



# chapter 18

## Distributions to Shareholders: Dividends and Repurchases

Profitable companies regularly face three important questions: (1) How much of our free cash flow should we pass on to shareholders? (2) Should we provide this cash to stockholders by raising the dividend or by repurchasing stock? (3) Should we maintain a stable, consistent payment policy, or should we let the payments vary as conditions change?

In this chapter we will discuss many of the issues that affect firms' policies. As we will see, mature companies with stable cash flows and limited growth opportunities tend to return more of their cash to shareholders, either by paying dividends or by using the cash to repurchase common stock. By contrast, rapidly growing companies with good investment opportunities are prone to invest most of their available cash 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 tendency. 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, it paid no dividends.

Market saturation and competition (including piracy) have caused its sales growth to slow. In the fiscal year ending, June 30, 2006, Microsoft reported annual sales growth of about 11%, still respectable but far short of its spectacular earlier growth rates. As growth slowed, Microsoft's cash flows increased, and during 2006 its cash flow from operating activities was \$14.4 billion.

As companies tend to do when growth slows and cash flows increase, Microsoft began paying a regular dividend in 2003, and it stunned the world with a huge special dividend in 2005, which, when combined with its regular dividend, totaled over \$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 2006, Microsoft paid regular dividends of \$3.5 billion, but it also repurchased \$17.1 billion in stock, for a total cash flow to shareholders of \$20.6 billion. Microsoft still has over \$34 billion in cash and marketable securities on its balance sheets, so investors are looking for more large cash distributions in the future.



e-resource

The textbook's Web site contains an *Excel* file that will guide you through the chapter's calculations. The file for this chapter is **FM12 Ch 18 Tool Kit.xls**, and we encourage you to open the file and follow along as you read the chapter.

Successful companies generate net operating profit after taxes (NOPAT). A company's growth opportunities and replacement requirements, identified through capital budgeting and financial planning, determine the amount that should be invested in operating capital. Subtracting the investment in operating capital from NOPAT results in free cash flow (FCF), which is the amount available for distribution to investors after paying expenses and taxes and making the necessary investments in operating capital. There are five potentially "good" uses for free cash flow: (1) to pay interest expenses, (2) to pay off debt, (3) to pay dividends, (4) to repurchase stock, and (5) to buy nonoperating assets such as Treasury bills or other marketable securities.<sup>1</sup> The capital structure choice determines the payments for interest expenses and debt principal, and the company's working capital policies (discussed in Chapter 22) determine its level of marketable securities. The remaining FCF should be distributed to shareholders, with the only choice 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 interdependence among shareholder distributions, operating plans (which have the biggest impact on free cash flow), financing plans (which have the biggest impact on the cost of capital), and working capital policies (which determine the target level of marketable securities).



An excellent source of recent dividend news for major corporations is available at the Web site of Corporate Financials Online at <http://www.cfnews.com/scs>. By clicking the down arrow of the "News Category" box to the left 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.

## 18.1 The Level of Distributions and Firm Value

Shareholder distributions for a wealth-maximizing firm affect the value of operations only to the extent that they change the cost of capital or investors' perceptions regarding expected free cash flow.<sup>2</sup> Here are the central issues addressed in this chapter: Can a company increase its value through (1) its choice of **distribution policy**, defined as the *level* of distributions, (2) the *form* of distributions (cash dividends versus stock repurchases), and (3) the *stability* of distributions?

The answer depends in part on investors' preferences for returns as dividend yields versus capital gains. The mix of yield return versus gains return 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 since 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

<sup>1</sup>Recall from Chapter 3 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"). Also, most growing companies actually issue new debt each year rather than repay debt. This "negative use" of FCF provides more FCF for the other uses.

<sup>2</sup>Shareholder distributions also affect the level of marketable securities, a nonoperating asset, which in turn affects the stock price.

## Corporate Valuation and Distributions to Shareholders



Free cash flow is the amount of cash available for distribution to all investors (shareholders and debtholders) after paying expenses and taxes and making investments in the operating capital required to support the company's growth. Most of this book has focused on FCF generation, including its risk and expected level. In contrast, this chapter focuses on a

use of FCF: How much FCF should be distributed to shareholders, and should it be distributed as dividends or stock repurchases? In addition, we show how distributions to shareholders are related to financing choices. Finally, we discuss ways that shareholders perceive distributions as signals regarding a firm's risk and expected future free cash flows.

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 hopefully a relatively high capital gain. Therefore, a firm's **optimal distribution policy** must strike a balance between cash dividends and capital gains so as to maximize the stock price.

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

### Dividend Irrelevance Theory

It has been argued that dividend policy has no effect on either the price of a firm's stock or its cost of capital. If dividend policy has no significant effects, then it would be *irrelevant*. The principal proponents of the **dividend irrelevance theory** are Merton Miller and Franco Modigliani (MM).<sup>3</sup> 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 or her 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 or her 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. Note, though, that investors who want additional dividends must incur brokerage costs to sell shares and pay taxes on any capital gains. Investors who do not want dividends incur brokerage costs to purchase shares with their dividends. Because taxes and brokerage costs certainly exist, dividend policy may well be relevant.

<sup>3</sup>See 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*, 2006, pp. 293–315.

In developing their dividend theory, MM made a number of assumptions, especially the absence of taxes and brokerage costs. Obviously, taxes and brokerage costs do exist, so the MM irrelevance theory may not be true. However, MM argued (correctly) that all economic theories are based on simplifying assumptions, and that the validity of a theory must be judged by empirical tests, not by the realism of its assumptions. We will discuss empirical tests of MM's dividend irrelevance theory shortly.

## Bird-in-the-Hand Theory: Dividends Are Preferred

The principal conclusion of MM's dividend irrelevance theory is that dividend policy does not affect the required rate of return on equity,  $r_s$ . This conclusion has been hotly debated in academic circles. In particular, Myron Gordon and John Lintner argued that  $r_s$  *decreases* as the dividend payout is increased because investors are less certain of receiving the capital gains that are supposed to result from retaining earnings than they are of receiving dividend payments.<sup>4</sup> Gordon and Lintner said, in effect, that investors value a dollar of expected dividends more highly than a dollar of expected capital gains because the dividend yield component is less risky than the expected capital gain.

