholders. Also notice that the company is beyond its high-growth phase, so FCF is positive and growing at a constant rate of 5%. Therefore, Benson has cash flow available for distribution to investors.

FIGURE 14-3

Illustration of the Residual Distribution Model as Applied to Benson Conglomerate (Millions of Dollars): Determining the Level of the Distribution

| | A | B | C | D | E | F | G |
|-----|---|---|---|------------|------------|---|---|
| 179 | | | | Projected | | | |
| 180 | | | | 12/31/2011 | 12/31/2012 | | |
| 181 | Capital budget ^a | | | \$412.0 | \$432.6 | | |
| 182 | Target equity ratio | | | 100% | 100% | | |
| 183 | Net income ^b | | | \$1,083.6 | \$1,137.8 | | |
| 184 | Required additional equity ^c | | | \$412.0 | \$432.6 | | |
| 185 | Residual distribution: NI – Req. equ. | | | \$671.6 | \$705.2 | | |

Notes:

^aSee Figure 14-1 for balance sheet projections. The capital budget is equal to the net addition to total operating capital: $(\Delta\text{Cash} + \Delta\text{Accts. rec.} + \Delta\text{Inventories} + \Delta\text{Net plant \& equipment}) - (\Delta\text{Accts. pay.} + \Delta\text{Accruals})$.

^bSee Figure 14-1 for income statement projections.

^cRequired additional equity = Capital budget \times Target equity ratio.



The Value of Operations. Figure 14-4 also shows the value of operations for each year. (See the *Tool Kit* for the full 4-year projections.) Recall from Chapter 13 that we can use the projected FCFs to determine the horizon value at the end of the projections and then estimate the value of operations for each year prior to the horizon. For Benson, the horizon value on December 31, 2012, is

$$\begin{aligned} V_{\text{op}(12/31/12)} &= \frac{\text{FCF}_{12/31/12}(1+g)}{\text{WACC} - g} \\ &= \frac{\$705.18(1+0.05)}{0.12 - 0.05} = \$10,577.70 \end{aligned}$$

The value of operations at the end of the previous year is equal to the value of operations 1 year ahead plus the free cash flow 1 year ahead, discounted back 1 year at the cost of capital. For example, the value of operations on December 31, 2011, is

$$\begin{aligned} V_{\text{op}(12/31/11)} &= \frac{V_{\text{op}(12/31/12)} + \text{FCF}_{12/31/12}}{(1 + \text{WACC})} \\ &= \frac{\$10,577.7 + \$705.18}{1 + 0.12} = \$10,074.00 \end{aligned}$$

We can repeat this process to obtain the current value of operations (i.e., as of December 31, 2010): \$9,549.29.

Notice that the choice of how to distribute the residual does not affect the value of operations because the distribution choice does not affect the projected free cash flows.

The Intrinsic Stock Price: Distributions as Dividends. Figure 14-5 shows the intrinsic stock price each year using the corporate valuation approach described in Chapter 13. Panel a provides calculations assuming cash is distributed via dividends. (See *Ch14 Tool Kit.xls* for projections for 4 years.) Notice that on

FIGURE 14-4

Illustration of the Residual Distribution Model as Applied to Benson Conglomerate (Millions of Dollars): Valuation Analysis

| | A | B | C | D | E | F | G |
|-----|--|------------|------------|-------------|-------------|---|---|
| 201 | WACC = 12.0% | | | | | | |
| 202 | | | | Projected | | | |
| 203 | <i>Calculation of Free Cash Flow</i> | | 12/31/2010 | 12/31/2011 | 12/31/2012 | | |
| 204 | Operating current assets ^a | \$2,240.00 | | \$2,352.00 | \$2,469.60 | | |
| 205 | Operating current liabilities ^b | 800.00 | | 840.00 | 882.00 | | |
| 206 | NOWC ^c | \$1,440.00 | | \$1,512.00 | \$1,587.60 | | |
| 207 | Net plant & equipment | 6,800.00 | | 7,140.00 | 7,497.00 | | |
| 208 | Net operating capital ^d | \$8,240.00 | | \$8,652.00 | \$9,084.60 | | |
| 209 | NOPAT ^e | \$1,032.00 | | \$1,083.60 | \$1,137.78 | | |
| 210 | Inv. in operating capital ^f | | | 412.00 | 432.60 | | |
| 211 | Free cash flow (FCF) ^g | | | \$671.60 | \$705.18 | | |
| 212 | | | | | | | |
| 213 | <i>Performance Measures</i> | | | | | | |
| 214 | Expected ROIC ^h | | | 13.15% | 13.15% | | |
| 215 | Growth in FCF | | | na | 5.00% | | |
| 216 | Growth in sales | | | 5.00% | 5.00% | | |
| 217 | | | | | | | |
| 218 | <i>Valuation</i> | | | | | | |
| 219 | Horizon value ⁱ | | | | \$10,577.70 | | |
| 220 | Value of operations ^j | | \$9,594.29 | \$10,074.00 | \$10,577.70 | | |

Notes:

^aSum of cash, accounts receivable, and inventories.

^bSum of accounts payable and accruals.

^cNet operating working capital is equal to operating current assets minus operating current liabilities.

^dSum of NOWC and net plant & equipment.

^eNet operating profit after taxes = (EBIT)(1 - T). In this example, NOPAT is equal to net income because there is no interest expense or interest income.

^fChange in net operating capital from previous year.

^gFCF = NOPAT - Investment in operating capital.

^hExpected return on invested capital = NOPAT divided by beginning capital.

ⁱHorizon value at T = $V_{op(T)} = [FCF_T (1 + g)] / (WACC - g)$.

^jValue of operations before horizon = $V_{op(t)} = (V_{op(t+1)} + FCF_{t+1}) / (1 + WACC)$.



December 31 the intrinsic value of equity drops because the firm no longer owns the short-term investments. This causes the intrinsic stock price also to drop. In fact, the drop in stock price is equal to the dividend per share. For example, the 2011 dividend per share (DPS) is \$0.67 and the drop in stock price is $\$10.75 - \$10.07 = \$0.68 \approx \0.67 . (The penny difference here is due to rounding in intermediate steps.)

Notice that if the stock price did *not* fall by the amount of the DPS then there would be an opportunity for arbitrage. If the price were to drop by less than the DPS—say, by \$0.50 to \$10.25, then you could buy the stock on December 30 for \$10.75, receive a DPS of \$0.67 on December 31, and then immediately sell the stock for \$10.25, reaping a sure profit of $-\$10.75 + \$0.67 + \$10.25 = \0.17 . Of course, you'd want to implement this strategy with a million shares, not just a single share. But if everyone tried to use this strategy, the increased demand would drive up the stock price on December 30 until there was no more sure

FIGURE 14-5

Illustration of the Residual Distribution Model as Applied to Benson Conglomerate (Millions of Dollars): Distributions as Dividends versus Stock Repurchases



Panel a: Distribute as Dividends

| | 12/31/10 | Projected | | | |
|--|-----------|------------|------------|------------|------------|
| | | 2011 | | 2012 | |
| | | 12/30 | 12/31 | 12/30 | 12/31 |
| Value of operations | \$9,594.3 | \$10,074.0 | \$10,074.0 | \$10,577.7 | \$10,577.7 |
| +Value of nonoperating assets | 0.0 | 671.6 | 0.0 | 705.2 | 0.0 |
| Total intrinsic value of firm | \$9,594.3 | \$10,745.6 | \$10,074.0 | \$11,282.9 | \$10,577.7 |
| – Debt | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| – Preferred stock | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Intrinsic value of equity | \$9,594.3 | \$10,745.6 | \$10,074.0 | \$11,282.9 | \$10,577.7 |
| ÷ Number of shares | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Intrinsic price per share ^a | \$9.59 | \$10.75 | \$10.07 | \$11.28 | \$10.58 |
| Dividend per share | | | \$0.67 | | \$0.71 |

