CHAPTER 15

DISTRIBUTIONS TO SHAREHOLDERS: DIVIDENDS AND SHARE REPURCHASES

Microsoft Shifts Gears and Begins to Unload Part of Its Vast Cash Hoard

Microsoft

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

In this chapter we discuss many of the issues that affect firms' cash distribution 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 has long been regarded as the epitome of a growth company, illustrates this tendency. Its sales grew from $786 *million* in 1989 to a projected $39.7 *billion* in 2005, which translates to an annual rate of nearly 28 percent. Much of this growth came from large, long-term investments in new products and technology, and, given its emphasis on growth, it paid no dividends.

However, over time this quintessential growth company has begun to evolve into a mature "cash-cow." Its Windows and Office products have saturated the market, and they help the company regularly produce $1 billion worth of free cash flow each month. As a result, the company reported a staggering $37.6 billion in cash on its balance sheet as of March 31, 2005.

Then Microsoft shifted gears and began paying a significant portion of that cash to shareholders. First, in 2003 it initiated a regular quarterly dividend of 8

cents a share. That regular dividend was doubled in 2004 and doubled again in 2005. More dramatically, in mid-2004 it announced plans to pay a one-time special dividend of $3 a share. All told, in 2004 the company returned $32.62 billion in cash to its shareholders. In addition, it announced plans to repurchase up to $30 billion worth of stock in the open market. These repurchases would return cash to shareholders and also tend to drive up the stock price.

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 percent for most investors. This change obviously made dividends even more attractive to investors, and as we will see in the chapter, it is causing many companies, in addition to Microsoft, to rethink their dividend policies.

Putting Things In Perspective

Successful companies earn income. That income can then be reinvested in operating assets, used to retire debt, or distributed to stockholders. If the decision is made to distribute income to stockholders, three key issues arise: (1) How much should be distributed? (2) Should the distribution be in the form of dividends or should the cash be passed on to shareholders by buying back stock? (3) How stable should the distribution be; that is, should the funds paid out from year to year be stable and dependable, which stockholders like, or be allowed to vary with the firms' cash flows and investment requirements, which might be better from the firm's standpoint? These three issues are the primary focus of this chapter.

15.1 DIVIDENDS VERSUS CAPITAL GAINS: WHAT DO INVESTORS PREFER?

When deciding how much cash to distribute, financial managers must keep in mind that the firm's objective is to maximize shareholder value. Consequently, the **target payout ratio**—defined as the percentage of net income to be paid out as cash dividends—should be based in large part on investors' preferences for dividends versus capital gains: Do investors prefer to receive dividends or to have the firm plow the cash back into the business, which presumably will produce capital gains? This preference can be considered in terms of the constant growth stock valuation model.

Target Payout Ratio
The target percentage of net income paid out as cash dividends.

$$\hat{P}_0 = \frac{D_1}{r_s - g}$$

If the company increases the payout ratio, this raises D_1. This increase in the numerator, taken alone, would cause the stock price to rise. However, if D_1 is raised, then less money will be available for reinvestment, which will cause the expected growth rate to decline and thus lower the stock's price. Therefore, any

Optimal Dividend Policy
The dividend policy that strikes a balance between current dividends and future growth and maximizes the firm's stock price.

change in the payout policy will have two opposing effects, so the **optimal dividend policy** must strike the particular balance between current dividends and future growth that maximizes the stock price. In the following sections we discuss the major theories that have been advanced to explain how investors regard current dividends versus future growth.

Dividend Irrelevance Theory

Dividend Irrelevance Theory
The theory advanced by Professors Merton Miller and Franco Modigliani which stated that a firm's dividend policy has no effect on either its value or its cost of capital.

Professors Merton Miller and Franco Modigliani (MM) advanced the theory that dividend policy has no effect on either the price of a firm's stock or its cost of capital; that is, dividend policy is **irrelevant.**[1] MM developed their theory under a stringent set of assumptions, and under those assumptions, they proved that a firm's value is determined only by its basic earning power and its business risk. In other words, 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. Note, though, MM assumed, among other things, that no taxes are paid on dividends, that stocks can be bought and sold with no transactions costs, and that everyone—investors and managers alike—has the same information regarding firms' future earnings.

Given their assumptions, MM argued that any shareholder can construct his or her own dividend policy. For example, if a firm does not pay dividends, a shareholder who wants a 5 percent dividend can "create" it by selling 5 percent 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. Note, though, that in the real world individual investors who want additional dividends would have to incur transactions costs to sell shares, and investors who do not want dividends would have to first pay taxes on the unwanted dividends and then incur transactions costs to purchase shares with the after-tax dividends. Because taxes and transactions costs certainly exist, dividend policy may well be relevant and investors may prefer policies that help them reduce taxes and transactions costs.

In defense of their theory, MM noted that many stocks are owned by institutional investors who pay no taxes and who can buy and sell stocks with very low transactions costs. For such investors, dividend policy might well be irrelevant, and if these investors dominate the market and represent the "marginal investor," then MM's theory could be valid in spite of its unrealistic assumptions. Note too that for tax-paying investors, the taxes and transactions costs depend on the individual investor's income and how long he or she plans to hold the stock. As a result—when it comes to investors' preferences for dividends, one size doesn't fit all. Next we discuss why some investors prefer dividends whereas others may prefer capital gains.

Reasons Some Investors Prefer Dividends

The principal conclusion of MM's dividend irrelevance theory is that dividend policy does not affect stock prices and thus the required rate of return on equity, r_s. Early critics of MM's theory suggested that investors preferred a sure dividend today to an uncertain future capital gain. 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.[2]

[1] Merton H. Miller and Franco Modigliani, "Dividend Policy, Growth, and the Valuation of Shares," *Journal of Business*, October 1961, pp. 411–433.

[2] 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.

MM disagreed. They argued that r_s is independent of dividend policy, which implies that investors are indifferent between dividends and capital gains, that is, between D_1/P_0 and g. 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 riskiness of the firm's cash flows to investors in the long run is determined by the riskiness of operating cash flows, not by dividend payout policy.

Bird-in-the-Hand Theory
MM's name for the theory that a firm's value will be maximized by setting a high dividend payout ratio.

Keep in mind, however, that MM's theory relied on the assumption that there are no taxes and transactions costs, which means that investors who prefer dividends could simply create their own dividend policy by selling a percentage of their stock each year. In reality, most investors face transactions costs when they sell stock, so investors who are looking for a steady stream of income would logically prefer that companies pay regular dividends. For example, retirees who have accumulated wealth over time and now want yearly income from their investments should prefer dividend-paying stocks.

Reasons Some Investors May Prefer Capital Gains

While dividends reduce transactions costs for investors who are looking for steady income from their investments, dividends would increase transactions costs for other investors who are less interested in income and more interested in saving money for the long-term future. These long-term investors would want to reinvest their dividends, and that would create transactions costs. Given this concern, a number of companies have established dividend reinvestment plans that help investors automatically reinvest their dividends. (We discuss dividend reinvestment plans in Section 15.4 of this chapter.)

In addition, and perhaps more importantly, the Tax Code encourages many individual investors to prefer capital gains to dividends. Prior to 2003, dividends were taxed at the ordinary income tax rate, which went up to 38 percent versus a rate of 20 percent on capital gains. Since 2003, the maximum tax rate on dividends and long-term capital gains has been set at 15 percent. This change lowered the tax disadvantage of dividends, but reinvestment and the accompanying capital gains still have two tax advantages over dividends. First, taxes must be paid on dividends the year they are received, whereas taxes on capital gains are not paid until the stock is sold. Due to time value effects, a dollar of taxes paid in the future has a lower effective cost than a dollar of taxes paid today. Moreover, if a stock is held by someone until he or she dies, there is no capital gains tax at all—the beneficiaries who receive the stock can use the stock's value on the death day as their cost basis, which permits them to completely escape the capital gains tax.

Because of these tax advantages, some investors probably prefer to have companies retain most of their earnings, and those investors might be willing to pay more for low-payout companies than for otherwise similar high-payout companies.

Explain briefly the ideas behind the dividend irrelevance theory.

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

Why did MM refer to the Gordon-Lintner dividend argument as the bird-in-the-hand fallacy?

Why do some investors prefer high-dividend-paying stocks?

Why might other investors prefer low-dividend-paying stocks?

15.2 OTHER DIVIDEND POLICY ISSUES

Before we discuss how dividend policy is set in practice, we need to examine two other issues that affect dividend policy: (1) the *information content*, or *signaling, hypothesis* and (2) the *clientele effect*.

Information Content, or Signaling, Hypothesis

It has been observed that an increase in the dividend is often accompanied by an increase in the stock price, while a dividend cut generally leads to a stock price decline. This observation was used to refute MM's irrelevance theory—their opponents argued that stock price actions after changes in dividend payouts demonstrate that investors prefer dividends to capital gains. However, MM argued differently. They noted that corporations are reluctant to cut dividends, hence that they do not raise dividends unless they anticipate earning more in the future to support the higher dividends. Thus, MM argued that a higher-than-expected dividend increase is a **signal** to investors that the firm's management forecasts good future earnings.[3] Conversely, a dividend reduction, or a smaller-than-expected increase, is a signal that management forecasts poor future earnings. If the MM position is correct, then stock price changes after dividend increases or decreases do not demonstrate a preference for dividends over retained earnings. Rather, price changes simply indicate that dividend announcements have **information,** or **signaling, content** about future earnings.