MM disagreed. They argued that  $r_s$  is independent of dividend policy, which implies that investors are indifferent between dividends and capital gains. MM called the Gordon-Lintner argument the **bird-in-the-hand** fallacy because, in MM's view, most investors plan to reinvest their dividends in the stock of the same or similar firms, and, in any event, the risk of the firm's cash flows to investors in the long run is determined by the risk of operating cash flows, not by dividend payout policy.

## Tax Preference 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 and reduced the tax rate on dividend income to the same as on long-term capital gains.<sup>5</sup> However, there are two reasons stock price appreciation is taxed more favorably than dividend income. First, due to time value effects, a dollar of taxes paid in the future has a lower effective cost than a dollar paid today. So even if dividends and gains are taxed equally, capital gains are never taxed sooner than dividends. Second, if a stock is held by someone until he or she dies, no capital gains tax is due at all—the beneficiaries who receive the stock can use the stock's value on the death day as their cost basis and thus completely escape the capital gains tax.

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<sup>4</sup>Myron 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.

<sup>5</sup>Of course, nothing involving taxes is quite this simple. First, 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. Under the new law, long-term capital gains are taxed at 5% for low-income investors (that is, those whose marginal tax rate is 15% or less) and at 15% for those with more income. Dividend income will be taxed at those same rates through 2007. In 2008, the 5% capital gains (and dividend rate) will drop to zero for low-income investors; there is no scheduled change for high-income investors in 2008. After 2008, the capital gains rates will revert to 10% and 20%, which were the capital gains rates in effect prior to the 2003 tax act. At the time this was written (2006), Congress was actively debating whether or not to extend the act.

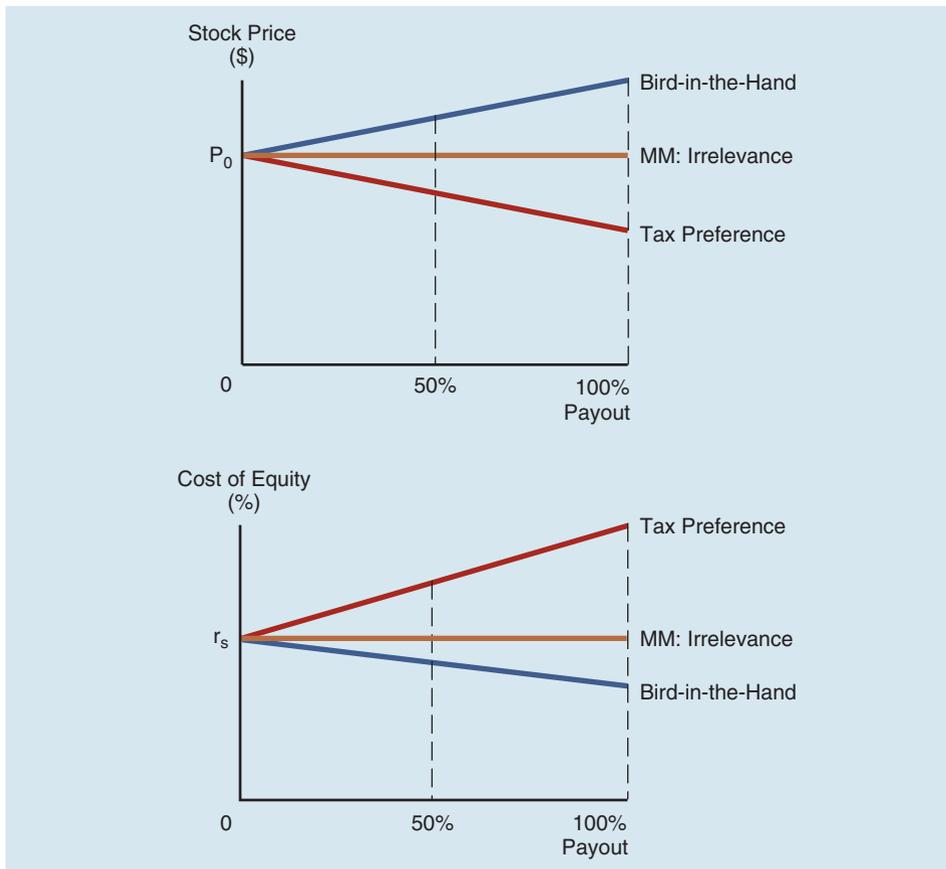
Because of these tax advantages, investors may prefer to have companies minimize dividends. If so, investors would be willing to pay more for low-payout companies than for otherwise similar high-payout companies.<sup>6</sup>

## Empirical Evidence and the Level of Shareholder Distributions

As Figure 18-1 shows, these three theories offer contradictory advice to corporate managers, so which, if any, should we believe? The most logical way to proceed is to test the theories empirically. Many such tests have been conducted, but their results have been unclear. There are two reasons for this: (1) For a valid statistical test, things other than distribution level must be held constant; that is, the sample companies must differ only in their distribution levels, and (2) we must be able to measure with a high degree of accuracy each firm's cost of equity. Neither of these two conditions holds: 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.

**Figure 18-1**

Dividend Irrelevance, Bird-in-the-Hand, and Tax Preference Dividend Theories



<sup>6</sup>For 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.

## Dividend Yields Around the World



Dividend yields vary considerably in different stock markets throughout the world. In 1999 in the United States, dividend yields 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 high-tech-dominated Nasdaq. 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*.

Therefore, no one has yet identified a completely unambiguous relationship between distribution level and the cost of equity or firm value.

Here is what the empirical evidence does tell us about distributions. First, the percentage of dividend paying companies has declined during the last 30 years.<sup>7</sup> In 1978, about 66.5% of NYSE, AMEX, and Nasdaq firms paid a dividend. In 1999, only 20.8% paid a dividend. As a percent of net income, the average dividend payout ratio fell from 22.3% in 1974 to 13.8% in 1998. Second, the average repurchase payout as a percent of net income rose from 3.7% to 13.6%, causing the percent of total cash distributions as a percent of net income to remain fairly stable at around 26% to 28%. 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.<sup>8</sup>

While total distributions as a percent of net income has been fairly steady, there is considerable variation in the level and form of payout among individual firms. We take a closer look at stock repurchases later in the chapter, but for now we focus on dividend payments.