Panel b: Distribute as Repurchase

| | 12/31/10 | 2011 | | 2012 | |
|--|-----------|------------|------------|------------|------------|
| | | 12/30 | 12/31 | 12/30 | 12/31 |
| Value of operations | \$9,594.3 | \$10,074.0 | \$10,074.0 | \$10,577.7 | \$10,577.7 |
| +Value of nonoperating assets | 0.0 | 671.6 | 0.0 | 705.2 | 0.0 |
| Total intrinsic value of firm | \$9,594.3 | \$10,745.6 | \$10,074.0 | \$11,282.9 | \$10,577.7 |
| – Debt | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| – Preferred stock | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Intrinsic value of equity | \$9,594.3 | \$10,745.6 | \$10,074.0 | \$11,282.9 | \$10,577.7 |
| ÷ Number of shares ^a | 1,000 | 1,000 | 938 | 938 | 879 |
| Intrinsic price per share ^a | \$9.59 | \$10.75 | \$10.75 | \$12.04 | \$12.04 |

Notes:

^aThe projected intrinsic stock prices for 4 years are shown in *Ch14 Tool Kit.xls*.

^bThe number of shares after the repurchase is: $n_{Post} = n_{Prior} - (Cash_{Rep}/P_{Prior})$. In this example, the entire amount of ST investments (i.e., the balance of nonoperating assets) is used to repurchase stock.



profit to be made. The reverse would happen if investors expected the stock price to fall by more than the DPS.²¹

Here is an important observation: Even though the stock price falls, shareholder wealth does not fall. For example, on December 30, a shareholder owns stock worth \$10.75. On December 31, the shareholder owns stock worth \$10.07 but has cash of \$0.67 from the dividend, for total wealth of \$10.75 (subject to rounding differences). Thus, the shareholder's wealth is the same before and after the dividend payment, with the only difference being that part of the shareholder's wealth is in the form of cash from the dividend payment.

The Intrinsic Stock Price: Distributions as Repurchases. Panel b of Figure 14-5 provides calculations of intrinsic value for the case in which stock is repurchased. Observe that the intrinsic value of equity is the same for both methods of distributions, but the analysis of a repurchase is a little more complicated because the number of shares changes. The key to solving this additional complexity is to recognize that the repurchase does not change the stock price. If the price did change due to the repurchase, then there would be an arbitrage opportunity. For example, suppose the stock price is expected to increase after the repurchase. If this were true, then it should be possible for an investor to buy the stock the day before the repurchase and then reap a reward the very next day. Current stockholders would realize this and would refuse to sell the stock unless they were paid the price that is expected immediately after the repurchase. Now suppose the stock price is expected to fall immediately after the repurchase. In this case, current shareholders should try to sell the stock prior to the repurchase, but their actions would drive the price down to the price that is expected after the repurchase. As this "thought experiment" shows, the repurchase itself does not change the stock price.

In summary, the events leading up to a repurchase generate cash (the sale of a division, a recapitalization, or the generation of high free cash flows from operations). Generating cash can certainly change the stock price, but the repurchase itself doesn't change the stock price. We can use this fact to determine the number of shares repurchased. First, though, we must define some notation.

n_{Prior} = The number of shares outstanding prior to the repurchase.
 n_{Post} = The number of shares outstanding after the repurchase.
 S_{Prior} = The intrinsic value of equity prior to the repurchase.
 S_{Post} = The intrinsic value of equity after the repurchase.
 P_{Prior} = The intrinsic stock price prior to the repurchase.
 P_{Post} = The intrinsic stock price after the repurchase.
 $P = P_{\text{Prior}} = P_{\text{Post}}$ = The intrinsic stock price during, before, and after the repurchase.
 Cash_{Rep} = The amount of cash used to repurchase shares.

As we explained, the repurchase itself doesn't change the stock price. Therefore, the number of shares repurchased is equal to the amount of cash used to repurchase stocks divided by the stock price:

$$\text{Number of shares repurchased} = n_{\text{Prior}} - n_{\text{Post}} = \frac{\text{Cash}_{\text{Rep}}}{P_{\text{Prior}}} \quad (14-2)$$

²¹We ignore taxes in this description. Empirical evidence suggests that the actual drop in stock price is equal to about 90% of the DPS, with all pre-tax profit being eliminated by taxes.

We can rewrite Equation 14-2 to find an expression for the number of shares after the repurchase:

$$\begin{aligned}
 n_{\text{Post}} &= n_{\text{Prior}} - \frac{\text{Cash}_{\text{Rep}}}{P_{\text{Prior}}} \\
 &= n_{\text{Prior}} - \frac{\text{Cash}_{\text{Rep}}}{S_{\text{Prior}}/n_{\text{Prior}}} \\
 &= n_{\text{Prior}} \left(1 - \frac{\text{Cash}_{\text{Rep}}}{S_{\text{Prior}}} \right)
 \end{aligned}
 \tag{14-3}$$

For example, as shown in Panel b of Figure 14-5, the intrinsic stock price on December 30, 2011, the day before the repurchase, is \$10.75, and there are 1,000 shares of stock. Using Equation 14-3, the number of shares after the repurchase is equal to:

$$\begin{aligned}
 n_{\text{Post}} &= n_{\text{Prior}} - \frac{\text{Cash}_{\text{Rep}}}{P_{\text{Prior}}} \\
 &= 1,000 - \frac{\$671.6}{\$10.75} \\
 &= 1,000 - 62.47 = 937.5
 \end{aligned}$$

Panel b of Figure 14-5 also shows that on December 31, 2011, the intrinsic value of equity prior to the repurchase, S_{Prior} , drops from \$10,745.6 to a value after the repurchase, S_{Post} , of \$10,074.0. This decrease in the intrinsic value of equity is equal to the amount of the cash used in the repurchase, \$671.6. However, the stock price remains at \$10.75 after the repurchase because the number of shares also drops:

$$P_{\text{Post}} = \frac{S_{\text{Post}}}{n_{\text{Post}}} = \frac{\$10,074}{937.5} = \$10.75$$

How does the repurchase affect shareholder wealth? The aggregate value of outstanding stock drops after the repurchase, but the aggregate wealth of the shareholders remains unchanged. Before the repurchase, shareholders own a total of equity worth S_{Prior} , \$10,745.6. After the repurchase, shareholders own a total of equity worth S_{Post} , \$10,074, but they also own cash (received in the repurchase) in the amount of \$671.6, for a total wealth of \$10,745.6. Thus, the repurchase does not change shareholders' aggregate wealth, it only changes the form in which they hold wealth (all stock versus a combination of stock and cash).

Comparing Intrinsic Stock Prices: Distributions as Repurchases. The chart at the top of Figure 14-5 shows the projected intrinsic stock prices for the two different distribution methods. Notice that the prices begin at the same level (because Benson has not yet begun making any distributions). The price for the repurchase scenario climbs smoothly and grows to a higher level than does the price for the dividend scenario, which drops by the DPS each time it is paid. However, the number of shares falls in the repurchase scenario. As shown in Rows 277 and 289 of the figure, the intrinsic values of equity are identical for both distribution methods.