Signal
An action taken by a firm's management that provides clues to investors about how management views the firm's prospects.

Information Content (Signaling) Hypothesis
The theory that investors regard dividend changes as signals of management's earnings forecasts.

Managers often do have better information about future prospects for dividends than public stockholders, so there is clearly some information content in dividend announcements. However, it is difficult to tell whether the stock price changes that follow increases or decreases in dividends reflect only signaling effects (as MM argue) or both signaling and dividend preference. Still, signaling effects should definitely be considered when a firm is contemplating a change in dividend policy. For example, if a firm has good long-term prospects but also a need for cash to fund current investments, it might be tempted to cut the dividend to increase funds available for investment. However, this action might cause the stock price to decline because the dividend reduction was taken as a signal that management thought future earnings were going to decline, when just the reverse was true. So, managers should consider signaling effects when they set dividend policy.

Clientele Effect

Clienteles
Different groups of stockholders who prefer different dividend payout policies.

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 often want the firm to pay out a high percentage of its earnings. Such investors are frequently in low or even zero tax brackets, so taxes are of little concern. On the other hand, stockholders in their peak-earning years might prefer reinvestment, because they

[3] Stephen Ross has suggested that managers can use capital structure as well as dividends to give signals concerning firm's future prospects. For example, a firm with good earnings prospects can carry more debt than a similar firm with poor earnings prospects. This theory, called *incentive signaling*, rests on the premise that signals with cash-based variables (either debt interest or dividends) cannot be mimicked by unsuccessful firms because such firms do not have the future cash-generating power to maintain the announced interest or dividend payment. Thus, investors are more likely to believe a glowing verbal report when it is accompanied by a dividend increase or a debt-financed expansion program. See Stephen A. Ross, "The Determination of Financial Structure: The Incentive-Signaling Approach," *The Bell Journal of Economics*, Spring 1977, pp. 23–40.

have less need for current investment income and would simply reinvest dividends received, after incurring both income taxes and brokerage costs.

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 would favor the low dividend policy: The less the firm pays out in dividends, the less these stockholders would have to pay in current taxes, and the less trouble and expense they would 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 had an average payout of 61 percent in 2004, while those favoring growth could invest in the software industry, which paid out only 5 percent that same year.

All of this suggests that a **clientele effect** exists, which means that firms have different clienteles, that the clienteles have different preferences, and hence that a dividend policy change might upset the dominant clientele and thus have a negative effect on the stock's price.[4] This suggests that companies should stabilize their dividend policy so as to avoid disrupting their clienteles.

Clientele Effect
The tendency of a firm to attract a set of investors who like its dividend policy.

Define (1) information content and (2) the clientele effect, and explain how they affect dividend policy.

15.3 ESTABLISHING THE DIVIDEND POLICY IN PRACTICE

Investors may or may not prefer dividends to capital gains; however, they almost certainly prefer *predictable* dividends. Given this situation, how should firms set their basic dividend policies? In particular, how should a company establish the specific percentage of earnings it will distribute, the form of this distribution, and the stability of its distributions over time? In this section, we describe how most firms answer these questions.

Setting the Target Payout Ratio: The Residual Dividend Model[5]

When deciding how much cash to distribute to stockholders, two points should be kept in mind: (1) The overriding objective is to maximize shareholder value, and (2) the firm's cash flows really belong to its shareholders, so management

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

[5] The term "payout ratio" can be interpreted in two ways: (1) the conventional way, where the payout ratio means the percentage of net income paid out as cash dividends, or (2) the percentage of net income distributed to stockholders through both dividends and share repurchases. In this section, we assume that no repurchases occur. Increasingly, though, firms are using the residual model to determine "distributions to shareholders" and then making a separate decision as to the form of those distributions. Further, over time an increasing percentage of the distribution has been in the form of share repurchases.

should not retain income unless they can reinvest those earnings at higher rates of return than shareholders could earn themselves. On the other hand, recall from Chapter 10 that internal equity (retained earnings) is cheaper than external equity (new common stock), so if good investments are available, it is better to finance them with retained earnings than with new stock.

When establishing a dividend 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 growth opportunities exist. Such firms typically distribute a large percentage of their cash to shareholders, thereby attracting investor clienteles who prefer high dividends. Other firms generate little or no excess cash but 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.

Over the past few decades, there have been increasing numbers of young, high-growth firms trading on the stock exchanges. A recent study by Eugene Fama and Kenneth French shows that the proportion of firms paying dividends has fallen sharply over this time period. In 1978, 66.5 percent of firms on the major stock exchanges paid dividends. By 1999, that proportion had fallen to 20.8 percent. Fama and French's analysis suggested that part of this decline was due to the changing composition of firms on the exchanges. Their analysis also indicates that this decline is due to the fact that firms of all types have become less likely to pay dividends.[6]

As a result of the 2003 tax changes, which lowered the tax rate on dividends to that on capital gains, many companies initiated or increased their dividend payments. Previously, these companies would have been more inclined to buy back shares. In 2002, only 113 companies raised or initiated dividends; however, in 2003 that number doubled, to 229. As of 2004, 2,000 domestic U.S. companies paid dividends and 356 of the 500 companies in the S&P 500 index paid dividends.[7]

As Table 15-1 suggests, dividend payouts and dividend yields for large corporations vary considerably. Generally, firms in stable, cash-producing industries such as utilities, food, and tobacco pay relatively high dividends, whereas companies in rapidly growing industries such as computer software and biotechnology tend to pay lower dividends. Average dividends also differ significantly across countries. Higher payout ratios in some countries can be partially explained by lower tax rates on earnings distributed as cash dividends relative to applicable rates on reinvested income. This biases the dividend policy toward higher payouts.

Residual Dividend Model
A model in which the dividend paid is set equal to net income minus the amount of retained earnings necessary to finance the firm's optimal capital budget.

For a given firm, the optimal payout ratio is a function of four factors: (1) management's opinion about its 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 dividend model.** Under this model a firm follows these four steps when establishing its target payout 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 retained earnings to meet equity requirements to the extent possible; and (4) it pays dividends only if more earnings are available than are needed to support

[6] Eugene F. Fama and Kenneth R. French, "Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay?" *Journal of Applied Corporate Finance*, Vol. 14, no. 1 (Spring 2001), pp. 67–79; and "Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay?" *Journal of Financial Economics*, Vol. 60 (April 2001), pp. 3–43. The last citation is a longer and more technical version of the first paper cited.

[7] Carla Pasternak, "Get the Most Out of Dividend-Paying Stocks," *High-Yield Investing*, March 8, 2004.

TABLE 15-1 *Dividend Payouts in 2005*

Company	Industry	Dividend Payout	Dividend Yield
I. COMPANIES THAT PAY HIGH DIVIDENDS			
General Motors Corporation	Auto manufacturing	266.67%	5.40%
The Southern Company	Electric utilities	73.04	4.20
Merck & Co. Inc.	Pharmaceuticals	60.56	4.80
Verizon Communications	Telecommunications	54.18	4.70
Bank of America Corporation	Banking	51.15	4.30
II. COMPANIES THAT PAY LITTLE OR NO DIVIDENDS			
Wal-Mart Stores Inc.	Discount retail	24.10%	1.20%
Marriott International Inc.	Lodging	15.97	0.60
Texas Instruments Incorporated	Semiconductor	9.17	0.30
Dell Inc.	Personal computing	0.00	0.00
eBay Inc.	Internet software and services	0.00	0.00
Genentech Inc.	Biotechnology	0.00	0.00

Source: MSN Money Web site, **http://moneycentral.msn.com,** July 18, 2005.

the optimal capital budget. The word *residual* implies "leftover," and the residual policy implies that dividends are paid out of "leftover" earnings.

If a firm rigidly follows the residual dividend policy, then dividends paid in any given year can be expressed in the following equation:

$$\text{Dividends} = \text{Net income} - \text{Retained earnings required to help finance new investments}$$

$$= \text{Net income} - [(\text{Target equity ratio})(\text{Total capital budget})]$$

For example, suppose the company has $100 million of earnings, a target equity ratio of 60 percent, and it plans to spend $50 million on capital projects. In that case, it would need $50(0.6) = $30 million of common equity plus $20 million of new debt to finance the capital budget. That would leave $100 − $30 = $70 million available for dividends, which would result in a 70 percent payout ratio.