Although investors in the aggregate cannot be shown to clearly prefer either higher or lower distribution levels, the evidence does show that individual investors have strong preferences. Evidence also shows that investors prefer stable, predictable dividend payouts (regardless of the payout level), and that they interpret dividend

<sup>7</sup>See Gustavo Grullon and Roni Michaely, "Dividends, Share Repurchases, and the Substitution Hypothesis," *Journal of Finance*, August 2002, pp. 1649–1684; or see 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.

<sup>8</sup>For example, see Harry DeAngelo, Linda DeAngelo, and Douglas J. Skinner, "Are Dividends Disappearing? Dividend Concentration and the Consolidation of Earnings," *Journal of Financial Economics*, 2004, pp. 425–456.

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?

## 18.2 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 off 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, for 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 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 49% payout in 2006, while those favoring growth could invest in the software industry, which paid out only 15% 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 it 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 **clienteles effect**.<sup>9</sup> MM and others have argued that one clientele is as good as another, so the existence



For updates of industry payout ratios, go to <http://yahoo.reuters.com>. After picking a company, select Ratios, then select Dividend.

<sup>9</sup>For example, see R. Richardson Pettit, “Taxes, Transactions Costs and the Clientele Effect of Dividends,” *Journal of Financial Economics*, December 1977, pp. 419–436.

of a clientele effect does not necessarily imply that one dividend policy is better than any other. MM may be wrong, though, 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.

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## 18.3 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, while a dividend cut generally leads to a stock price decline. Some have argued that this indicates that investors prefer dividends to capital gains. However, MM argued differently. They noted the well-established fact that corporations are reluctant to cut dividends, hence 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 an important **information, or signaling, content** in dividend announcements.

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, while others find no significant change in earnings.<sup>10</sup> 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.<sup>11</sup> However, more recent data with larger samples provide mixed evidence.<sup>12</sup> On average, firms that cut dividends have had poor earnings in

<sup>10</sup>See 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.

<sup>11</sup>For 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.

<sup>12</sup>See 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 years directly preceding the cut but have actually improved earnings in subsequent years. Firms that increase dividends have had earnings increases in the years preceding the increase but don't appear to have had subsequent earnings increases. However, they don't have subsequent declines in earnings either, so it appears that the increase in dividends signals 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 since it is difficult to tell whether any stock price changes that follow changes in dividends reflect only signaling effects or both signaling and dividend preferences.

### SELF-TEST

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

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## 18.4 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 interpreted 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 that a company's regular cash dividends should also grow at a steady, predictable rate.<sup>13</sup>

### SELF-TEST

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

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## 18.5 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,

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<sup>13</sup>For 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. 281–294; 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.

and (2) the firm's cash flows really belong to its shareholders, so management should refrain from retaining income unless they can reinvest it 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 10 that internal equity (reinvested earnings) is cheaper than external equity (new common stock issues) because it avoids flotation costs. 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 where 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 since they have many good investment opportunities. Such firms generally distribute little or no cash but enjoy rising earnings and stock prices, thereby attracting investors who prefer capital gains.

As Table 18-1 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; (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:

$$\begin{aligned} \text{Distributions} &= \text{Net income} - \text{Retained earnings needed to} \\ &\quad \text{finance new investments} && \text{(18-1)} \\ &= \text{Net income} - [(\text{Target equity ratio}) \times (\text{Total capital budget})]. \end{aligned}$$

For example, suppose the target equity ratio is 60% and the firm plans to spend \$50 million on capital projects. In that case, it would need  $\$50(0.6) = \$30$  million of common equity. Then, if its net income were \$100 million, its distributions would be  $\$100 - \$30 = \$70$  million. So, if the company had \$100 million of earnings and a capital budget of \$50 million, it would use \$30 million of the retained earnings plus  $\$50 - \$30 = \$20$  million of new debt to finance the capital budget, and this would keep its capital structure on target. Note that the amount of equity needed to finance new investments might exceed the net income; in our example, this would happen if the capital budget were greater than \$166.67 million. In that case, no distributions would be paid, and the company would have to issue new common stock in order to maintain its target capital structure.

Most firms have a target capital structure that calls for at least some debt, so new financing is done partly with debt and partly with equity. As long as the firm

Table 18-1

## Dividend Payouts (July 2006)

Company	Industry	Dividend Payout	Dividend Yield
<b>I. Companies That Pay High Dividends</b>			
WD-40 Company (WDFC)	Household products	46%	2.8%
Empire District Electric (EDE)	Electric utility	130	6.2
Rayonier Inc. (RYN.N)	Forest products	68	5.1
Reynolds American Inc. (RAI)	Tobacco products	67	4.2
Regions Financial Corp. (RF)	Regional banks	60	4.1
Ingles Markets Inc. (IMKTA)	Retail (grocery)	48	4.0
Microsoft Corp (MSFT)	Software and programming	33	1.6
<b>II. Companies That Pay Little or No Dividends</b>			
Tiffany and Company (TIF)	Specialty retail	19%	1.3%
Harley-Davidson Inc. (HDI)	Recreational products	19	1.6
Aaron Rents Inc. (RNT)	Rental and leasing	4	0.3
Delta Air Lines Inc. (DALRQ)	Airline	NM <sup>a</sup>	0
Papa John's Intl. Inc. (PZZA)	Restaurants	0	0

<sup>a</sup>Reported a loss, so its dividend payout ratio is not meaningful.  
Source: <http://yahoo.investor.reuters.com>, July 2006.

finances with the optimal mix of debt and equity, and provided it uses only internally generated equity (retained earnings), then the marginal cost of each new dollar of capital will be minimized. Internally generated equity is available for financing a certain amount of new investment, but beyond that amount, the firm must turn to more expensive new common stock. At the point where new stock must be sold, the cost of equity, and consequently the marginal cost of capital, rises.