This example illustrates three key results: (1) Ignoring possible tax effects and signals, the total market value of equity will be the same whether a firm pays dividends or repurchases stock. (2) The repurchase itself does not change the stock price

(compared with using the cash to buy marketable securities) at the time of the repurchase, although it does reduce the number of outstanding shares. (3) Because a company that repurchases stock will have fewer shares than an otherwise identical company that pays dividends, the stock price of a repurchasing company will climb faster than that of the dividend-paying company. However, the total return to the two companies' shareholders will be the same.²²

Self-Test

Explain how a repurchase changes the number of shares but not the stock price. A firm's most recent FCF was \$2.4 million, and its FCF is expected to grow at a constant rate of 5%. The firm's WACC is 14% and it has 2 million shares outstanding. The firm has \$12 million in short-term investments that it plans to liquidate and then distribute in a stock repurchase; the firm has no other financial investments or debt. Verify that the value of operations is \$28 million. Immediately prior to the repurchase, what are the intrinsic value of equity and the intrinsic stock price? (**\$40 million; \$20/share**) How many shares will be repurchased? (**0.6 million**) How many shares will remain after the repurchase? (**1.4 million**) Immediately after the repurchase, what are the intrinsic value of equity and the intrinsic stock price? (**\$28 million; \$20/share**)

14.10 THE PROS AND CONS OF DIVIDENDS AND REPURCHASES

The advantages of repurchases can be listed as follows.

1. Repurchase announcements are viewed as positive signals by investors because the repurchase is often motivated by management's belief that the firm's shares are undervalued.
2. Stockholders have a choice when the firm distributes cash by repurchasing stock—they can sell or not sell. Those stockholders who need cash can sell back some of their shares while others can simply retain their stock. With a cash dividend, on the other hand, stockholders must accept a dividend payment.
3. Dividends are “sticky” in the short run because management is usually reluctant to raise the dividend if the increase cannot be maintained in the future, and cutting cash dividends is always avoided because of the negative signal it gives. Hence, if the excess cash flow is thought to be only temporary, management may prefer making the distribution in the form of a stock repurchase to declaring an increased cash dividend that cannot be maintained.
4. Companies can use the residual model to set a *target cash distribution* level and then divide the distribution into a *dividend component* and a *repurchase component*. The dividend payout ratio will be relatively low, but the dividend itself will be relatively secure, and it will grow as a result of the declining number of shares outstanding. The company has more flexibility in adjusting the total distribution than it would if the entire distribution were in the form of cash dividends,

²²For more on repurchases, see David J. Denis, “Defensive Changes in Corporate Payout Policy: Share Repurchases and Special Dividends,” *Journal of Finance*, December 1990, pp. 1433–1456; Gerald D. Gay, Jayant R. Kale, and Thomas H. Noe, “Share Repurchase Mechanisms: A Comparative Analysis of Efficacy, Shareholder Wealth and Corporate Control Effects,” *Financial Management*, Spring 1991, pp. 44–59; Jeffrey M. Netter and Mark L. Mitchell, “Stock-Repurchase Announcements and Insider Transactions after the October 1987 Stock Market Crash,” *Financial Management*, Autumn 1989, pp. 84–96; William Pugh and John S. Jahera, Jr., “Stock Repurchases and Excess Returns: An Empirical Examination,” *The Financial Review*, February 1990, pp. 127–142; and James W. Wansley, William R. Lane, and Salil Sarkar, “Managements' View on Share Repurchase and Tender Offer Premiums,” *Financial Management*, Autumn 1989, pp. 97–110.

because repurchases can be varied from year to year without giving off adverse signals. This procedure, which is what Florida Power & Light employed, has much to recommend it, and it is one reason for the dramatic increase in the total volume of stock repurchases.

5. Repurchases can be used to produce large-scale changes in capital structures. For example, several years ago Consolidated Edison decided to borrow \$400 million and use the funds to repurchase some of its common stock. Thus, Con Ed was able to quickly change its capital structure.
6. Companies that use stock options as an important component of employee compensation usually repurchase shares in the secondary market and then use those shares when employees exercise their options. This technique allows companies to avoid issuing new shares and thus diluting earnings.

Repurchases have three principal disadvantages.

1. Stockholders may not be indifferent between dividends and capital gains, and the price of the stock might benefit more from cash dividends than from repurchases. Cash dividends are generally dependable, but repurchases are not.
2. The *selling* stockholders may not be fully aware of all the implications of a repurchase, or they may not have all the pertinent information about the corporation's present and future activities. However, in order to avoid potential stockholder suits, firms generally announce repurchase programs before embarking on them.
3. The corporation may pay too much for the repurchased stock—to the disadvantage of remaining stockholders. If the firm seeks to acquire a relatively large amount of its stock, then the price may be bid above its equilibrium level and then fall after the firm ceases its repurchase operations.

When all the pros and cons on stock repurchases versus dividends have been totaled, where do we stand? Our conclusions may be summarized as follows.

1. Because of the deferred tax on capital gains, repurchases have a tax advantage over dividends as a way to distribute income to stockholders. This advantage is reinforced by the fact that repurchases provide cash to stockholders who want cash while allowing those who do not need current cash to delay its receipt. On the other hand, dividends are more dependable and thus are better suited for those who need a steady source of income.
2. The danger of signaling effects requires that a company not have volatile dividend payments, which would lower investors' confidence in the company and adversely affect its cost of equity and its stock price. However, cash flows vary over time, as do investment opportunities, so the "proper" dividend in the residual model sense varies. To get around this problem, a company can set its dividend low enough to keep dividend payments from constraining operations and then use repurchases on a more or less regular basis to distribute excess cash. Such a procedure will provide regular, dependable dividends plus additional cash flow to those stockholders who want it.
3. Repurchases are also useful when a firm wants to make a large shift in its capital structure, wants to distribute cash from a one-time event such as the sale of a division, or wants to obtain shares for use in an employee stock option plan.

Self-Test

What are some advantages and disadvantages of stock repurchases?

How can stock repurchases help a company operate in accordance with the residual distribution model?

Dividend Yields around the World

Dividend yields vary considerably in different stock markets throughout the world. In 1999, dividend yields in the United States averaged 1.6% for the large blue-chip stocks in the Dow Jones Industrials, 1.2% for a broader sample of stocks in the S&P 500, and 0.3% for

stocks in the Nasdaq, where high-tech firms predominate. Outside the United States, average dividend yields ranged from 5.7% in New Zealand to 0.7% in Taiwan. The accompanying table summarizes the dividend picture in 1999.

| World Stock Market (Index) | Dividend Yield | World Stock Market (Index) | Dividend Yield |
|----------------------------|----------------|---------------------------------------|----------------|
| New Zealand | 5.7% | United States (Dow Jones Industrials) | 1.6% |
| Australia | 3.1 | Canada (TSE 300) | 1.5 |
| Britain FTSE 100 | 2.4 | United States (S&P 500) | 1.2 |
| Hong Kong | 2.4 | Mexico | 1.1 |
| France | 2.1 | Japan Nikkei | 0.7 |
| Germany | 2.1 | Taiwan | 0.7 |
| Belgium | 2.0 | United States (Nasdaq) | 0.3 |
| Singapore | 1.7 | | |

Source: From Alexandra Eadie, "On the Grid Looking for Dividend Yield around the World," *The Globe and Mail*, June 23, 1999, p. B16. Eadie's source was Bloomberg Financial Services. Reprinted with permission from *The Globe and Mail*.

14.11 OTHER FACTORS INFLUENCING DISTRIBUTIONS

In this section, we discuss several other factors that affect the dividend decision. These factors may be grouped into two broad categories: (1) constraints on dividend payments and (2) availability and cost of alternative sources of capital.

Constraints

Constraints on dividend payments can affect distributions, as the following examples illustrate.