Note that the amount of equity needed to finance the capital budget might exceed the net income; in the preceding example, if the capital budget were $100/0.6 = $166.67 million or more, no dividends 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 a firm finances with the optimal mix of debt and equity, and assuming 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 percent. 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 of net income and a target capital structure of 60 percent equity and 40 percent debt. Provided it does not pay any cash dividends, T&W could make net investments (investments in addition to asset replacements from depreciation) of $100 million, consisting of $60 million from retained earnings plus $40 million of new debt supported by the retained earnings, at a 10 percent marginal cost of capital. If the capital budget exceeded $100 million, the required equity component would exceed net income, which is of course the maximum amount of retained earnings. In this case, T&W would have to issue new common stock, thereby pushing its cost of capital above 10 percent.[8]

At the beginning of its planning period, T&W's financial staff considers all proposed projects for the upcoming period. Any independent project is accepted if its estimated IRR exceeds its risk-adjusted cost of capital. In choosing among mutually exclusive projects, the project with the highest positive NPV is accepted. The capital budget represents the amount of capital that is required to finance all accepted projects. If T&W follows a strict residual dividend policy, we can see from Table 15-2 that the estimated capital budget will have a profound effect on its dividend payout ratio. If investment opportunities are poor, the capital budget will be only $40 million. To maintain the target capital structure, 0.6($40) = $24 million must be equity, with the remaining $16 million coming as debt. If T&W followed a strict residual policy, it would therefore pay out $60 − $24 = $36 million as dividends, hence its payout ratio would be $36/$60 = 0.6 = 60%.

If the company's investment opportunities were average, its capital budget would be $70 million. This would require $42 million of equity, so dividends would be $60 − $42 = $18 million, for a payout of $18/$60 = 30%. Finally, if investment opportunities were good, the capital budget would be $150 million, and 0.6($150) = $90 million of equity would be required. Therefore, all of the net income would be retained, dividends would be zero, and the company would have to issue new common stock to maintain the target capital structure.

We see, then, that under the residual model dividends and the payout ratio would vary with investment opportunities. Similar dividend variations would result from fluctuations in earnings. Because investment opportunities and earnings will surely vary from year to year, strict adherence to the residual dividend policy would result in highly unstable dividends. One year the firm might pay zero dividends because it needed the money to finance good investment opportunities, but the next year it might pay a large dividend because investment opportunities were poor and it therefore did not need to retain much. Similarly, fluctuating earnings would also lead to variable dividends, even if investment opportunities were stable. Therefore, following the residual dividend policy would almost certainly lead to fluctuating, unstable dividends. This would not be bad if investors were not bothered by fluctuating dividends, but since investors do prefer stable, dependable dividends, it would not be optimal to follow the residual model in a strict sense. Therefore, firms should

1. Estimate earnings and investment opportunities, on average, over the next five or so years.
2. Use this forecasted information to find the average residual model amount of dividends, and the payout ratio, during the planning period.
3. Then set a target payout policy based on the projected data.

[8] If T&W does not retain all of its earnings, its cost of capital will rise above 10% before its capital budget reaches $100 million. For example, if T&W chose to retain $36 million, its cost of capital would increase once the capital budget exceeded $36/0.6 = $60 million. To see this point, note that a capital budget of $60 million would require $36 million of equity—if the capital budget rose above $60 million, the company's required equity capital would exceed its retained earnings, thereby requiring it to issue new common stock.

TABLE 15-2 *T&W's Dividend Payout Ratio with $60 Million of Net Income When Faced with Different Investment Opportunities (Dollars in Millions)*

	INVESTMENT OPPORTUNITIES		
	Poor	**Average**	**Good**
Capital budget	$40	$70	$150
Net income (NI)	60	60	60
Required equity (0.6 × Capital budget)	24	42	90
Dividends paid (NI − Required equity)	$36	$18	($ 30)[a]
Dividend payout ratio (Dividends/NI)	60%	30%	0%

[a] With a $150 million capital budget, T&W would retain all of its earnings and also issue $30 million of new stock.

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

Most larger companies use the residual dividend model in a conceptual sense, then implement it with a computerized financial forecasting model. 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 then generates 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, and the higher the payout ratio, the greater the required external equity. Most companies use the model to find a dividend payout over the forecast period (generally five years) that will provide sufficient equity to support the capital budget without having to sell new common stock or move the capital structure ratios outside the optimal range. This chapter's *Excel* model includes an illustration of this. In addition, Web Appendix 15A discusses this approach in more detail. The end result might be a memo like the following from the CFO to the chairman of the board:

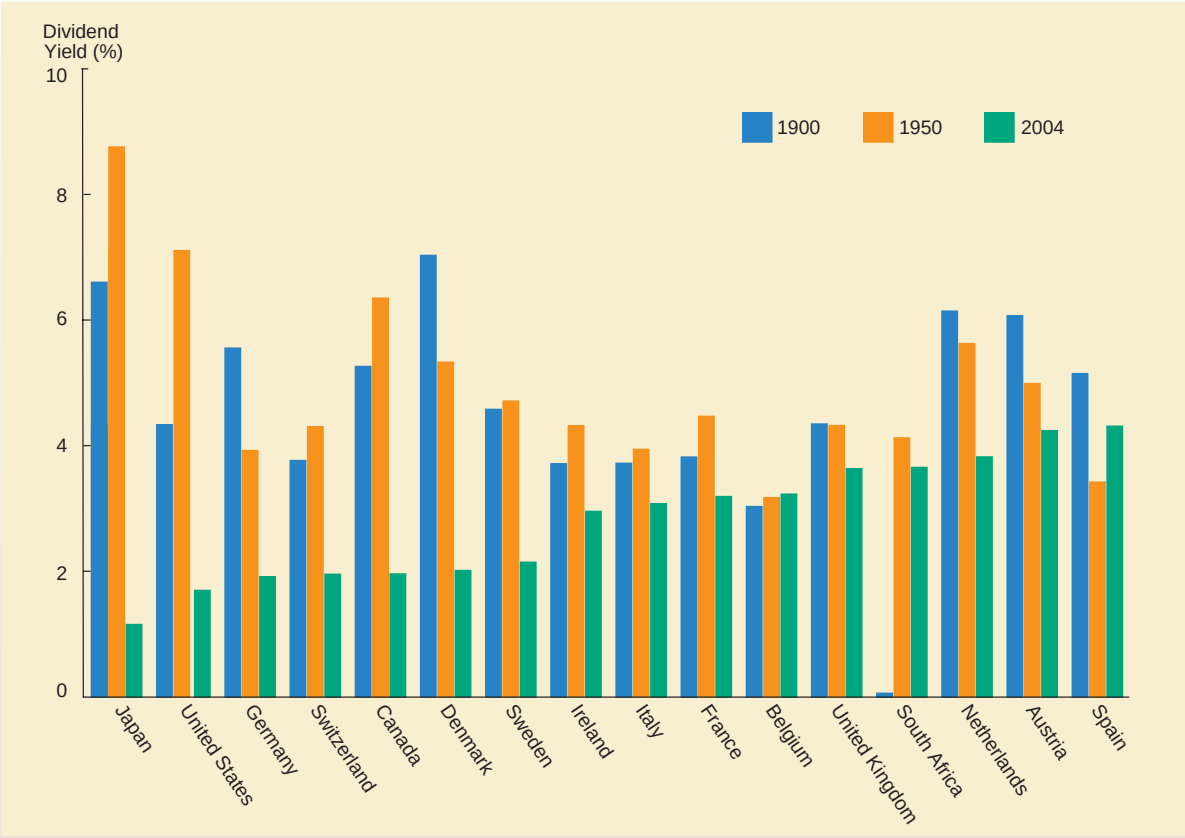
> We forecasted the total market demand for our products, what our share of the market is likely to be, and our required investments in capital assets and working capital. Using this information, we developed projected balance sheets and income statements for the period 2006–2010.
>
> Our 2005 dividends totaled $50 million, or $2 per share. On the basis of projected earnings, cash flows, and capital requirements, we can increase the dividend by 6 percent per year. This would be consistent with a payout ratio of 42 percent, on average, over the forecast period. Any faster dividend growth rate would require us to sell common stock, cut the capital budget, or raise the debt ratio. Any slower growth rate would lead to increases in the common equity ratio. Therefore, I recommend that the Board increase the dividend for 2006 by 6 percent, to $2.12, and that it plan for similar increases in the future.
>
> Events over the next five years will undoubtedly lead to differences between our forecasts and actual results. If and when such events occur, we would want to reexamine our position. However, I am confident that we can meet random cash shortfalls by increasing our borrowings—we have unused debt capacity that gives us flexibility in this regard.
>
> We ran the corporate model under several scenarios. If the economy totally collapses, our earnings will not cover the dividend. However, in all

GLOBAL PERSPECTIVES

Dividend Yields Around the World

Average dividend yields have varied over time, and they also vary considerably in different countries around the world. The accompanying graph, obtained from a recent study by Elroy Dimson, Paul Marsh, and Mike Staunton of the London Business School, shows how the average dividend yield for 16 different countries has changed over the past century. In both 1900 and 1950, dividend yields varied from nation to nation, but the average around the world was about 5 percent. However, by 2004, the yield in most countries had declined significantly, and the average had fallen to about 3 percent. For the United States, the average dividend yield was 4.3 percent in 1900, 7.2 percent in 1950, and 1.7 percent in 2004. Thus, U.S. stocks went from having one of the highest yields in 1900 to the second lowest in 2004.