To illustrate these points, consider the case of Texas and Western (T&W) Transport Company. T&W's overall composite cost of capital is 10%. However, this cost assumes that all new equity comes from retained earnings. If the company must issue new stock, its cost of capital will be higher. T&W has \$60 million in net income and a target capital structure of 60% equity and 40% debt. Provided that it does not make any cash distributions, T&W could make net investments (investments in addition to asset replacements from depreciation) of \$100 million, consisting of \$60 million from reinvested earnings plus \$40 million of new debt supported by the retained earnings, at a 10% marginal cost of capital. If the capital

Table 18-2

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)	24	42	90
Distributions paid (NI – Required equity)	\$36	\$18	–\$30 <sup>a</sup>
Distribution ratio (Dividend/NI)	60%	30%	0%

<sup>a</sup>With a \$150 million capital budget, T&W would retain all of its earnings and also issue \$30 million of new stock.

budget exceeded \$100 million, the required equity component would exceed net income, which is of course the maximum amount of reinvested earnings. In this case, T&W would have to issue new common stock, thereby pushing its cost of capital above 10%.

At the beginning of its planning period, T&W's financial staff considers all proposed projects for the upcoming period. Independent projects are accepted if their estimated returns exceed the risk-adjusted cost of capital. In choosing among mutually exclusive projects, T&W chooses the project with the highest positive NPV. The capital budget represents the amount of capital that is required to finance all accepted projects. If T&W follows a strict residual distribution policy, we can see from Table 18-2 that there may be changes in the distribution ratio.

If T&W forecasts poor investment opportunities, its estimated capital budget will be only \$40 million. To maintain the target capital structure, 40% of this capital (\$16 million) 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, then distribute the remaining \$36 million to shareholders. Under this scenario, the company's distribution ratio would be  $\$36 \text{ million} / \$60 \text{ million} = 0.6 = 60\%$ .

By 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, the capital budget would be \$150 million, which would require  $0.6(\$150) = \$90$  million of equity. T&W would retain all of its net income (\$60 million), 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.

Since both investment opportunities and earnings will surely vary from year to year, strict adherence to the residual distribution policy would result in unstable distributions. One year the firm might make no distributions because it needed the money to finance good investment opportunities, but the next year it might make a large distribution because investment opportunities were poor and it therefore did not need to retain much. Similarly, fluctuating earnings could also lead to

variable distributions, even if investment opportunities were stable. To this point, we have not said whether distributions should be in the form of dividends, stock repurchases, or some combination. The next sections discuss some specific issues associated with dividend payments and stock repurchases, 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%. 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)

## 18.6 Distributions in the Form of Dividends

This section explains how the volatile distributions implied by the residual model affect the use of dividends as a form of distribution. It also describes some of the institutional features associated with dividend payments.

### Dividends and the Residual Model

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

1. Estimate earnings and investment opportunities, on average, over the next five 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. Then 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 computerized financial forecasting models in conjunction with the residual distribution model as discussed above to help understand the determinants of an optimal dividend policy. Most larger 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 the optimal range.

Some companies set a very low “regular” dividend and then supplement it with an “extra” dividend when times are good. General Motors, Ford, and other

auto companies have followed the **low-regular-dividend-plus-extras policy** in the past. Each company announced a low regular dividend that it was sure could be maintained “through hell or high water,” and stockholders could count on receiving that dividend under all conditions. Then, when times were good and profits and cash flows were high, the companies either paid a specially designated extra dividend or repurchased shares of stock. Investors recognized that the extras might not be maintained in the future, so they did not interpret them as a signal that the companies’ earnings were going up permanently, nor did they take the elimination of the extra as a negative signal.

At times, however, companies must make substantial cuts in dividends in order to conserve cash. In October 2000, facing increasing competition, technology changes, a decline in its bond rating, and a cutoff from the commercial paper market, Xerox Corporation rolled back its quarterly dividend from \$0.20 per share to \$0.05 per share. This was a dividend rate not seen by Xerox shareholders since 1966. In the week prior to the dividend cut, the share price had declined significantly in response to an announcement that there would be a loss for the quarter rather than a modest profit and a warning that a dividend cut was being considered. Xerox took a substantial stock price hit when it conceded that cash flows would not be sufficient to cover the old dividend—the price declined from about \$15 to about \$8. However, some analysts viewed the cut as a positive action that would preserve cash and maintain Xerox’s ability to service its debt.

## Dividend Payment Procedures

Dividends are normally paid quarterly, and, if conditions permit, the dividend is increased once each year. For example, Katz Corporation paid \$0.50 per quarter in 2007, or at an annual rate of \$2.00. In common financial parlance, we say that in 2007 Katz’s *regular quarterly dividend* was \$0.50, and its *annual dividend* was \$2.00. In late 2007, Katz’s board of directors met, reviewed projections for 2008, and decided to keep the 2008 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 November 8—the directors meet and declare the regular dividend, issuing a statement similar to the following: “On November 8, 2007, the directors of Katz Corporation met and declared the regular quarterly dividend of 50 cents per share, payable to holders of record on December 7, payment to be made on January 3, 2008.” For accounting purposes, the declared dividend becomes an actual liability on the declaration date. If a balance sheet were constructed, the amount  $(\$0.50)(\text{Number of shares outstanding})$  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 7, 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 7, then the new owner receives the dividend. However, if notification is received on or after December 8, the previous owner gets the dividend check.
3. *Ex-dividend date.* Suppose Jean Buyer buys 100 shares of stock from John Seller on December 4. 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 2 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 2 days prior to December 7, or December 5:

Dividend goes with stock:	December 4
Ex-dividend date:	December 5
	December 6
Holder-of-record date:	December 7

Therefore, if Buyer is to receive the dividend, she must buy the stock on or before December 4. If she buys it on December 5 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 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 4, it would probably open at about \$30 on December 5.

4. *Payment date*. The company actually mails the checks to the holders of record on January 3, the **payment date**.

### SELF-TEST

Why is the residual model more likely to be 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?

Explain the procedures used to actually pay the dividend.

Why is the ex-dividend date important to investors?

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## 18.7 Distributions through Stock Repurchases

**Stock repurchases**, which occur when a company buys back some of its own outstanding stock, have become an important part of the financial landscape.<sup>14</sup> In fact, large companies have repurchased more shares than they have issued since 1985. Repurchases have also become the preferred method of initiating cash distributions to shareholders. In 1998, 81% of those firms initiating a distribution did so with a stock repurchase instead of a cash dividend, substantially higher than the 27% doing so in 1973.<sup>15</sup> Stock repurchases have also steadily replaced dividends as a form of distribution, with more cash returned to shareholders in repurchases than as dividend payments since 1998. This section discusses stock repurchases and their effect on value.