1. *Bond indentures.* Debt contracts often limit dividend payments to earnings generated after the loan was granted. Also, debt contracts often stipulate that no dividends can be paid unless the current ratio, times-interest-earned ratio, and other safety ratios exceed stated minimums.
2. *Preferred stock restrictions.* Typically, common dividends cannot be paid if the company has omitted its preferred dividend. The preferred arrearages must be satisfied before common dividends can be resumed.
3. *Impairment of capital rule.* Dividend payments cannot exceed the balance sheet item "retained earnings." This legal restriction, known as the "impairment of capital rule," is designed to protect creditors. Without the rule, a company in trouble might distribute most of its assets to stockholders and leave its debt-holders out in the cold. (*Liquidating dividends* can be paid out of capital, but they must be indicated as such and must not reduce capital below the limits stated in debt contracts.)
4. *Availability of cash.* Cash dividends can be paid only with cash, so a shortage of cash in the bank can restrict dividend payments. However, the ability to borrow can offset this factor.

5. *Penalty tax on improperly accumulated earnings.* To prevent wealthy individuals from using corporations to avoid personal taxes, the Tax Code provides for a special surtax on improperly accumulated income. Thus, if the IRS can demonstrate that a firm's dividend payout ratio is being deliberately held down to help its stockholders avoid personal taxes, the firm is subject to heavy penalties. This factor is generally relevant only to privately owned firms.

Alternative Sources of Capital

The second factor that influences the dividend decision is the cost and availability of alternative sources of capital.

1. *Cost of selling new stock.* If a firm needs to finance a given level of investment, it can obtain equity by retaining earnings or by issuing new common stock. If flotation costs (including any negative signaling effects of a stock offering) are high then r_e will be well above r_s , making it better to set a low payout ratio and to finance through retention rather than through the sale of new common stock. On the other hand, a high dividend payout ratio is more feasible for a firm whose flotation costs are low. Flotation costs differ among firms—for example, the flotation percentage is generally higher for small firms, so they tend to set low payout ratios.
2. *Ability to substitute debt for equity.* A firm can finance a given level of investment with either debt or equity. As just described, low stock flotation costs permit a more flexible dividend policy because equity can be raised either by retaining earnings or by selling new stock. A similar situation holds for debt policy: If the firm can adjust its debt ratio without raising costs sharply, then it can pay the expected dividend—even if earnings fluctuate—by increasing its debt ratio.
3. *Control.* If management is concerned about maintaining control, it may be reluctant to sell new stock; hence the company may retain more earnings than it otherwise would. However, if stockholders want higher dividends and a proxy fight looms, then the dividend will be increased.

Self-Test

What constraints affect dividend policy?

How do the availability and cost of outside capital affect dividend policy?

14.12 SUMMARIZING THE DISTRIBUTION POLICY DECISION

In practice, the distribution decision is made jointly with capital structure and capital budgeting decisions. The underlying reason for joining these decisions is asymmetric information, which influences managerial actions in two ways.

1. In general, managers do not want to issue new common stock. First, new common stock involves issuance costs—commissions, fees, and so on—and those costs can be avoided by using retained earnings to finance equity needs. Second, as we will explain in Chapter 15, asymmetric information causes investors to view new common stock issues as negative signals and thus lowers expectations regarding the firm's future prospects. The end result is that the announcement of a new stock issue usually leads to a decrease in the stock price. Considering the total costs due to issuance and asymmetric information, managers prefer to use retained earnings as the primary source of new equity.
2. Dividend changes provide signals about managers' beliefs concerning their firms' future prospects. Thus, dividend reductions generally have a significant negative effect on a firm's stock price. Since managers recognize this, they try to

set dollar dividends low enough that there is only a remote chance the dividend will have to be reduced in the future.

The effects of asymmetric information suggest that, to the extent possible, managers should avoid both new common stock sales and dividend cuts, because both actions tend to lower the stock price. Thus, in setting distribution policy, managers should begin by considering the firm's future investment opportunities relative to its projected internal sources of funds. The target capital structure also plays a part, but because it is a *range*, firms can vary their actual capital structures somewhat from year to year. Since it is best to avoid issuing new common stock, the target long-term payout ratio should be designed to permit the firm to meet all of its equity capital requirements with retained earnings. In effect, *managers should use the residual model to set dividends, but in a long-term framework*. Finally, the current dollar dividend should be set so that there is an extremely low probability that the dividend, once set, will ever have to be lowered or omitted.

Of course, the dividend decision is made during the planning process, so there is uncertainty about future investment opportunities and operating cash flows. The actual payout ratio in any year will therefore likely be above or below the firm's long-range target. However, the dollar dividend should be maintained, or increased as planned, unless the firm's financial condition deteriorates to the point at which the planned policy simply cannot be maintained. A steady or increasing stream of dividends over the long run signals that the firm's financial condition is under control. Moreover, investor uncertainty is decreased by stable dividends, so a steady dividend stream reduces the negative effect of a new stock issue—should one become absolutely necessary.

In general, firms with superior investment opportunities should set lower payouts, and hence retain more earnings, than firms with poor investment opportunities. The degree of uncertainty also influences the decision. If there is a great deal of uncertainty regarding the forecasts of free cash flows, which are defined here as the firm's operating cash flows minus mandatory equity investments, then it is best to be conservative and to set a lower current dollar dividend. Also, firms with postponable investment opportunities can afford to set a higher dollar dividend, because in times of stress investments can be postponed for a year or two, thus increasing the cash available for dividends. Finally, firms whose cost of capital is largely unaffected by changes in the debt ratio can also afford to set a higher payout ratio, because in times of stress they can more easily issue additional debt to maintain the capital budgeting program without having to cut dividends or issue stock.

The net result of these factors is that many firms' dividend policies are consistent with the life-cycle theory in which younger firms with many investment opportunities but relatively low cash flows reinvest their earnings so that they can avoid the large flotation costs associated with raising external capital.²³ As firms mature and begin to generate more cash flow, they tend to pay more dividends and issue more debt as a way to "bond" their cash flows (as described in Chapter 15) and thereby reduce the agency costs of free cash flow.

What do executives think? A recent survey indicates financial executives believe that it is extremely important to *maintain* dividends but much less important to initiate or increase dividend payments. In general, they view the cash distribution decision as being much less important than capital budgeting decisions. Managers like

²³For a test of the life-cycle theory, see Harry DeAngelo, Linda DeAngelo, and René Stulz, "Dividend Policy and the Earned/Contributed Capital Mix: A Test of the Life-Cycle Theory," *Journal of Financial Economics*, August 2006, pp. 227–254.

the flexibility provided by repurchases instead of regular dividends. They tend to repurchase shares when they believe their stock price is undervalued, and they believe that shareholders view repurchases as positive signals. In general, the different taxation of dividends and repurchases is not a major factor when a company chooses how to distribute cash to investors.²⁴

Self-Test

Describe the decision process for distribution policy and dividend payout. Be sure to discuss all the factors that influence this decision.

14.13 STOCK SPLITS AND STOCK DIVIDENDS

The rationale for stock splits and dividends can best be explained through an example. We will use Porter Electronic Controls Inc., a \$700 million electronic components manufacturer, for this purpose. Since its inception, Porter's markets have been expanding, and the company has enjoyed growth in sales and earnings. Some of its earnings have been paid out in dividends, but some are also retained each year, causing its earnings per share and stock price to grow. The company began its life with only a few thousand shares outstanding, and after some years of growth the stock price was high. Porter's CFO thought this high price limited the number of investors who could buy the stock, which reduced demand for the stock and thus kept the firm's total market value below what it could be if there were more shares, at a lower price, outstanding. To correct this situation, Porter "split its stock," as we describe next.

Stock Splits

Although there is little empirical evidence to support the contention, there is nevertheless a widespread belief in financial circles that an *optimal price range* exists for stocks. "Optimal" means that if the price is within this range, the firm's value will be maximized. Many observers, including Porter's management, believe the best range for most stocks is from \$20 to \$80 per share. Accordingly, if the price of Porter's stock rose to \$80, management would probably declare a 2-for-1 **stock split**, thus doubling the number of shares outstanding, halving the earnings and dividends per share, and thereby lowering the stock price. Each stockholder would have more shares, but each share would be worth less. If the post-split price were \$40, then Porter's stockholders would be exactly as well off as before the split. However, if the stock price were to stabilize above \$40, stockholders would be better off. Stock splits can be of any size—for example, the stock could be split 2-for-1, 3-for-1, 1.5-for-1, or in any other way.