DIVIDEND YIELDS AROUND THE WORLD: 1900, 1950, AND 2004



Source: Elroy Dimson, Paul Marsh, and Mike Staunton, "Forecasting the Market," London Business School, Working Paper Draft 1, March 10, 2004.

likely scenarios our cash flows would cover the recommended dividend. I know the Board does not want to push the dividend up to a level where we would have to cut it under bad conditions. Our model runs indicate, though, that the $2.12 dividend could be maintained under any reasonable set of forecasts. Only if we increased the dividend to over $3 would we be seriously exposed to the danger of having to reduce it.

I might also note that most analysts' reports are forecasting that our dividends will grow in the 5 to 6 percent range. Thus, if we go to $2.12, we will be at the high end of the range, which should give our stock a boost. With takeover rumors so widespread, getting the stock up a bit would make us all breathe a little easier.

Finally, we considered distributing cash to shareholders through a stock repurchase program. Here we would reduce the dividend payout ratio and use the funds so generated to buy our stock on the open market. Such a program has several advantages, but it would also have drawbacks. I do not recommend that we institute a stock repurchase program at this time. However, if our free cash flows exceed our forecasts, I would recommend that we use these surpluses to buy back stock. Also, I plan to continue looking into a regular repurchase program, and I may recommend such a program in the future.

This company has very stable operations, so it can plan its dividends with a fairly high degree of confidence. Other companies, especially those in cyclical industries, have difficulty maintaining a dividend in bad times that is really too low in good times. Such companies often 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 such a **low-regular-dividend-plus-extras** policy in the past. Each company announced a low regular dividend that it was confident it could maintain "through hell or high water," one that stockholders could count on under all conditions. Then, when times were good and profits and cash flows were high, the company would pay a clearly designated extra dividend. 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 permanently higher, nor did they take the elimination of the extra as a negative signal.

Low-Regular-Dividend-Plus-Extras
The policy of announcing a low, regular dividend that can be maintained no matter what and then, when times are good, paying a designated "extra" dividend.

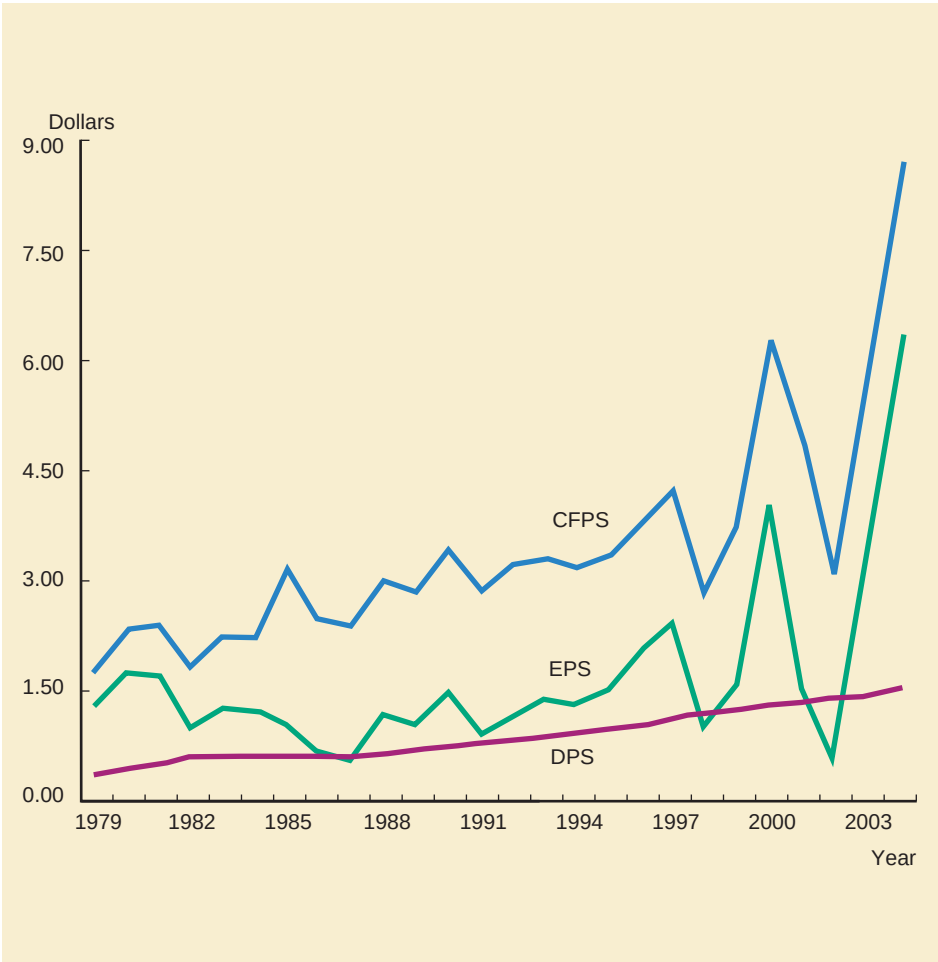
Earnings, Cash Flows, and Dividends

We normally think of earnings as being the primary determinant of dividends, but in reality cash flows are more important. This situation is revealed in Figure 15-1, which gives data for Chevron Corporation from 1979 through 2004. Chevron's dividends increased steadily from 1979 to 1981; during that period both earnings and cash flows were rising, as was the price of oil. After 1981, oil prices declined sharply, pulling earnings down. Cash flows per share (CFPS), though, remained well above the dividend requirement.

Chevron acquired Gulf Oil in 1984, and it borrowed more than $10 billion to finance the acquisition. Interest on the debt hurt earnings immediately after the merger, as did certain write-offs connected with the merger. Further, Chevron's management wanted to pay off new debt as fast as possible. All of this influenced the company's decision to hold the dividend constant from 1982 through 1987. Earnings improved dramatically in 1988, and the dividend has increased more or less steadily since then. Note that the dividend was increased in 1991 in spite of the weak earnings and cash flow resulting from the Persian Gulf War. Then, in October 2001, Chevron acquired Texaco. Earnings in 2001 and 2002 declined due to the decline in crude oil and natural gas prices. On April 13, 2005, Chevron announced plans to acquire Unocal (Union Oil Company of California). The merger is expected to be completed in late 2005. Although the merger appears to be a good fit for Chevron, earnings will still fall over the next couple of years if oil prices decline from their recent highs.

Now look at Columns 4 and 6, which show payout ratios based on earnings and on cash flows. The earnings payout is quite volatile—dividends ranged from 25 to 260 percent of earnings. The cash flow payout, on the other hand, is

FIGURE 15-1 *Chevron Corp.: Earnings, Cash Flows, and Dividends, 1979–2004*



much more stable—it ranged from 18 to 47 percent. Further, the correlation between dividends and cash flows was 0.78 versus 0.46 between dividends and earnings. Thus, dividends clearly depend more on cash flows, which reflect the company's ability to pay cash dividends, than on current earnings, which are heavily influenced by accounting practices and which do not necessarily reflect the firm's cash position.

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 2005, or at an annual rate of $2.00. In common financial parlance, we say that in 2005 Katz's *regular quarterly dividend* was $0.50, and its *annual dividend* was $2.00. In late 2005, Katz's board of directors met, reviewed projections for 2006, and decided to keep the 2006 dividend at $2.00. The directors announced the $2 rate, so stockholders could count on receiving it unless the company experienced unanticipated operating problems.

Declaration Date
The date on which a firm's directors issue a statement declaring a dividend.

The actual payment procedure is as follows:

1. *Declaration date.* On the **declaration date**—say, November 8—the directors meet and declare the regular dividend, issuing a statement similar to the fol-

FIGURE 15-1 *continued*

Year (1)	Dividends per Share (2)	Earnings per Share (3)	Earnings Payout (4)	Cash Flow per Share (5)	Cash Flow Payout (6)
1979	$0.36	$1.31	27.78%	$1.82	19.92%
1980	0.45	1.76	25.64	2.32	19.40
1981	0.50	1.74	28.74	2.40	20.83
1982	0.60	1.01	59.55	1.84	32.61
1983	0.60	1.29	46.60	2.23	26.91
1984	0.60	1.24	48.58	2.25	26.67
1985	0.60	1.05	57.28	3.19	18.81
1986	0.60	0.66	91.25	2.47	24.29
1987	0.60	0.53	112.68	2.37	25.32
1988	0.64	1.22	52.47	2.99	21.32
1989	0.70	1.04	67.31	2.83	24.73
1990	0.74	1.51	49.01	3.44	21.51
1991	0.81	0.92	88.04	2.82	28.72
1992	0.83	1.18	70.34	3.22	25.78
1993	0.88	1.40	62.86	3.28	26.83
1994	0.93	1.30	71.54	3.16	29.43
1995	0.96	1.51	63.58	3.34	28.74
1996	1.04	2.03	51.23	3.73	27.88
1997	1.14	2.43	46.91	4.18	27.27
1998	1.22	1.02	119.61	2.80	43.57
1999	1.24	1.57	78.98	3.76	32.98
2000	1.30	3.99	32.58	6.26	20.77
2001	1.33	1.55	85.81	4.88	27.25
2002	1.40	0.54	259.26	2.98	46.98
2003	1.43	3.48	41.09	5.90	24.24
2004	1.54	6.28	24.52	8.67	17.76

Note: For consistency, data have been adjusted for two-for-one splits in 1994 and 2004.