Three principal situations lead to stock repurchases. First, a company may decide to increase its leverage by issuing debt and using the proceeds to repurchase stock, as we described in Chapter 16. Second, many firms have given their

<sup>14</sup>The 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.

<sup>15</sup>See Gustavo Grullon and David Ikenberry, "What Do We Know about Stock Repurchases?" *Journal of Applied Corporate Finance*, Spring 2000, pp. 31–51.

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 it may simply be that the company is generating more free cash flow than it needs to service its debt.<sup>16</sup>

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.<sup>17</sup> (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 that it will buy up to a specified number of shares within a stated time period (usually about 2 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 15.

## The Effects of Stock Repurchases

Suppose a company has some extra cash, perhaps due to the sale of a division, and it plans to use that cash to repurchase stock.<sup>18</sup> To keep the example simple, we assume the company has no debt. The current stock price,  $P_0$ , is \$20 and the company has 2 million outstanding shares,  $n_0$ , for a total market capitalization of \$40 million. The company has \$5 million in marketable securities (that is, extra cash) from the recent sale of a division. It has no other financial assets.

As described in the corporate valuation model of Chapter 15, the company’s value of operations,  $V_{op}$ , is the present value of its expected future free cash flows, discounted at the WACC.<sup>19</sup> Notice that the repurchase will not affect the FCFs or the WACC, so the repurchase doesn’t affect the value of operations. The total value of the company is the value of operations plus the value of the extra cash. We can find the price per share,  $P_0$ , by dividing the total value by the number of shares outstanding,  $n_0$ :

$$P_0 = \frac{V_{op} + \text{Extra cash}}{n_0}. \quad (18-2)$$

We can easily solve this for the value of operations:  $V_{op} = P_0(n_0) - \text{Extra cash} = \$40 - \$5 = \$35$  million.

Now consider the repurchase.  $P$  is the repurchase price and  $n$  is the number of shares that will be outstanding after the repurchase. We can multiply the

<sup>16</sup>See Benton Gup and Doowoo Nam, “Stock Buybacks, Corporate Performance, and EVA,” *Journal of Applied Corporate Finance*, Spring 2001, pp. 99–110, who show that firms that repurchase stock have a more superior operating performance than 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. Gup and Nam also show that the operating performance increases in the year after the buyback, indicating that the superior performance is sustainable.

<sup>17</sup>Many firms announce their plans to repurchase stock on the open market. For example, a company might announce that it plans to repurchase 4 million shares of stock. Interestingly, companies usually don’t buy back all the shares they announce but instead repurchase only around 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.

<sup>18</sup>See Chapter 16 for a description of a stock repurchase as part of a recapitalization.

<sup>19</sup>The WACC is based on the company’s capital used in operations and does not include any effects due to the extra cash.

unknown repurchase price by the number of shares that are repurchased, and this must equal the extra cash that is being used in the repurchase:

$$P(n_0 - n) = \text{Extra cash.} \quad (18-3)$$

Since the company will have no extra cash after the repurchase, the stock price will be the value of operations divided by the remaining shares of stock:

$$P = \frac{V_{op}}{n}. \quad (18-4)$$

We know the current price ( $P_0$ ), the current number of shares ( $n_0$ ), and the amount of extra cash. This leaves three remaining unknown variables ( $P$ ,  $n$ , and  $V_{op}$ ) and three equations, so we can solve for the unknown variables.<sup>20</sup> The solution shows that  $P = P_0 = \$20$ . In other words, the repurchase itself does not change the stock price. However, the repurchase does change the number of outstanding shares. Rewriting Equation 18-4,

$$n = \frac{V_{op}}{P} = \frac{\$35 \text{ million}}{\$20} = 1.75 \text{ million.} \quad (18-5)$$

As a check, we can see that the total market capitalization before the repurchase was \$40 million, \$5 million was used to repurchase shares, and the total market capitalization after the repurchase is \$35 million =  $P(n) = \$20(1.75 \text{ million})$ . This should make sense, since the repurchase itself transferred \$5 million of corporate assets to the individual shareholders. Notice that the aggregate wealth of the shareholders didn't change. It was \$40 million prior to the repurchase, and it is \$40 million afterward (\$35 million in stock and \$5 million in cash). Notice also that a repurchase of 250,000 shares of stock at a price of \$20 equals the \$5 million in cash used to repurchase the shares.

To summarize, the events leading up to a repurchase (the sale of a division, a recapitalization, or the generation of higher than normal free cash flows) can certainly change the stock price, but the repurchase itself doesn't change the stock price.

## A Tale of Two Cash Distributions: Dividends versus Stock Repurchases

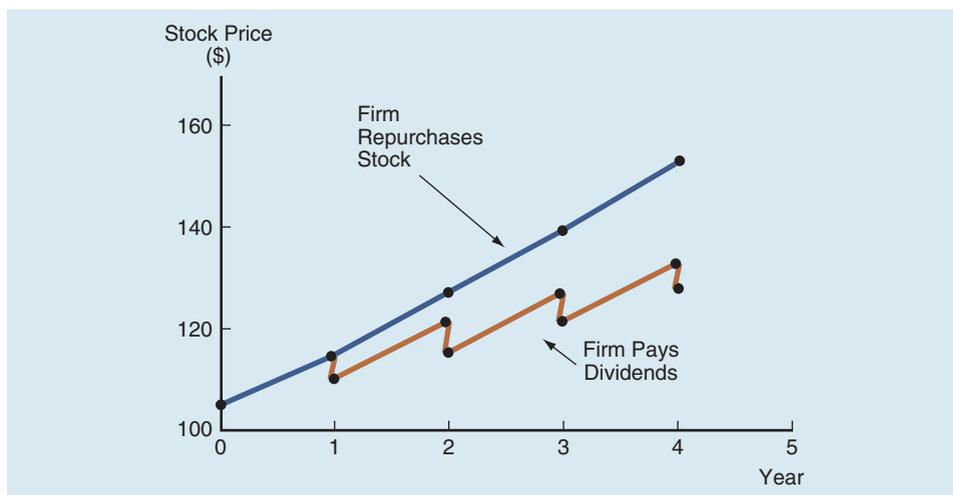
Suppose a company's current earnings are \$400 million, it has 40 million shares of stock, and it pays out 50% of its earnings as dividends. Earnings are expected to grow at a constant rate of 5%, and the cost of equity is 10%. Its current dividend per share is  $0.50(\$400/40) = \$5$ . Using the dividend growth model, the current stock price is

$$P_0 = \frac{D_1}{r_s - g} = \frac{D_0(1 + g)}{r_s - g} = \frac{\$5(1 + 0.05)}{0.10 - 0.05} = \frac{\$5.25}{0.05} = \$105.$$

<sup>20</sup>We can rewrite Equation 18-3 as  $\text{Extra cash} = P(n_0) - P(n)$  and Equation 18-4 as  $V_{op} = P(n)$ . We then substitute these expressions for extra cash and  $V_{op}$  into Equation 18-2 and solve for  $P$ , which results in  $P = P_0$ .