Sometimes a company will have a **reverse split**. For example, International Pictures Corp. (IPIX) developed the iPIX computer imaging technology, which allows a user to "walk through" a 360-degree view. Its stock price was in the \$30 range prior to the dot-com crash of April 2000, but by August 2001 its price had fallen to \$0.20 per share. One of Nasdaq's listing requirements is that the stock price must be above \$1 per share, and Nasdaq was threatening to delist IPIX. To drive its price up, IPIX had a 1-10 reverse stock split before trading began on August 23, 2001, with its shareholders exchanging 10 shares of stock for a single new share. In theory, the stock price should have increased by a factor of 10, to around \$2, but IPIX closed that day at a price of \$1.46. Evidently, investors saw the reverse split as a negative signal. IPIX continued to struggle and declared bankruptcy in 2006, eventually auctioning off virtually all of its assets.

²⁴See Alon Brav, John R. Graham, Campbell R. Harvey, and Roni Michaely, "Payout Policy in the 21st Century," *Journal of Financial Economics*, September 2005, pp. 483–527.



THE GLOBAL ECONOMIC CRISIS

Talk about a Split Personality!

Sun Microsystems once was among the highest of the high-flying companies in the tech boom of the 1990s. Sun went public in 1986 and its stock price grew rapidly, with Sun declaring seven different 2-1 stock splits between 1988 and 2000. Without these splits, Sun's stock price would have grown from about \$30 in late 1988 to over \$1,700 in mid-2000, a staggering return of over 40% per year! However, Sun's fortunes fell when the tech bubble burst, and Sun never recovered. With its stock price languishing around \$5, Sun declared a 1-4 reverse stock split in late 2007, which boosted the stock price to over \$20, but subsequently it sank into the \$3-\$4 range by the spring of 2009. In April 2009, Sun announced that it had agreed to be acquired by

Oracle for about \$9.50 per share. This would have been only $\$2.375 = \$9.50/4$ if not for the reverse split in 2007, quite a fall from its former highs.

Reverse splits were rare when Sun Microsystems declared its split in 2007, but now Sun might have plenty of company caused by the economic crisis. In May 2009, many firms were considering reverse splits, including AIG, GM, Rite Aid, and Citigroup. In fact, over 340 companies had stock prices of less than a dollar per share in May 2009, including such familiar names as Sirius XM Radio, Vonage, and Blockbuster. Because so many firms have such low stock prices, the NYSE and Nasdaq temporarily suspended their requirement that listed companies maintain a stock price of over \$1 per share.

Stock Dividends

Stock dividends are similar to stock splits in that they “divide the pie into smaller slices” without affecting the fundamental position of the current stockholders. On a 5% stock dividend, the holder of 100 shares would receive an additional 5 shares (without cost); on a 20% stock dividend, the same holder would receive 20 new shares; and so on. Again, the total number of shares is increased, so earnings, dividends, and price per share all decline.

If a firm wants to reduce the price of its stock, should it use a stock split or a stock dividend? Stock splits are generally used after a sharp price run-up to produce a large price reduction. Stock dividends used on a regular annual basis will keep the stock price more or less constrained. For example, if a firm's earnings and dividends were growing at about 10% per year, its stock price would tend to go up at about that same rate, and it would soon be outside the desired trading range. A 10% annual stock dividend would maintain the stock price within the optimal trading range. Note, however, that small stock dividends create bookkeeping problems and unnecessary expenses, so firms today use stock splits far more often than stock dividends.²⁵

Effect on Stock Prices

If a company splits its stock or declares a stock dividend, will this increase the market value of its stock? Many empirical studies have sought to answer this question. Here is a summary of their findings.

²⁵Accountants treat stock splits and stock dividends somewhat differently. For example, in a 2-for-1 stock split, the number of shares outstanding is doubled and the par value is halved, and that's about all there is to it. With a stock dividend, a bookkeeping entry is made transferring “retained earnings” to “common stock..”

1. On average, the price of a company's stock rises shortly after it announces a stock split or a stock dividend.
2. However, these price increases are probably due to signaling rather than a desire for stock splits or dividends per se. Only managers who think future earnings will be higher tend to split stocks, so investors often view the announcement of a stock split as a positive signal. Thus, it is the signal of favorable prospects for earnings and dividends that causes the price to increase.
3. If a company announces a stock split or stock dividend, its price will tend to rise. However, if during the next few months it does not announce an increase in earnings and dividends, then its stock price will drop back to the earlier level.
4. As we noted earlier, brokerage commissions are generally higher in percentage terms on lower-priced stocks. This means that it is more expensive to trade low-priced than high-priced stocks—which, in turn, means that stock splits may reduce the liquidity of a company's shares. This particular piece of evidence suggests that stock splits/dividends might actually be harmful, although a lower price does mean that more investors can afford to trade in round lots (100 shares), which carry lower commissions than do odd lots (fewer than 100 shares).

What can we conclude from all this? From a purely economic standpoint, stock dividends and splits are just additional pieces of paper. However, they provide management with a relatively low-cost way of signaling that the firm's prospects look good.²⁶ Further, we should note that since few large, publicly owned stocks sell at prices above several hundred dollars, we simply do not know what the effect would be if Microsoft, Wal-Mart, Hewlett-Packard, and other highly successful firms had never split their stocks and consequently sold at prices in the thousands or even tens of thousands of dollars. All in all, it probably makes sense to employ stock splits (or stock dividends) when a firm's prospects are favorable, especially if the price of its stock has gone beyond the normal trading range.²⁷

Self-Test

What are stock splits and stock dividends?

How do stock splits and dividends affect stock prices?

In what situations should managers consider the use of stock splits?

In what situations should managers consider the use of stock dividends?

Suppose you have 1,000 common shares of Burnside Bakeries. The EPS is \$6.00, the DPS is \$3.00, and the stock sells for \$90 per share. Burnside announces a 3-for-1 split. Immediately after the split, how many shares will you have? **(3,000)** What will the adjusted EPS and DPS be? **(\$2 and \$1)** What would you expect the stock price to be? **(\$30)**

²⁶For more on stock splits and stock dividends, see H. Kent Baker, Aaron L. Phillips, and Gary E. Powell, "The Stock Distribution Puzzle: A Synthesis of the Literature on Stock Splits and Stock Dividends," *Financial Practice and Education*, Spring/Summer 1995, pp. 24–37; Maureen McNichols and Ajay Dravid, "Stock Dividends, Stock Splits, and Signaling," *Journal of Finance*, July 1990, pp. 857–879; and David R. Peterson and Pamela P. Peterson, "A Further Understanding of Stock Distributions: The Case of Reverse Stock Splits," *Journal of Financial Research*, Fall 1992, pp. 189–205.

²⁷It is interesting to note that Berkshire Hathaway (controlled by billionaire Warren Buffett) has never had a stock split, and its stock (BRKa) sold on the NYSE for \$85,500 per share in March 2009. Yet in response to investment trusts that were being formed in 1996 to sell fractional units of the stock and thus—in effect—split it, Buffett himself created a new class of Berkshire Hathaway stock (Class B) worth about 1/30 of a Class A (regular) share.

14.14 DIVIDEND REINVESTMENT PLANS

During the 1970s, most large companies instituted **dividend reinvestment plans (DRIPs)**, under which stockholders can choose to automatically reinvest their dividends in the stock of the paying corporation. Today most large companies offer DRIPs; participation rates vary considerably, but about 25% of the average firm's shareholders are enrolled. There are two types of DRIPs: (1) plans that involve only "old stock" that is already outstanding and (2) plans that involve newly issued stock. In either case, the stockholder must pay taxes on the amount of the dividends, even though stock rather than cash is received.