Source: Adapted from *Value Line Investment Survey*, various issues.

lowing: "On November 8, 2005, the directors of Katz Corporation met and declared the regular quarterly dividend of 50 cents per share, payable to holders of record at the close of business on December 8, payment to be made on January 3, 2006." For accounting purposes, the declared dividend becomes an actual liability on the declaration date. If a balance sheet were constructed, the amount ($0.50) × (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 8, 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 8, then the new owner receives the dividend. However, if notification is received on or after December 9, the previous owner receives the dividend check.

Holder-of-Record Date
If the company lists the stockholder as an owner on this date, then the stockholder receives the dividend.

3. *Ex-dividend date*. Suppose Jean Buyer buys 100 shares of stock from John Seller on December 5. Will the company be notified of the transfer in time to list Buyer as the new owner and thus pay the dividend to her? To avoid conflict, the securities industry has set up a convention under which the right to the dividend remains with the stock until two business days prior to the holder-of-record date; on the second day before that date, the right to the dividend no longer goes with the shares. The date when the right to the dividend leaves

Ex-Dividend Date
The date on which the right to the current dividend no longer accompanies a stock; it is usually two business days prior to the holder-of-record date.

the stock is called the **ex-dividend date.** In this case, the ex-dividend date is two days prior to December 8, or December 6:

Dividend goes with stock if it is bought on or before	December 5
Ex-dividend date. Buyer does not receive the dividend	December 6
Buyer does not receive the dividend	December 7
Holder-of-record date; not normally of concern to stockholder	December 8

Therefore, if Buyer is to receive the dividend, she must buy the stock on or before December 5. If she buys it on December 6 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 5, it would probably open at about $30 on December 6.[9]

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

Payment Date
The date on which a firm actually mails dividend checks.

Explain the logic of the residual dividend model, the steps a firm would take to implement it, and why it is more likely to be used to establish a long-run payout target than to set the actual year-by-year payout ratio.

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

Which are more critical to the dividend decision, earnings or cash flow? Explain.

Explain the procedures used to actually pay the dividend.

Why is the ex-dividend date important to investors?

A firm has a capital budget of $30 million, net income of $35 million, and a target capital structure of 45 percent debt and 55 percent equity. If the residual dividend policy were used, what would its dividend payout ratio be? (52.86%)

[9] Tax effects cause the price decline on average to be less than the full amount of the dividend. If you bought Katz's stock on December 5, you would receive the dividend, but you would almost immediately pay 15% of it out in taxes. Thus, you would want to wait until December 6 to buy the stock if you thought you could get it for $0.50 less per share. Your reaction, and that of others, would influence stock prices around dividend payment dates. Here is what would happen:

1. Other things held constant, a stock's price should rise during the quarter, with the daily price increase (for Katz) equal to $0.50/90 = $0.005556. Therefore, if the price started at $30 just after its last ex-dividend date, it would rise to $30.50 on December 5.
2. In the absence of taxes, the stock's price would fall to $30 on December 6 and then start up as the next dividend accrual period began. Thus, over time, if everything else were held constant, the stock's price would follow a sawtooth pattern if it were plotted on a graph.
3. Because of taxes, the stock's price would neither rise by the full amount of the dividend nor fall by the full dividend amount when it goes ex-dividend.
4. The amount of the rise and subsequent fall would be the Dividend $\times$ (1 $-$ T), where generally T = 15%, the tax rate on individual dividends.

See Edwin J. Elton and Martin J. Gruber, "Marginal Stockholder Tax Rates and the Clientele Effect," *Review of Economics and Statistics*, February 1970, pp. 68–74, for an interesting discussion of the subject.

15.4 DIVIDEND REINVESTMENT PLANS

Dividend Reinvestment Plan (DRIP)
A plan that enables a stockholder to automatically reinvest dividends received back into the stock of the paying firm.

During the 1970s, most large companies instituted **dividend reinvestment plans (DRIPs),** whereby stockholders can automatically reinvest their dividends in the stock of the paying corporation.[10] Today most larger companies offer DRIPs, and participation rates vary considerably. More than 1,000 companies offer DRIPS, and this number keeps increasing. 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 versus having the company use the dividends to buy more stock in the corporation for the investor. Under an "old stock" plan, the company gives the money that stockholders who elect to use the DRIP would have received to a bank, which acts as a trustee. The bank then uses the money to purchase 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.

A "new stock" DRIP invests the dividends in newly issued stock, hence these plans raise new capital for the firm. AT&T, Xerox, and many other companies have used new stock plans to raise substantial amounts of equity capital. No fees are charged to stockholders, and some companies have offered stock at discounts of 2 to 5 percent below the actual market price. The companies offer discounts as a trade-off against flotation costs that would have been incurred if the new stock had been issued through investment bankers.

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 served 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. Companies switch from old stock to new stock DRIPs depending on their need for equity capital.

About 40 percent of the companies offering DRIPs have expanded their programs 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, allow participants to invest weekly or monthly rather than on the quarterly dividend schedule. With 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.

[10] 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.

What are dividend reinvestment plans?

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

15.5 SUMMARY OF FACTORS INFLUENCING DIVIDEND POLICY

In earlier sections we described the theories of investor preference for dividends and the potential effects of dividend policy on the value of a firm. We also discussed the residual dividend model for setting a firm's long-run target payout ratio. In this section, we discuss several other factors that affect the dividend decision. These factors may be grouped into four broad categories: (1) constraints on dividend payments, (2) investment opportunities, (3) availability and cost of alternative sources of capital, and (4) effects of dividend policy on r_s. We discuss these factors next.

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. Thus, 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 relevant primarily to privately owned firms.

Investment Opportunities

1. *Number of profitable investment opportunities*. As we saw in our discussion of the residual model, if a firm has a large number of profitable investment opportunities, this will tend to produce a low target payout ratio, and vice versa if the firm has few profitable investment opportunities.
2. *Possibility of accelerating or delaying projects*. The ability to accelerate or postpone projects will permit a firm to adhere more closely to a stable dividend policy.

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 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 especially high 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, 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 its WACC 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.

Effects of Dividend Policy on r_s

The effects of dividend policy on r_s may be considered in terms of four factors: (1) stockholders' desire for current versus future income, (2) the perceived riskiness of dividends versus capital gains, (3) the tax advantage of capital gains over dividends, and (4) the information content of dividends (signaling). We discussed each of these factors earlier, so we only note here that the importance of each factor varies from firm to firm depending on the makeup of its current and possible future stockholders.

It should be apparent that dividend policy decisions are based more on informed judgment than quantitative analysis. Even so, to make rational dividend decisions, financial managers must take account of all the points discussed in the preceding sections.

Identify the four broad sets of factors that affect dividend policy.

What constraints affect dividend policy?

How do investment opportunities affect dividend policy?

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

15.6 STOCK DIVIDENDS AND STOCK SPLITS

Stock dividends were originally used by firms that were short of cash in lieu of regular cash dividends. Today, though, their primary purpose is to increase the number of shares outstanding and thus to lower the stock's price in the market. Stock splits have a similar purpose.

Up-to-date information about changes in stock splits and stock repurchases is now just a few clicks away. A good place to get started is The Online Investor at ***http://www.investhelp.com****. The Online Investor's home page includes recent stock repurchase and stock split announcements at "Buybacks" and "Splits Center."*

Stock dividends and splits can best be explained through an example, and we 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 were also retained each year, causing its earnings per share and the stock price to grow. The company began its life with only a few thousand shares outstanding, and, after some years of growth, each of Porter's shares had a very high EPS and DPS. When a "normal" P/E ratio was applied, the resulting market price was so high that few people could afford to buy a "round lot" of 100 shares. This limited demand for the stock and thus kept the firm's total market value 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 price/earnings ratio, hence 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 two-for-one **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 they were 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 two-for-one, three-for-one, one-and-a-half-for-one, or in any other way.[11]

Stock Split
An action taken by a firm to increase the number of shares outstanding, such as doubling the number of shares outstanding by giving each stockholder two new shares for each one formerly held.

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 percent stock dividend, the holder of 100 shares would receive an additional 5 shares (without cost); on a 20 percent 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.

Stock Dividend
A dividend paid in the form of additional shares of stock rather than in cash.