Figure 18-2

## Stock Repurchases versus Cash Dividends



As the year progresses, the stock should climb in price by 10% to \$115.5, but then fall by the amount of the dividend (\$5.25) to \$110.25 when the dividend is paid at Year 1.<sup>21</sup> This process will be repeated each year, as shown in Figure 18-2. Notice that the shareholders experience a 10% total return each year, with 5% as a dividend yield and 5% as a capital gain. Also, the total expected market value of equity after paying the dividend at the end of Year 1 is the price per share multiplied by the number of shares:

$$S_1 = \$110.25(40 \text{ million}) = \$4,410 \text{ million.}$$

Suppose the company decides to use 50% of its earnings to repurchase stock each year instead of paying dividends. To find the current price per share, we discount the total payments to shareholders and divide that by the current number of shares. These payments are exactly equal to the total dividend payments in the original scenario, so the current price is the same for both dividend policies, ignoring any taxes or signaling effects. But what happens when the end of the year arrives? The stock price has grown to \$115.50, just as for the cash dividend policy. But unlike the case of cash dividends in which the stock price falls by the amount of the dividend, the price per share doesn't change when a company repurchases stock, as shown earlier in this section (see Figure 18-2). This means that the total rate of return for a shareholder under the repurchase policy is 10%, with a zero dividend yield and a 10% capital gain.

Year 1 earnings will be  $\$400(1.05) = \$420$  million, and the total amount of cash used to repurchase stock is  $0.50(\$420 \text{ million}) = \$210$  million. Using Equation 18-3, we can solve for the number of shares remaining,  $n$ , after the repurchase at Year 1:

$$\begin{aligned} P(n_0 - n) &= \text{Cash purchase} \\ \$115.5(40 - n) &= \$210 \text{ million} \\ n &= [\$115.5(40) - \$210]/\$115.5 = 38.182 \text{ million.} \end{aligned}$$

<sup>21</sup>This assumes no tax effects.

The total market value of equity at Year 1,  $S_1$ , is the price per share multiplied by the number of shares,

$$S_1 = \$115.5(38.182 \text{ million}) = \$4,410 \text{ million,}$$

which is identical to the market value of equity if the firm pays dividends instead of repurchasing stock.

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), although it does reduce the number of outstanding shares. (3) The stock price for a company that repurchases its stock will climb faster than if it pays a dividend, but the total return to the shareholders will be the same.<sup>22</sup>

### SELF-TEST

Explain how a repurchase changes the number of shares but not the stock price.

A firm has 2 million shares outstanding, with a \$20 per share market price. The firm has \$4 million in extra cash that it plans to use in a stock repurchase; the firm has no other financial investments. What is the firm's value of operations and how many shares will remain after the repurchase? (\$36 million; 1.8 million)

## 18.8 Comparison of Dividends and Repurchases

The advantages of repurchases are 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. The stockholders have a choice when the firm distributes cash by repurchasing stock—they can sell or not sell. Thus, those stockholders who need cash can sell back some of their shares, while those who do not want additional cash 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 managements are reluctant to raise the dividend if the increase cannot be maintained in the future—managements dislike cutting cash dividends because of the negative signal a cut gives. Hence, if the excess cash flow is thought to be only temporary, management may prefer to make the distribution in the form of a stock repurchase rather than to declare an increased cash dividend that cannot be maintained.

<sup>22</sup>For 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; April Klein and James Rosenfeld, "The Impact of Targeted Share Repurchases on the Wealth of Non-Participating Shareholders," *Journal of Financial Research*, Summer 1988, pp. 89–97; 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.

4. Companies can use the residual model to set a *target cash distribution* level, 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, 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 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 can repurchase shares and then use those shares when employees exercise their options. This avoids having to issue new shares and thus diluting earnings. Microsoft and other high-tech companies have used this procedure in recent years.

Disadvantages of repurchases include the following:

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, firms generally announce repurchase programs before embarking on them to avoid potential stockholder suits.
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 are thus better suited for those who need a steady source of income.
2. Because of signaling effects, companies should not vary their dividends—that 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?

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## 18.9 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

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 that is in trouble might distribute most of its assets to stockholders and leave its debtholders out in the cold. (*Liquidating dividends* can be paid out of capital, but they must be indicated as such, and they 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

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,  $r_e$  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 noted above, 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, 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

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What constraints affect dividend policy?

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

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## 18.10 Overview of 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 discussed in Chapter 16, 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 involved, including both issuance and asymmetric information costs, managers prefer to use retained earnings as the primary source of new equity.
2. Dividend changes provide signals about managers' beliefs as to 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 so that there is only a remote chance that 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 stock prices. 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 the optimal capital structure 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. Thus, the actual payout ratio in any year will probably 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 where 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. Further, 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, 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 they can, in times of stress, 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.<sup>23</sup> 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 and thereby reduce the agency costs of free cash flow.

What do executives think? A recent survey indicates that financial executives believe it is extremely important to not reduce dividends, but that it is much less important to initiate dividend payments or to increase dividend payments. In general, they view the cash distribution decision as being much less important than capital budgeting decisions. Managers like 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 they choose how to distribute cash to investors.<sup>24</sup>

<sup>23</sup>For 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.

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

**SELF-TEST**

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

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## 18.11 Stock Splits and Stock Dividends

Stock splits and stock dividends are related to the firm's cash dividend policy. 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 so high that few people could afford to buy a "round lot" of 100 shares. Porter's CFO thought this limited the demand for the stock and thus kept the total market value of the firm below what it would have been if more shares, at a lower price, had been outstanding. To correct this situation, Porter "split its stock," as described in the next section.