Under both types of DRIPs, stockholders choose between continuing to receive dividend checks or having the company use the dividends to buy more stock in the corporation. Under the "old stock" type of plan, if a stockholder elects reinvestment then a bank, acting as trustee, takes the total funds available for reinvestment, purchases the corporation's stock on the open market, and allocates the shares purchased to the participating stockholders' accounts on a pro rata basis. The transaction costs of buying shares (brokerage costs) are low because of volume purchases, so these plans benefit small stockholders who do not need cash dividends for current consumption.

The "new stock" type of DRIP uses the reinvested funds to buy newly issued stock; hence these plans raise new capital for the firm. AT&T, Union Carbide, and many other companies have used new stock plans to raise substantial amounts of new equity capital. No fees are charged to stockholders, and many companies offer stock at a discount of 3% to 5% below the actual market price. The companies offer discounts as a trade-off against flotation costs that would have been incurred if new stock had been issued through investment bankers instead of through the dividend reinvestment plans.

One interesting aspect of DRIPs is that they cause corporations to re-examine their basic dividend policies. A high participation rate in a DRIP suggests that stockholders might be better off if the firm simply reduced cash dividends, which would save stockholders some personal income taxes. Quite a few firms are surveying their stockholders to learn more about their preferences and to find out how they would react to a change in dividend policy. A more rational approach to basic dividend policy decisions may emerge from this research.

Note that companies start or stop using new stock DRIPs depending on their need for equity capital. For example, Union Carbide and AT&T recently stopped offering new stock DRIPs with a 5% discount because their needs for equity capital declined.

Some companies have expanded their DRIPs by moving to "open enrollment," whereby anyone can purchase the firm's stock directly and thus bypass brokers' commissions. ExxonMobil not only allows investors to buy their initial shares at no fee but also lets them pick up additional shares through automatic bank account withdrawals. Several plans, including ExxonMobil's, offer dividend reinvestment for individual retirement accounts, and some, such as U.S. West's, allow participants to invest weekly or monthly rather than on the quarterly dividend schedule. In all of these plans, and many others, stockholders can invest more than the dividends they are forgoing—they simply send a check to the company and buy shares without a brokerage commission. According to First Chicago Trust, which handles the paperwork for 13 million shareholder DRIP accounts, at least half of all DRIPs will offer open enrollment, extra purchases, and other expanded services within the next few years.

Self-Test

What are dividend reinvestment plans?

What are their advantages and disadvantages from both the stockholders' and the firm's perspectives?

Summary

- **Distribution policy** involves three issues: (1) What fraction of earnings should be distributed? (2) Should the distribution be in the form of cash dividends or stock repurchases? (3) Should the firm maintain a steady, stable dividend growth rate?
- The **optimal distribution policy** strikes a balance between current dividends and future growth so as to maximize the firm's stock price.
- Miller and Modigliani (MM) developed the **dividend irrelevance theory**, which holds that a firm's dividend policy has no effect on either the value of its stock or its cost of capital.
- The **dividend preference theory**, also called the **bird-in-the-hand theory**, holds that the firm's value will be maximized by a high dividend payout ratio, because investors regard cash dividends as being less risky than potential capital gains.
- The **tax effect theory** states that because long-term capital gains are subject to lower taxes than dividends, investors prefer to have companies retain earnings rather than pay them out as dividends.
- Dividend policy should take account of the **information content of dividends (signaling)** and the **clienteles effect**. The information content, or signaling, effect stems from investors regarding an unexpected dividend change as a signal of management's forecast of future earnings. The clienteles effect suggests that a firm will attract investors who like the firm's dividend payout policy. Both factors should be taken into account by firms that are considering a change in dividend policy.
- In practice, dividend-paying firms follow a policy of paying a **steadily increasing dividend**. This policy provides investors with stable, dependable income, and departures from it give investors signals about management's expectations for future earnings.
- Most firms use the **residual distribution model** to set the long-run target distribution ratio at a level that will permit the firm to meet its equity requirements with retained earnings.
- Under a **stock repurchase plan**, a firm buys back some of its outstanding stock, thereby decreasing the number of shares but leaving the stock price unchanged.
- **Legal constraints, investment opportunities, availability and cost of funds from other sources**, and **taxes** are also considered when firms establish dividend policies.
- A **stock split** increases the number of shares outstanding. Normally, splits reduce the price per share in proportion to the increase in shares because splits merely "divide the pie into smaller slices." However, firms generally split their stocks only if (1) the price is quite high and (2) management thinks the future is bright. Therefore, stock splits are often taken as positive signals and thus boost stock prices.
- A **stock dividend** is a dividend paid in additional shares rather than in cash. Both stock dividends and splits are used to keep stock prices within an "optimal" trading range.
- A **dividend reinvestment plan (DRIP)** allows stockholders to have the company automatically use dividends to purchase additional shares. DRIPs are popular because they allow stockholders to acquire additional shares without brokerage fees.

Questions

- (14-1) Define each of the following terms:
- Optimal distribution policy
 - Dividend irrelevance theory; bird-in-the-hand theory; tax effect theory
 - Information content, or signaling, hypothesis; clientele effect
 - Residual distribution model; extra dividend
 - Declaration date; holder-of-record date; ex-dividend date; payment date
 - Dividend reinvestment plan (DRIP)
 - Stock split; stock dividend; stock repurchase
- (14-2) How would each of the following changes tend to affect aggregate payout ratios (that is, the average for all corporations), other things held constant? Explain your answers.
- An increase in the personal income tax rate
 - A liberalization of depreciation for federal income tax purposes—that is, faster tax write-offs
 - A rise in interest rates
 - An increase in corporate profits
 - A decline in investment opportunities
 - Permission for corporations to deduct dividends for tax purposes as they now do interest charges
 - A change in the Tax Code so that both realized and unrealized capital gains in any year were taxed at the same rate as dividends
- (14-3) What is the difference between a stock dividend and a stock split? As a stockholder, would you prefer to see your company declare a 100% stock dividend or a 2-for-1 split? Assume that either action is feasible.
- (14-4) One position expressed in the financial literature is that firms set their dividends as a residual after using income to support new investments. Explain what a residual policy implies (assuming that all distributions are in the form of dividends), illustrating your answer with a table showing how different investment opportunities could lead to different dividend payout ratios.
- (14-5) Indicate whether the following statements are true or false. If the statement is false, explain why.
- If a firm repurchases its stock in the open market, the shareholders who tender the stock are subject to capital gains taxes.
 - If you own 100 shares in a company's stock and the company's stock splits 2-for-1, then you will own 200 shares in the company following the split.
 - Some dividend reinvestment plans increase the amount of equity capital available to the firm.
 - The Tax Code encourages companies to pay a large percentage of their net income in the form of dividends.
 - A company that has established a clientele of investors who prefer large dividends is unlikely to adopt a residual dividend policy.
 - If a firm follows a residual dividend policy then, holding all else constant, its dividend payout will tend to rise whenever the firm's investment opportunities improve.

Self-Test Problem

Solution Appears in Appendix A

(ST-1)
Residual Dividend

Components Manufacturing Corporation (CMC) has 1 million shares of stock outstanding. CMC has a target capital structure with 60% equity and 40% debt. The company projects net income of \$5 million and investment projects requiring \$6 million in the upcoming year.

- a. CMC uses the residual distribution model and pays all distributions in the form of dividends. What is the projected DPS?
- b. What is the projected payout ratio?