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 percent per year, its stock price would tend to increase at about that same rate, and it would soon be outside the desired trading range. A 10 percent annual stock dividend would maintain the stock price within the optimal trading range. Note, though, that small stock div-

[11] *Reverse splits*, which reduce the shares outstanding, can also be used. For example, a company whose stock sells for $5 might employ a one-for-five reverse split, exchanging one new share for five old ones and raising the value of the shares to about $25, which is within the optimal price range. LTV Corporation did this after several years of losses had driven its stock price below the optimal range.

idends create bookkeeping problems and unnecessary expenses, so firms use stock splits far more often than stock dividends.[12]

Effect on Stock Prices

If a company splits its stock or declares a stock dividend, will this increase the market value of its stock? Several empirical studies have addressed this question. Here is a summary of their findings.[13]

1. On average, the price of a company's stock rises shortly after it announces a stock split or dividend.
2. One reason that stock splits and stock dividends may lead to higher prices is that investors often take stock splits/dividends as signals of higher future earnings. 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 may be the result of a favorable signal for earnings and dividends.
3. If a company announces a stock split or 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. This supports the signaling effect discussed earlier.
4. By creating more shares and lowering the stock price, stock splits may also increase the stock's liquidity. This would tend to increase the firm's value.
5. There is also evidence that stock splits change the mix of shareholders. The proportion of trades made by individual investors tends to increase after a stock split, whereas the proportion of trades made by institutional investors tends to fall. We are not sure how this would affect the stock's value.

What do we conclude from all this? From a pure economic standpoint, stock dividends and splits are just additional pieces of paper. However, they provide management with a relatively low-cost way of signaling that the firm's prospects look good. 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 Chevron, Microsoft, Xerox, 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.[14]

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[12] 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." For example, if a firm had 1,000,000 shares outstanding, if the stock price was $10, and if it wanted to pay a 10 percent stock dividend, then (1) each stockholder would be given one new share of stock for each 10 shares held, and (2) the accounting entries would involve showing 100,000 more shares outstanding and transferring 100,000($10) = $1,000,000 from "retained earnings" to "common stock." The retained earnings transfer limits the size of stock dividends, but that is not important because companies can always split their stock in any way they choose.

[13] See Eugene F. Fama, Lawrence Fisher, Michael C. Jensen, and Richard Roll, "The Adjustment of Stock Prices to New Information," *International Economic Review*, February 1969, pp. 1–21; Mark S. Grinblatt, Ronald M. Masulis, and Sheridan Titman, "The Valuation Effects of Stock Splits and Stock Dividends," *Journal of Financial Economics*, December 1984, pp. 461–490; Ravi Dahr, William N. Goetzmann, Shane Shepherd, and Ning Zhu, "The Impact of Clientele Changes: Evidence from Stock Splits," Working Paper Draft, March 2004; and Thomas E. Copeland, "Liquidity Changes Following Stock Splits," *Journal of Finance*, March 1979, pp. 115–141.

[14] 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 sold on the NYSE for $84,400 per share in July 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.

What are stock dividends and stock splits?

How do stock dividends and splits affect stock prices?

In what situation should a firm pay a stock dividend?

In what situation should a firm split its stock?

Suppose you have 100 common shares of Tillman Industries. The EPS is $4.00, the DPS is $2.00, and the stock sells for $60 per share. Now Tillman announces a two-for-one 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? (200 shares; $2.00; $1.00; probably a little over $30)

15.7 STOCK REPURCHASES

Several years ago, a *Fortune* article entitled "Beating the Market by Buying Back Stock" discussed the fact that during a one-year period, more than 600 major corporations repurchased significant amounts of their own stocks. It also gave illustrations of some specific companies' repurchase programs and the effects of these programs on stock prices. The article's conclusion was that "buybacks have made a mint for shareholders who stay with the companies carrying them out."

More recently, as we noted in the opening vignette, Microsoft announced plans to establish a dividend and to repurchase shares of its common stock. As we see in the box entitled, "Stock Repurchases Soar in 2004," Microsoft's recent actions are part of a larger trend in which many leading companies have repurchased stock. How do stock repurchase programs work, and why have they become so prevalent over the past several years? We discuss these questions in the remainder of this section.

Stock Repurchase
A transaction in which a firm buys back shares of its own stock, thereby decreasing shares outstanding, increasing EPS, and, often, increasing the stock price.

There are three principal types of **stock repurchases**: (1) situations where the firm has cash available for distribution to its stockholders, and it distributes this cash by repurchasing shares rather than by paying cash dividends; (2) situations where the firm concludes that its capital structure is too heavily weighted with equity, and it then sells debt and uses the proceeds to buy back its stock; and (3) situations where the firm has issued options to employees and it then uses open market repurchases to obtain stock for use when the options are exercised.

Stock that has been repurchased by a firm is called *treasury stock*. If some of the outstanding stock is repurchased, fewer shares will remain outstanding. Assuming that the repurchase does not adversely affect the firm's future earnings, the earnings per share on the remaining shares will increase, resulting in a higher market price per share. As a result, capital gains will have been substituted for dividends.

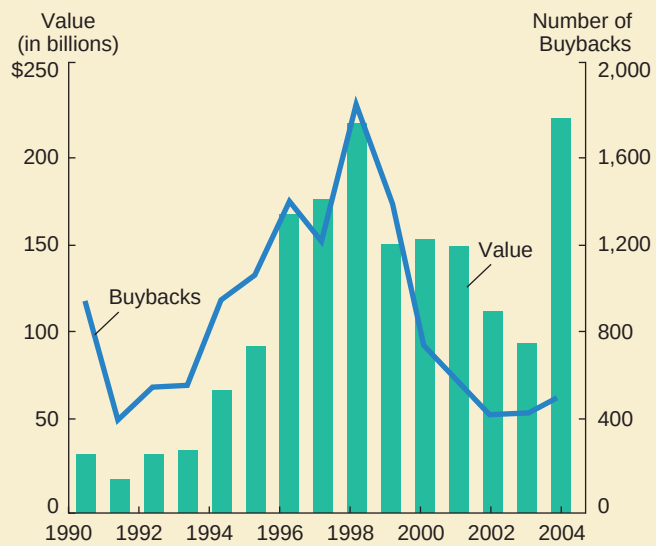
The Effects of Stock Repurchases

Many companies have been repurchasing their stock in recent years. Until the 1980s, most repurchases amounted to a few million dollars, but in 1985, Phillips Petroleum announced plans for the largest repurchase on record at that time—81 million of its shares with a market value of $4.1 billion. Even more dramatic, in 2004, Microsoft announced plans for a $30 billion stock repurchase that will take place over a number of years. Other large repurchases have been made by Procter & Gamble, Dell, Home Depot, Texas Instruments, IBM, Coca-Cola, Tele-

Stock Repurchases Soar in 2004

During 2004, companies announced plans to repurchase $233 billion of common stock. The amount repurchased was more than double the $101 billion repurchased in 2003, and reversed a several year decline in the number of stock buybacks. Over the same time period, there was also a steady increase in corporate dividend payments. Analysts attributed the accelerated activity to the recent surge in corporate cash holdings and increased confidence concerning the health of the economy and financial markets.

The accompanying graph summarizes the recent trends in repurchase activity. Looking ahead, it will be interesting to see if the increased activity in 2004 was a one-year phenomenon or part of a larger trend where companies are directing more of their cash back into the hands of shareholders. In the first quarter of 2005, $61 billion has been allocated to buybacks of shares for S&P 500 companies such as Procter & Gamble, Dell, and Home Depot.



Note: Data include stock repurchases and self-tenders, in which companies buy back shares at a specified price.

Source: Thomson Financial.

Sources: Steven D. Jones, "Moving the Market—Tracking the Numbers, Street Sleuth: Firms Share the Wealth More Often These Days—Share Buyback Programs and Dividend Payments Increased from Last Year," *The Wall Street Journal,* December 31, 2004, p. C3; and "Share Repurchases Surge Among S&P 500 Members; But Buybacks Don't Often Help Shareholders," *SNL IR Advisor,* July 2005.

dyne, Atlantic Richfield, Goodyear, and Xerox. Indeed, since 1985, more shares have been repurchased than issued.

The effects of a repurchase can be illustrated with data on American Development Corporation (ADC). The company expects to earn $4.4 million in 2006, and 50 percent of this amount, or $2.2 million, has been allocated for distribution to common shareholders. There are 1.1 million shares outstanding, and the market price is $20 a share. ADC believes that it can either use the $2.2 million to

repurchase 100,000 of its shares through a tender offer at $22 a share or else pay a cash dividend of $2 a share.[15]

The effect of the repurchase on the EPS and market price per share of the remaining stock can be analyzed in the following way:

1. $$\text{Current EPS} = \frac{\text{Total earnings}}{\text{Number of shares}} = \frac{\$4.4 \text{ million}}{1.1 \text{ million}} = \$4 \text{ per share}$$
2. $$\text{P/E ratio} = \frac{\$20}{\$4} = 5\times$$
3. $$\text{EPS after repurchasing 100,000 shares} = \frac{\$\ 4.4 \text{ million}}{1 \text{ million}} = \$4.40 \text{ per share}$$
4. $$\text{Expected market price after repurchase} = (\text{P/E})(\text{EPS}) = (5)(\$4.40) = \$22 \text{ per share}$$

It should be noted from this example that investors would receive before-tax benefits of $2 per share in any case, either in the form of a $2 cash dividend or a $2 increase in the stock price. This result would occur because we assumed, first, that shares could be repurchased at exactly $22 a share and, second, that the P/E ratio would remain constant. If shares could be bought for less than $22, the operation would be even better for *remaining* stockholders, but the reverse would hold if ADC had to pay more than $22 a share. Furthermore, the P/E ratio might change as a result of the repurchase operation, rising if investors viewed it favorably and falling if they viewed it unfavorably. Some factors that might affect P/E ratios are considered next.