### 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 that 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, 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, 1½-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.

### 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, though, that small stock dividends create bookkeeping problems and unnecessary expenses, so firms today use stock splits far more often than stock dividends.<sup>25</sup>

## 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.

1. On average, the price of a company's stock rises shortly after it announces a stock split or dividend.
2. However, these price increases are more the result of the fact that investors take stock splits/dividends as signals of higher future earnings and dividends than of a desire for stock dividends/splits per se. Because only companies whose managements think things look good tend to split their stocks, the announcement of a stock split is taken as a signal that earnings and cash dividends are likely to rise. Thus, the price increases associated with stock splits/dividends are probably the result of signals of favorable prospects for earnings and dividends, not a desire for stock splits/dividends per se.
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, and this, 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 (less than 100 shares).

What do 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

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<sup>25</sup>Accountants treat stock splits and stock dividends somewhat differently. For example, in a two-for-one stock split, the number of shares outstanding is doubled and the par value is halved, and that is about all there is to it. With a stock dividend, a bookkeeping entry is made transferring "retained earnings" to "common stock."

look good.<sup>26</sup> 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 dividends/splits when a firm's prospects are favorable, especially if the price of its stock has gone beyond the normal trading range.<sup>27</sup>

## 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, what will the adjusted EPS and DPS be, and what would you expect the stock price to be? (3,000; \$2; \$1; \$30)

## 18.12 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.<sup>28</sup> Today most larger companies offer DRIPs, and although participation rates vary considerably, 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, 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

<sup>26</sup>For 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; J. Randall Woolridge and Donald R. Chambers, "Reverse Splits and Shareholder Wealth," *Financial Management*, Autumn 1983, pp. 5–15; 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.

<sup>27</sup>It is interesting to note that Berkshire Hathaway, which is controlled by billionaire Warren Buffett, one of the most successful financiers of the 20th century, has never had a stock split, and its stock (BRKa) sold on the NYSE for \$82,800 per share in April 2005. But, in response to investment trusts that were being formed 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.

<sup>28</sup>See Richard H. Pettway and R. Phil Malone, "Automatic Dividend Reinvestment Plans," *Financial Management*, Winter 1973, pp. 11–18, for an old but still excellent discussion of the subject.

many other companies have had new stock plans in effect in recent years, using them 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 rather than through the dividend reinvestment plans.

One interesting aspect of DRIPs is that they are forcing corporations to reexamine 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. Thus, both 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.<sup>29</sup>

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## SELF-TEST

What are dividend reinvestment plans?

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

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## Summary

The key concepts covered in this chapter are listed below:

- **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 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.

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<sup>29</sup>For more on DRIPs, see Pamela P. Peterson, David R. Peterson, and Norman H. Moore, “The Adoption of New-Issue Dividend Reinvestment Plans and Shareholder Wealth,” *The Financial Review*, May 1987, pp. 221–232.

- 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 preference theory** states that because long-term capital gains are subject to somewhat less onerous taxes than dividends, investors prefer to have companies retain earnings rather than pay them out as dividends.
- **Empirical tests** of the three theories **have been inconclusive**. Therefore, academicians cannot tell corporate managers how a given change in dividend policy will affect stock prices and capital costs.
- Dividend policy should take account of the **information content of dividends (signaling)** and the **clienteles effect**. The information content, or signaling, effect relates to the fact that investors regard 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 considered 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.

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## Questions

- (18-1) Define each of the following terms:
- a. Optimal distribution policy
  - b. Dividend irrelevance theory; bird-in-the-hand theory; tax preference theory

- c. Information content, or signaling, hypothesis; clientele effect
  - d. Residual distribution model; extra dividend
  - e. Declaration date; holder-of-record date; ex-dividend date; payment date
  - f. Dividend reinvestment plan (DRIP)
  - g. Stock split; stock dividend; stock repurchase
- (18-2)** How would each of the following changes tend to affect aggregate (that is, the average for all corporations) payout ratios, other things held constant? Explain your answers.
- a. An increase in the personal income tax rate
  - b. A liberalization of depreciation for federal income tax purposes—that is, faster tax write-offs
  - c. A rise in interest rates
  - d. An increase in corporate profits
  - e. A decline in investment opportunities
  - f. Permission for corporations to deduct dividends for tax purposes as they now do interest charges
  - g. 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
- (18-3)** 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.
- (18-4)** One position expressed in the financial literature is that firms set their dividends as a residual after using income to support new investments.
- a. Explain what a residual policy implies (assuming all distributions as dividends), illustrating your answer with a table showing how different investment opportunities could lead to different dividend payout ratios.
  - b. Think back to Chapter 16, in which we considered the relationship between capital structure and the cost of capital. If the WACC-versus-debt-ratio plot was shaped like a sharp V, would this have a different implication for the importance of setting dividends according to the residual policy than if the plot was shaped like a shallow bowl (or a flattened U)?
- (18-5)** Indicate whether the following statements are true or false. If the statement is false, explain why.
- a. If a firm repurchases its stock in the open market, the shareholders who tender the stock are subject to capital gains taxes.
  - b. If you own 100 shares in a company's stock and the company's stock splits 2-for-1, you will own 200 shares in the company following the split.
  - c. Some dividend reinvestment plans increase the amount of equity capital available to the firm.
  - d. The Tax Code encourages companies to pay a large percentage of their net income in the form of dividends.
  - e. If your company has established a clientele of investors who prefer large dividends, the company is unlikely to adopt a residual dividend policy.
  - f. If a firm follows a residual dividend policy, holding all else constant, its dividend payout will tend to rise whenever the firm's investment opportunities improve.

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## Self-Test Problem Solution Appears in Appendix A

**(ST-1)**  
Alternative Dividend  
Payouts

Components Manufacturing Corporation (CMC) has an all-common-equity capital structure. It has 200,000 shares of \$2 par value common stock outstanding. When CMC's founder, who was also its research director and most successful inventor, retired unexpectedly to the South Pacific in late 2007, CMC was left suddenly and permanently with materially lower growth expectations and relatively few attractive new investment opportunities. Unfortunately, there was no way to replace the founder's contributions to the firm. Previously, CMC found it necessary to plow back most of its earnings to finance growth, which averaged 12% per year. Future growth at a 5% rate is considered realistic, but that level would call for an increase in the dividend payout. Further, it now appears that new investment projects with at least the 14% rate of return required by CMC's stockholders ( $r_s = 14\%$ ) would amount to only \$800,000 for 2008 in comparison to a projected \$2,000,000 of net income. If the existing 20% dividend payout were continued, retained earnings would be \$1.6 million in 2008, but, as noted, investments that yield the 14% cost of capital would amount to only \$800,000.