Problems

Answers Appear in Appendix B

EASY PROBLEMS 1–5

(14-1)
Residual Distribution
Model

Axel Telecommunications has a target capital structure that consists of 70% debt and 30% equity. The company anticipates that its capital budget for the upcoming year will be \$3 million. If Axel reports net income of \$2 million and follows a residual distribution model with all distributions as dividends, what will be its dividend payout ratio?

(14-2)
Residual Distribution
Policy

Petersen Company has a capital budget of \$1.2 million. The company wants to maintain a target capital structure which is 60% debt and 40% equity. The company forecasts that its net income this year will be \$600,000. If the company follows a residual distribution model and pays all distributions as dividends, what will be its payout ratio?

(14-3)
Dividend Payout

The Wei Corporation expects next year's net income to be \$15 million. The firm's debt ratio is currently 40%. Wei has \$12 million of profitable investment opportunities, and it wishes to maintain its existing debt ratio. According to the residual distribution model (assuming all payments are in the form of dividends), how large should Wei's dividend payout ratio be next year?

(14-4)
Stock Repurchase

A firm has 10 million shares outstanding with a market price of \$20 per share. The firm has \$25 million in extra cash (short-term investments) that it plans to use in a stock repurchase; the firm has no other financial investments or any debt. What is the firm's value of operations, and how many shares will remain after the repurchase?

(14-5)
Stock Split

Gamma Medical's stock trades at \$90 a share. The company is contemplating a 3-for-2 stock split. Assuming the stock split will have no effect on the total market value of its equity, what will be the company's stock price following the stock split?

INTERMEDIATE PROBLEMS 6–9

(14-6)
External Equity
Financing

Northern Pacific Heating and Cooling Inc. has a 6-month backlog of orders for its patented solar heating system. To meet this demand, management plans to expand production capacity by 40% with a \$10 million investment in plant and machinery. The firm wants to maintain a 40% debt-to-total-assets ratio in its capital structure; it also wants to maintain its past dividend policy of distributing 45% of last year's net income. In 2010, net income was \$5 million. How much external equity must Northern Pacific seek at the beginning of 2011 in order to expand capacity as desired?

(14-7) Stock Split Suppose you own 2,000 common shares of Laurence Incorporated. The EPS is \$10.00, the DPS is \$3.00, and the stock sells for \$80 per share. Laurence announces a 2-for-1 split. Immediately after the split, how many shares will you have, what will the adjusted EPS and DPS be, and what would you expect the stock price to be?

(14-8) Stock Split After a 5-for-1 stock split, the Strasburg Company paid a dividend of \$0.75 per new share, which represents a 9% increase over last year's pre-split dividend. What was last year's dividend per share?

(14-9) Residual Distribution Policy The Welch Company is considering three independent projects, each of which requires a \$5 million investment. The estimated internal rate of return (IRR) and cost of capital for these projects are as follows:

| | |
|--------------------------|----------------------------------|
| Project H (high risk): | Cost of capital = 16%; IRR = 20% |
| Project M (medium risk): | Cost of capital = 12%; IRR = 10% |
| Project L (low risk): | Cost of capital = 8%; IRR = 9% |

Note that the projects' cost of capital varies because the projects have different levels of risk. The company's optimal capital structure calls for 50% debt and 50% common equity. Welch expects to have net income of \$7,287,500. If Welch bases its dividends on the residual model (all distributions are in the form of dividends), what will its payout ratio be?

CHALLENGING PROBLEMS
10-11

(14-10) Alternative Dividend Policies In 2010, the Keenan Company paid dividends totaling \$3.6 million on net income of \$10.8 million. The year was a normal one, and earnings have grown at a constant rate of 10% for the past 10 years. However, in 2011, earnings are expected to jump to \$14.4 million, and the firm expects to have profitable investment opportunities of \$8.4 million. It is predicted that Keenan will not be able to maintain the 2011 level of earnings growth—the high 2011 projected earnings level is due to an exceptionally profitable new product line to be introduced that year—and then the company will return to its previous 10% growth rate. Keenan's target debt ratio is 40%.

- Calculate Keenan's total dividends for 2011 if it follows each of the following policies:
 - Its 2011 dividend payment is set to force dividends to grow at the long-run growth rate in earnings.
 - It continues the 2010 dividend payout ratio.
 - It uses a pure residual policy with all distributions in the form of dividends (40% of the \$8.4 million investment is financed with debt).
 - It employs a regular-dividend-plus-extras policy, with the regular dividend being based on the long-run growth rate and the extra dividend being set according to the residual policy.
- Which of the preceding policies would you recommend? Restrict your choices to the ones listed, but justify your answer.
- Does a 2011 dividend of \$9 million seem reasonable in view of your answers to parts a and b? If not, should the dividend be higher or lower?

(14-11) Residual Distribution Model Buena Terra Corporation is reviewing its capital budget for the upcoming year. It has paid a \$3 dividend per share (DPS) for the past several years, and its shareholders expect the dividend to remain constant for the next several years. The company's target capital structure is 60% equity and 40% debt, it has 1 million shares of common

equity outstanding, and its net income is \$8 million. The company forecasts it would require \$10 million to fund all of its profitable (i.e., positive-NPV) projects for the upcoming year.

- a. If Buena Terra follows the residual model and makes all distributions as dividends, how much retained earnings will it need to fund its capital budget?
- b. If Buena Terra follows the residual model with all distributions in the form of dividends, what will be the company's dividend per share and payout ratio for the upcoming year?
- c. If Buena Terra maintains its current \$3 DPS for next year, how much retained earnings will be available for the firm's capital budget?
- d. Can the company maintain its current capital structure, maintain the \$3 DPS, and maintain a \$10 million capital budget *without* having to raise new common stock?
- e. Suppose Buena Terra's management is firmly opposed to cutting the dividend; that is, it wishes to maintain the \$3 dividend for the next year. Suppose also that the company is committed to funding all profitable projects and is willing to issue more debt (along with the available retained earnings) to help finance the company's capital budget. Assume the resulting change in capital structure has a minimal impact on the company's composite cost of capital, so that the capital budget remains at \$10 million. What portion of this year's capital budget would have to be financed with debt?
- f. Suppose once again that Buena Terra's management wants to maintain the \$3 DPS. In addition, the company wants to maintain its target capital structure (60% equity, 40% debt) and its \$10 million capital budget. What is the minimum dollar amount of new common stock the company would have to issue in order to meet all of its objectives?
- g. Now consider the case in which Buena Terra's management wants to maintain the \$3 DPS and its target capital structure but also wants to avoid issuing new common stock. The company is willing to cut its capital budget in order to meet its other objectives. Assuming the company's projects are divisible, what will be the company's capital budget for the next year?
- h. If a firm follows the residual distribution policy, what actions can it take when its forecasted retained earnings are less than the retained earnings required to fund its capital budget?

(14–12)
Stock Repurchase

Bayani Bakery's most recent FCF was \$48 million; the FCF is expected to grow at a constant rate of 6%. The firm's WACC is 12% and it has 15 million shares of common stock outstanding. The firm has \$30 million in short-term investments, which it plans to liquidate and distribute to common shareholders via a stock repurchase; the firm has no other nonoperating assets. It has \$368 million in debt and \$60 million in preferred stock.

- a. What is the value of operations?
- b. Immediately prior to the repurchase, what is the intrinsic value of equity?
- c. Immediately prior to the repurchase, what is the intrinsic stock price?
- d. How many shares will be repurchased? How many shares will remain after the repurchase?
- e. Immediately after the repurchase, what is the intrinsic value of equity? The intrinsic stock price?