Advantages of Repurchases

The advantages of repurchases are as follows:

1. A repurchase announcement may be viewed as a positive signal by investors because repurchases are often motivated by managements' belief that their firms' shares are undervalued.
2. The stockholders have a choice when the firm distributes cash by repurchasing stock—they can sell or not sell. With a cash dividend, on the other hand, stockholders must accept a dividend payment and pay the tax. 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. From a tax standpoint, a repurchase permits both types of stockholders to get what they want.
3. A repurchase can remove a large block of stock that is "overhanging" the market and keeping the price per share down.

[15] Stock repurchases are generally made in one of three ways: (1) A publicly owned firm can simply buy its own stock through a broker on the open market. (2) It can make a *tender offer*, under which it permits stockholders to send in (that is, "tender") their shares to the firm in exchange for a specified price per share. In this case, it generally indicates that it will buy up to a specified number of shares within a particular time period (usually about two weeks); if more shares are tendered than the company wishes to purchase, 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. If a negotiated purchase is employed, care must be taken to ensure that this one stockholder does not receive preferential treatment over other stockholders or that any preference given can be justified by "sound business reasons." A number of years ago, Texaco's management was sued by stockholders who were unhappy over the company's repurchase of about $600 million of stock from the Bass Brothers at a substantial premium over the market price. The suit charged that Texaco's management, afraid the Bass Brothers would attempt a takeover, used the buyback to get them off its back. Such payments have been dubbed "greenmail."

4. 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 expected to be temporary, management may prefer to make the distribution as a share repurchase rather than to declare an increased cash dividend that cannot be maintained.
5. 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. This gives the company more flexibility in adjusting the total distribution than 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 has much to recommend it, and it is an important reason for the dramatic increase in the volume of share repurchases.
6. Repurchases can be used to produce large-scale changes in capital structure. For example, a number of years ago Consolidated Edison decided that its debt ratio was too low to minimize its WACC. It then borrowed $400 million and used the funds to repurchase shares of its common stock. This resulted in an immediate shift from a nonoptimal to an optimal capital structure.
7. 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 the resulting dilution of earnings. Microsoft and other high-tech companies have used this procedure in recent years.

Disadvantages of Repurchases

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. This is especially true in situations where management has good reason to believe that the stock price is well below its intrinsic value. However, firms generally announce repurchase programs before embarking on them to avoid potential stockholder suits.
3. The corporation may pay too high a price for the repurchased stock, to the disadvantage of remaining stockholders. If its shares are not actively traded, and if the firm seeks to acquire a relatively large amount of its stock, then the price may be bid above its intrinsic value and then fall after the firm ceases its repurchase operations.

Conclusions on Stock Repurchases

When all the pros and cons on stock repurchases 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 but allow 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 pay fluctuating 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 at a level 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 would provide regular, dependable dividends plus additional cash flows to those stockholders who want it.
3. Repurchases are also useful when a firm wants to make a large, rapid 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.

In an earlier edition of this book, we argued that companies ought to be doing more repurchasing and paying out less cash as dividends than they were. Increases in the size and frequency of repurchases in recent years suggest that companies have finally reached this same conclusion.

Explain how repurchases can (1) help stockholders hold down taxes and (2) help firms change their capital structures.

What is treasury stock?

What are the three procedures a firm can use to repurchase its stock?

What are some advantages and disadvantages of stock repurchases?

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

Tying It All Together

Once a company becomes profitable, it must decide what to do with the cash it generates. It may choose to retain cash and use it to purchase additional assets or to repay outstanding debt. Alternatively, it may choose to return cash to shareholders. Keep in mind that every dollar that management chooses to retain is a dollar that shareholders could have received and invested elsewhere. Therefore, managers should retain earnings if and only if they can invest the money within the firm and earn more than stockholders could earn outside the firm. Consequently, high-growth companies with many good projects will tend to retain a high percentage of earnings, whereas mature companies with lots of cash but limited investment opportunities will tend to have generous cash distribution policies.

SELF-TEST QUESTIONS AND PROBLEMS (Solutions Appear in Appendix A)

ST-1 **Key terms** Define each of the following terms:

a. Target payout ratio; optimal dividend policy
b. Dividend irrelevance theory; bird-in-the-hand theory
c. Information content, or signaling, hypothesis; clientele effect; signal; clienteles
d. Residual dividend model
e. Low-regular-dividend-plus-extras policy
f. Declaration date; holder-of-record date; ex-dividend date; payment date
g. Dividend reinvestment plan (DRIP)
h. Stock split; stock dividend
i. Stock repurchase

ST-2 **Alternative dividend policies** Components Manufacturing Corporation (CMC) has an all-common-equity capital structure. It has 200,000 shares of $2 par value common stock outstanding. When CMC's founder, who was also its research director and most successful inventor, retired unexpectedly to the South Pacific in late 2005, CMC was left suddenly and permanently with materially lower growth expectations and relatively few attractive new investment opportunities. Unfortunately, there was no way to replace the founder's contributions to the firm. Previously, CMC found it necessary to plow back most of its earnings to finance growth, which averaged 12 percent per year. Future growth at a 5 percent rate is considered realistic, but that level would call for an increase in the dividend payout. Further, it now appears that new investment projects with at least the 14 percent rate of return required by CMC's stockholders ($r_s = 14\%$) would amount to only $800,000 for 2006 in comparison to a projected $2,000,000 of net income. If the existing 20 percent dividend payout were continued, retained earnings would be $1.6 million in 2006, but, as noted, investments that yield the 14 percent cost of capital would amount to only $800,000.

The one encouraging point is that the high earnings from existing assets are expected to continue, and net income of $2 million is still expected for 2006. Given the dramatically changed circumstances, CMC's management is reviewing the firm's dividend policy.

a. Assuming that the acceptable 2006 investment projects would be financed entirely by earnings retained during the year, calculate DPS in 2006, assuming that CMC uses the residual dividend model.
b. What payout ratio does your answer to part a imply for 2006?
c. If a 60 percent 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.
d. What would happen to the price of the stock if the old 20 percent payout were continued? Assume that if this payout is maintained, the average rate of return on the retained earnings will fall to 7.5 percent and the new growth rate will be

$$\begin{aligned} g &= (1.0 - \text{Payout ratio})(\text{ROE}) \\ &= (1.0 - 0.2)(7.5\%) \\ &= (0.8)(7.5\%) = 6.0\% \end{aligned}$$

QUESTIONS

15-1 Discuss the pros and cons of having the directors formally announce what a firm's dividend policy will be in the future.

15-2 "The cost of retained earnings is less than the cost of new outside equity capital. Consequently, it is totally irrational for a firm to sell a new issue of stock and to pay dividends during the same year." Discuss this statement.

15-3 Would it ever be rational for a firm to borrow money in order to pay dividends? Explain.

15-4 Modigliani and Miller (MM) on the one hand and Gordon and Lintner (GL) on the other have expressed strong views regarding the effect of dividend policy on a firm's cost of capital and value.

a. In essence, what are the MM and GL views regarding the effect of dividend policy on the cost of capital and stock prices?
b. How could MM use the information content, or signaling, hypothesis to counter their opponents' arguments? If you were debating MM, how would you counter them?
c. How could MM use the clientele effect concept to counter their opponents' arguments? If you were debating MM, how would you counter them?

15-5 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.

15-6 One position expressed in the financial literature is that firms set their dividends as a residual after using income to support new investment.

a. Explain what a residual dividend policy implies, illustrating your answer with a table showing how different investment opportunities could lead to different dividend payout ratios.
b. Think back to Chapter 14, where we considered the relationship between capital structure and the cost of capital. If the WACC-versus-debt-ratio plot were 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 were shaped like a shallow bowl (or a flattened U)?

15-7 "Executive salaries have been shown to be more closely correlated to the size of the firm than to its profitability. If a firm's board of directors is controlled by management instead of by outside directors, this might result in the firm's retaining more earnings than can be justified from the stockholders' point of view." Discuss the statement, being sure (a) to discuss the interrelationships among cost of capital, investment opportunities, and new investment and (b) to explain the implied relationship between dividend policy and stock prices.

15-8 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 percent stock dividend or a two-for-one split? Assume that either action is feasible.

15-9 Most firms would like to have their stock selling at a high P/E ratio, and they would also like to have extensive public ownership (many different shareholders). Explain how stock dividends or stock splits may help achieve these goals.

15-10 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.

PROBLEMS

Easy Problems 1–3

15-1 **Residual dividend model** Axel Telecommunications has a target capital structure that consists of 70 percent debt and 30 percent 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 dividend payout policy, what will be its dividend payout ratio?

15-2 **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 market value of its equity, what will be the company's stock price following the stock split?

15-3 **Stock repurchases** Beta Industries has net income of $2,000,000 and it has 1,000,000 shares of common stock outstanding. The company's stock currently trades at $32 a share. Beta is considering a plan in which it will use available cash to repurchase 20 percent of its shares in the open market. The repurchase is expected to have no effect on either net income or the company's P/E ratio. What will be its stock price following the stock repurchase?