The one encouraging note is that the high earnings from existing assets are expected to continue, and net income of \$2 million is still expected for 2008. Given the dramatically changed circumstances, CMC's management is reviewing the firm's dividend policy.

- Assuming that the acceptable 2008 investment projects would be financed entirely by earnings retained during the year, calculate DPS in 2008, assuming that CMC uses the residual distribution model and pays all distributions in the form of dividends.
- What payout ratio does your answer to part a imply for 2008?
- If a 60% payout ratio is maintained for the foreseeable future, what is your estimate of the present market price of the common stock? How does this compare with the market price that should have prevailed under the assumptions existing just before the news about the founder's retirement? If the two values of  $P_0$  are different, comment on why.

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## Problems Answers Appear in Appendix B

### Easy Problems 1–5

**(18-1)**  
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 \$3,000,000. If Axel reports net income of \$2,000,000 and it follows a residual distribution model with all distributions as dividends, what will be its dividend payout ratio?

**(18-2)**  
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?

**(18-3)**  
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?

**(18-4)** Stock Repurchase A firm has 10 million shares outstanding, with a \$20 per share market price. The firm has \$25 million in extra cash that it plans to use in a stock repurchase; the firm has no other financial investments. What is the firm's value of operations and how many shares will remain after the repurchase?

**(18-5)** Stock Split Gamma Medical's stock trades at \$90 a share. The company is contemplating a 3-for-2 stock split. Assuming that 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

**(18-6)** 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 2007, net income was \$5 million. How much external equity must Northern Pacific seek at the beginning of 2008 to expand capacity as desired?

**(18-7)** 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?

**(18-8)** 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?

**(18-9)** 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 presented below:

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

**(18-10)** Alternative Dividend Policies In 2007 the Keenan Company paid dividends totaling \$3,600,000 on net income of \$10.8 million. 2007 was a normal year, and for the past 10 years, earnings have grown at a constant rate of 10%. However, in 2008, 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 2008

level of earnings growth—the high 2008 earnings level is attributable to an exceptionally profitable new product line introduced that year—and the company will return to its previous 10% growth rate. Keenan's target debt ratio is 40%.

- a. Calculate Keenan's total dividends for 2008 if it follows each of the following policies:
  - (1) Its 2008 dividend payment is set to force dividends to grow at the long-run growth rate in earnings.
  - (2) It continues the 2007 dividend payout ratio.
  - (3) 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).
  - (4) 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.
- b. Which of the preceding policies would you recommend? Restrict your choices to the ones listed, but justify your answer.
- c. Does a 2008 dividend of \$9,000,000 seem reasonable in view of your answers to parts a and b? If not, should the dividend be higher or lower?

**(18-11)**  
Residual Distribution  
Model

Buena Terra Corporation is reviewing its capital budget for the upcoming year. It has paid a \$3.00 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 1,000,000 shares of common equity outstanding; and its net income is \$8 million. The company forecasts that it would require \$10 million to fund all of its profitable (that is, 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 \$3.00 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 \$3.00 DPS, and maintain a \$10 million capital budget without having to raise new common stock?
- e. Suppose that Buena Terra's management is firmly opposed to cutting the dividend; that is, it wishes to maintain the \$3.00 dividend for the next year. Also assume that the company was committed to funding all profitable projects and was willing to issue more debt (along with the available retained earnings) to help finance the company's capital budget. Assume that 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 \$3.00 DPS. In addition, the company wants to maintain its target capital structure (60% equity, 40% debt), and maintain its \$10 million capital budget. What is the minimum dollar amount of new common stock that the company would have to issue in order to meet each of its objectives?
- g. Now consider the case where Buena Terra's management wants to maintain the \$3.00 DPS and its target capital structure, but it wants to avoid issuing new common stock. The company is willing to cut its capital budget in order to

meet its other objectives. Assuming that the company's projects are divisible, what will be the company's capital budget for the next year?

- h. What actions can a firm that follows the residual distribution policy take when its forecasted retained earnings are less than the retained earnings required to fund its capital budget?



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(18-12)

Build a Model: Residual Distribution Model

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## Spreadsheet Problem

Start with the partial model in the file *FM12 Ch 18 P12 Build a Model.xls* from the textbook's Web site. Rework Problem 18-11, parts a through g, using a spreadsheet model.



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## Cyberproblem

Please go to the textbook's Web site to access any Cyberproblems.

### 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 they own all of the shares. However, SSC has now reached the stage where outside equity capital is necessary if the firm is to achieve its growth targets yet still maintain its target capital structure of 60% equity and 40% debt. 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 that you were recently hired by Pierce Westerfield Carney (PWC), a national consulting firm, which 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 questions.

- a. (1) What is meant by the term "distribution policy"?
- (2) The terms "irrelevance," "bird-in-the-hand," and "tax preference" 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 an \$800,000 capital budget planned for the coming year. You have determined that its present capital structure (60% equity and 40% debt) is optimal, and its net income is forecasted at \$600,000. Use the residual distribution model approach to determine SSC's total dollar distribution. Assume for now that the distribution is in the form of a dividend. Then, explain what would happen if net income were forecasted at \$400,000, or at \$800,000.
    - (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. What are stock repurchases? Discuss the advantages and disadvantages of a firm repurchasing its own shares.
  - e. Describe the series of steps that most firms take in setting dividend policy in practice.
  - f. What are stock splits and stock dividends? What are the advantages and disadvantages of stock splits and stock dividends?
  - g. What is a dividend reinvestment plan (DRIP), and how does it work?
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## Selected Additional Cases

The following cases from Textchoice, Thomson 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 47, "Floral Fragrance, Inc.," Case 20, "Bessemer Steel

Products, Inc.," and Case 80, "The Western Company," which illustrate the dividend policy decision.

Brigham-Buzzard Series:

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