SPREADSHEET PROBLEM

(14-13)

Build a Model:
Distributions as
Dividends or
Repurchases

resource

Start with the partial model in the file *Ch14 P13 Build a Model.xls* on the textbook's Web site. J. Clark Inc. (JCI), a manufacturer and distributor of sports equipment, has grown until it has become a stable, mature company. Now JCI is planning its first distribution to shareholders. (See the file for the most recent year's financial statements and projections for the next year, 2011; JCI's fiscal year ends on June 30.) JCI plans to liquidate and distribute \$500 million of its short-term securities on July 1, 2011, the first day of the next fiscal year, but has not yet decided whether to distribute with dividends or with stock repurchases.

- Assume first that JCI distributes the \$500 million as dividends. Fill in the missing values in the file's balance sheet column for July 1, 2011, that is labeled Distribute as Dividends. (*Hint:* Be sure that the balance sheets balance after you fill in the missing items.) Assume that JCI did not have to establish an account for dividends payable prior to the distribution.
- Now assume that JCI distributes the \$500 million through stock repurchases. Fill in the missing values in the file's balance sheet column for July 1, 2011, that is labeled Distribute as Repurchase. (*Hint:* Be sure that the balance sheets balance after you fill in the missing items.)
- Calculate JCI's projected free cash flow; the tax rate is 40%.
- What is JCI's current intrinsic stock price (the price on 6/30/2010)? What is the projected intrinsic stock price for 6/30/2011?
- What is the projected intrinsic stock price on 7/1/2011 if JCI distributes the cash as dividends?
- What is the projected intrinsic stock price on 7/1/2011 if JCI distributes the cash through stock repurchases? How many shares will remain outstanding after the repurchase?

THOMSON ONE

Business School Edition

Problem

Use the Thomson ONE—Business School Edition online database to work this chapter's questions.

MICROSOFT'S DIVIDEND POLICY

Let's find out what has happened to Microsoft's (MSFT) dividend policy since its 2003 announcement to initiate dividends. We can address this issue by relying on the data that are provided to you in Thomson ONE.

Thomson ONE—BSE Discussion Questions

- To get information about MSFT's dividend policy, enter its ticker and select OVERVIEW>FULL REPORTS>WORLDSCOPE FULL REPORTS>FULL COMPANY REPORT. Click on STOCK & EARNINGS DATA, and scroll down to the Annual Historical Data section. What has happened to MSFT's dividend per share, dividend yield, and dividend payout over the past 5 years? Do you have any explanations?
- Compare this with other firms in the same industry. To see how MSFT stacks up against its peers, select PEERS>OVERVIEWS>PER SHARE DATA to get MSFT's peers' last annual dividends. Accessing PEER>OVERVIEWS>

- ABSOLUTE RANKINGS will give their dividend yields. You can also get this information from the VALUATION COMPARISON in this same section. Has MSFT behaved differently from its peers, or have there been industry-wide shifts?
3. Refer back to the FULL COMPANY REPORT used in Question 1. Manually plot earnings and dividends over time. In the text, we point out that dividends are often much more stable than earnings. Do you see a similar pattern for MSFT?
 4. In the Interim Financial Data section of the FULL COMPANY REPORT, identify the dividend declared date, the ex dividend date, and the pay date. Explain the significance of these dates. Go back to Overview and access the Interactive Price Chart. Can you observe price shifts around these dates? Explain what price shifts you might expect to see.
 5. Investors are more concerned with future dividends than historical dividends, so go to ESTIMATES and scroll down to the Consensus Estimates section. Click on the Available Measures menu to toggle between earnings per share and dividends per share. What do analysts expect MSFT's payout policy to be in the future?
 6. Refer back to the FULL COMPANY REPORT, and scroll down to the 5 Yr Annual Balance Sheet section. Does it appear that MSFT has been repurchasing any stock, or has it been issuing new stock?

Mini Case

Southeastern Steel Company (SSC) was formed 5 years ago to exploit a new continuous casting process. SSC's founders, Donald Brown and Margo Valencia, had been employed in the research department of a major integrated-steel company, but when that company decided against using the new process (which Brown and Valencia had developed), they decided to strike out on their own. One advantage of the new process was that it required relatively little capital in comparison with the typical steel company, so Brown and Valencia have been able to avoid issuing new stock and thus own all of the shares. However, SSC has now reached the stage at which outside equity capital is necessary if the firm is to achieve its growth targets. Therefore, Brown and Valencia have decided to take the company public. Until now, Brown and Valencia have paid themselves reasonable salaries but routinely reinvested all after-tax earnings in the firm, so dividend policy has not been an issue. However, before talking with potential outside investors, they must decide on a dividend policy.

Assume you were recently hired by Pierce Westerfield Carney (PWC), a national consulting firm that has been asked to help SSC prepare for its public offering. Martha Millon, the senior PWC consultant in your group, has asked you to make a presentation to Brown and Valencia in which you review the theory of dividend policy and discuss the following issues.

- a.
 - (1) What is meant by the term "distribution policy"? How has the mix of dividend payouts and stock repurchases changed over time?
 - (2) The terms "irrelevance," "dividend preference, or bird-in-the-hand," and "tax effect" have been used to describe three major theories regarding the way dividend payouts affect a firm's value. Explain what these terms mean, and briefly describe each theory.
 - (3) What do the three theories indicate regarding the actions management should take with respect to dividend payouts?
 - (4) What results have empirical studies of the dividend theories produced? How does all this affect what we can tell managers about dividend payouts?
- b. Discuss (1) the information content, or signaling, hypothesis, (2) the clientele effect, and (3) their effects on distribution policy.
- c. (1) Assume that SSC has completed its IPO and has a \$112.5 million capital budget planned for the coming year. You have determined that its present capital structure (80% equity and 20% debt) is optimal, and its net income is forecasted at \$140 million. Use the residual distribution approach to determine SSC's total dollar distribution.

- Assume for now that the distribution is in the form of a dividend. Suppose SSC has 100 million shares of stock outstanding. What is the forecasted dividend payout ratio? What is the forecasted dividend per share? What would happen to the payout ratio and DPS if net income were forecasted to decrease to \$90 million? To increase to \$160 million?
- (2) In general terms, how would a change in investment opportunities affect the payout ratio under the residual distribution policy?
 - (3) What are the advantages and disadvantages of the residual policy? (*Hint:* Don't neglect signaling and clientele effects.)
- d. (1) Describe the procedures a company follows when it make a distribution through dividend payments.
 - (2) What is a stock repurchase? Describe the procedures a company follows when it make a distribution through a stock repurchase.
 - e. Discuss the advantages and disadvantages of a firm repurchasing its own shares.
 - f. Suppose SSC has decided to distribute \$50 million, which it presently is holding in very liquid short-term investments. SSC's value of operations is estimated to be about \$1,937.5 million, and it has \$387.5 million in debt (it has no preferred stock). As mentioned previously, SSC has 100 million shares of stock outstanding.
 - (1) Assume that SSC has not yet made the distribution. What is SSC's intrinsic value of equity? What is its intrinsic stock price per share?
 - (2) Now suppose that SSC has just made the \$50 million distribution in the form of dividends. What is SSC's intrinsic value of equity? What is its intrinsic stock price per share?
 - (3) Suppose instead that SSC has just made the \$50 million distribution in the form of a stock repurchase. Now what is SSC's intrinsic value of equity? How many shares did SSC repurchase? How many shares remained outstanding after the repurchase? What is its intrinsic stock price per share after the repurchase?
 - g. Describe the series of steps that most firms take when setting dividend policy.
 - h. What are stock splits and stock dividends? What are the advantages and disadvantages of each?
 - i. What is a dividend reinvestment plan (DRIP), and how does it work?

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 19, "Georgia Atlantic Company," Case 20, "Bessemer Steel Products, Inc.," Case 47, "Floral Fragrance, Inc.," and Case 80, "The Western Company," all illustrate the dividend policy decision.

Brigham-Buzzard Series:

Case 9, "Powerline Network Corporation (Dividend Policy)."