Intermediate Problems 4–6

15-4 **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 percent increase over last year's pre-split dividend. What was last year's dividend per share?

15-5 **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 percent with a $10 million investment in plant and machinery. The firm wants to maintain a 40 percent debt-to-total-assets ratio in its capital structure; it also wants to maintain its past dividend policy of distributing 45 percent of last year's net income. In 2005, net income was $5 million. How much external equity must Northern Pacific seek at the beginning of 2006 to expand capacity as desired? Assume the firm uses only debt and common equity in its capital structure.

15-6 **Residual dividend model** 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 here:

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' costs of capital vary because the projects have different levels of risk. The company's optimal capital structure calls for 50 percent debt and 50 percent common equity. Welch expects to have net income of $7,287,500. If Welch establishes its dividends from the residual model, what will be its payout ratio?

Challenging Problems 7–9

15-7 **Dividends** Bowles Sporting Inc. is prepared to report the following income statement (shown in thousands of dollars) for the year 2006.

Sales	$15,200
Operating costs including depreciation	11,900
EBIT	$ 3,300
Interest	300
EBT	$ 3,000
Taxes (40 percent)	1,200
Net income	$ 1,800

Prior to reporting this income statement, the company wants to determine its annual dividend. The company has 500,000 shares of stock outstanding and its stock trades at $48 per share.

a. The company had a 40 percent dividend payout ratio in 2005. If Bowles wants to maintain this payout ratio in 2006, what will be its per-share dividend in 2006?
b. If the company maintains this 40 percent payout ratio, what will be the current dividend yield on the company's stock?
c. The company reported net income of $1.5 million in 2005. Assume that the number of shares outstanding has remained constant. What was the company's per-share dividend in 2005?
d. As an alternative to maintaining the same dividend payout ratio, Bowles is considering maintaining the same per-share dividend in 2006 that it paid in 2005. If it chooses this policy, what will be the company's dividend payout ratio in 2006?
e. Assume that the company is interested in dramatically expanding its operations and that this expansion will require significant amounts of capital. The company would like to avoid transactions costs involved in issuing new equity. Given this scenario, would it make more sense for the company to maintain a constant dividend payout ratio or to maintain the same per-share dividend?

15-8 **Alternative dividend policies** Rubenstein Bros. Clothing is expecting to pay an annual dividend per share of $0.75 out of annual earnings per share of $2.25. Currently, Rubenstein Bros.' stock is selling for $12.50 per share. Adhering to the company's target capital structure, the firm has $10 million in assets, of which 40 percent is funded by debt. Assume that the firm's book value of equity equals its market value. In past years, the firm has earned a return on equity (ROE) of 18 percent, which is expected to continue this year and into the foreseeable future.

a. Based on this information, what long-run growth rate can the firm be expected to maintain? (Hint: g = Retention rate × ROE.)
b. What is the stock's required return?
c. If the firm were to change its dividend policy and pay an annual dividend of $1.50 per share, financial analysts predict that the change in policy will have no effect on the firm's stock price or ROE. Therefore, what must the firm's new expected long-run growth rate and required return be?
d. Suppose instead that the firm has decided to proceed with its original plan of disbursing $0.75 per share to shareholders, but the firm intends to do so in the form of a stock dividend rather than a cash dividend. The firm will allot new shares based on the current stock price of $12.50. In other words, for every $12.50 in dividends due to shareholders, a share of stock will be issued. How large will the stock dividend be relative to the firm's current market capitalization? (Hint: Remember market capitalization = P_0 × number of shares outstanding.)
e. If the plan in part d is implemented, how many new shares of stock will be issued, and by how much will the company's earnings per share be diluted?

15-9 **Alternative dividend policies** In 2005 the Keenan Company paid dividends totaling $3,600,000 on net income of $10.8 million. Note that 2005 was a normal year, and for the past 10 years, earnings have grown at a constant rate of 10 percent. However, in 2006, 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 2006 level of earnings growth—the high 2006 earnings level is attributable to an exceptionally profitable new-product line introduced that year—and the company will return to its previous 10 percent growth rate. Keenan's target capital structure is 40 percent debt and 60 percent equity.

a. Calculate Keenan's total dividends for 2006 if it follows each of the following policies:

   (1) Its 2006 dividend payment is set to force dividends to grow at the long-run growth rate in earnings.
   (2) It continues the 2005 dividend payout ratio.
   (3) It uses a pure residual dividend policy (40 percent of the $8.4 million investment is financed with debt and 60 percent with common equity).
   (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. Assume that investors expect Keenan to pay total dividends of $9,000,000 in 2006 and to have the dividend grow at 10 percent after 2006. The stock's total market value is $180 million. What is the company's cost of equity?
d. What is Keenan's long-run average return on equity? [Hint: g = Retention rate × ROE = (1.0 − Payout rate)(ROE).]
e. Does a 2006 dividend of $9,000,000 seem reasonable in view of your answers to parts c and d? If not, should the dividend be higher or lower?

COMPREHENSIVE/SPREADSHEET PROBLEM

15-10 **Residual dividend 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 percent equity and 40 percent 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 dividend model, how much retained earnings will it need to fund its capital budget?
b. If Buena Terra follows the residual dividend model, 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 effect 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 percent equity and 40 percent 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 dividend policy take when its forecasted retained earnings are less than the retained earnings required to fund its capital budget?

Integrated Case

Southeastern Steel Company

15-11 **Dividend policy** 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 in which outside equity capital is necessary if the firm is to achieve its growth targets yet still maintain its target capital structure of 60 percent equity and 40 percent 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 Arthur Adamson & Company (AA), a national consulting firm, which has been asked to help SSC prepare for its public offering. Martha Millon, the senior AA 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 "dividend policy"?
   (2) Explain briefly the dividend irrelevance theory that was put forward by Modigliani and Miller. What were the key assumptions underlying their theory?
   (3) Discuss why some investors may prefer high-dividend-paying stocks, while other investors prefer stocks that pay low or nonexistent dividends.
b. Discuss (1) the information content, or signaling, hypothesis, (2) the clientele effect, and (3) their effects on dividend 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 percent equity and 40 percent debt) is optimal, and its net income is forecasted at $600,000. Use the residual dividend model approach to determine SSC's total dollar dividend and payout ratio. In the process, explain what the residual dividend model is. 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 payment policy?
   (3) What are the advantages and disadvantages of the residual policy? (Hint: Don't neglect signaling and clientele effects.)
d. What is a dividend reinvestment plan (DRIP), and how does it work?
e. Describe the series of steps that most firms take in setting dividend policy in practice.
f. What are stock repurchases? Discuss the advantages and disadvantages of a firm's repurchasing its own shares.
g. What are stock dividends and stock splits? What are the advantages and disadvantages of stock dividends and stock splits?

Please go to the ThomsonNOW Web site to access the Cyberproblems.

THOMSON ONE Business School Edition

Access the Thomson ONE problems through the ThomsonNOW Web site. Use the Thomson ONE—Business School Edition online database to work this chapter's questions.

Microsoft's Dividend Policy

In this chapter's opening vignette, we discuss Microsoft's decision to establish a dividend payout policy in 2003. Let's find out what has happened to Microsoft's (MSFT) dividend policy since the time of this announcement. We can address this issue by relying on the data that are provided to you in Thomson One.

Discussion Questions

1. To get information about MSFT's dividend policy, enter its ticker and select OVERVIEW>FULL REPORTS>WORLDSCOPE FULL REPORTS>FULL COMPANY REPORT. Click on STOCK & EARNINGS DATA and scroll down to the "Annual Historical Data" section. What has happened to MSFT's dividend per share, dividend yield, and dividend payout over the past 5 years? Do you have any explanations?
2. Compare this with other firms in the same industry. To see how MSFT stacks up against its peers, select PEERS>OVERVIEWS>PER SHARE DATA to get MSFT's peers' last annual dividends. Accessing PEER>OVERVIEWS>ABSOLUTE RANKINGS will give their dividend yields. You can also get this information from the VALUATION COMPARISON in this same section. Has MSFT behaved differently from its peers or have there been industrywide shifts?
3. Refer back to the FULL COMPANY REPORT used in Question 1. Manually, plot earnings and dividends over time. In the text we point out that dividends are often much more stable than earnings. Do you see a similar pattern for MSFT?
4. In the "Interim Financial Data" section of the FULL COMPANY REPORT, identify the dividend declared date, ex date, and pay date. Explain the significance of these dates. Go back to "Overview," and access the "Interactive Price Chart." Can you observe price shifts around these dates? Explain what price shifts you might expect to see.
5. Investors are more concerned with future dividends than historical dividends, so go to ESTIMATES and scroll down to the "Consensus Estimates" section. Click on the "Available Measures" menu to toggle between earnings per share and dividends per share. How do analysts expect MSFT's payout policy to behave in the future?
6. Refer back to the FULL COMPANY REPORT and scroll down to the "5 Yr Annual Balance Sheet" section. Does it appear that MSFT has been repurchasing any stock, or has it been issuing new stock?