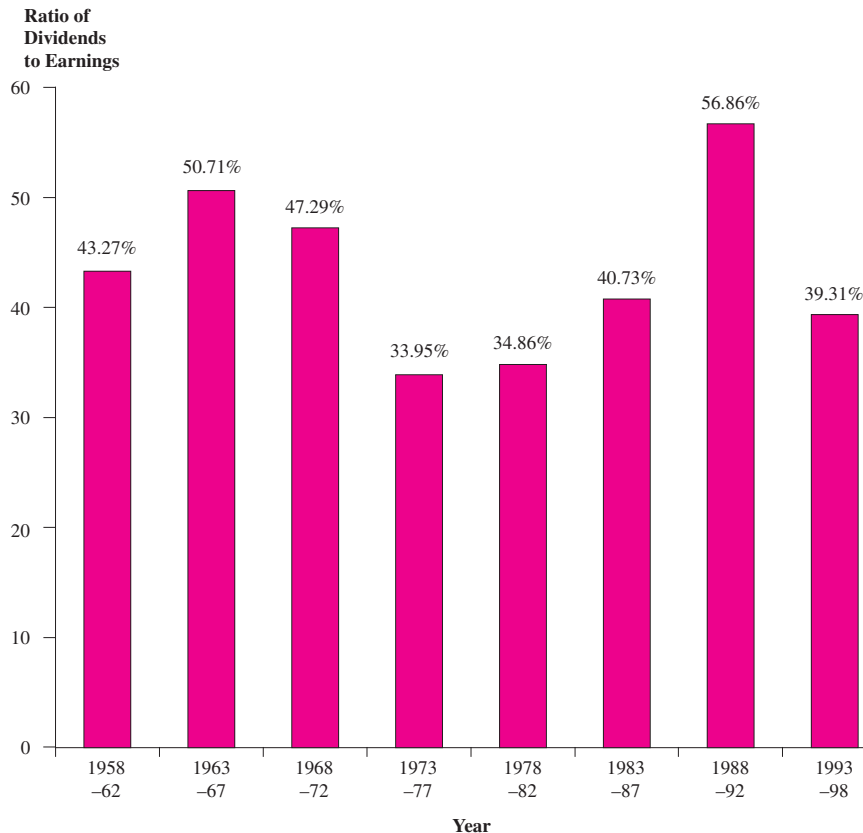


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Part IV Capital Structure and Dividend Policy

### ■ FIGURE 18.7 Ratio of Aggregate Dividends to Aggregate Earnings in the United States



Corporations pay a significant amount of earnings out as dividends.

Source: Table 11 of E. F. Fama and K. R. French, "Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay," *Journal of Financial Economics* (Apr. 2001).

listed on the different exchanges. For the most part, firms of this type do not pay dividends. In addition, the authors argue that the percentage of firms of all types paying dividends has declined in recent years.

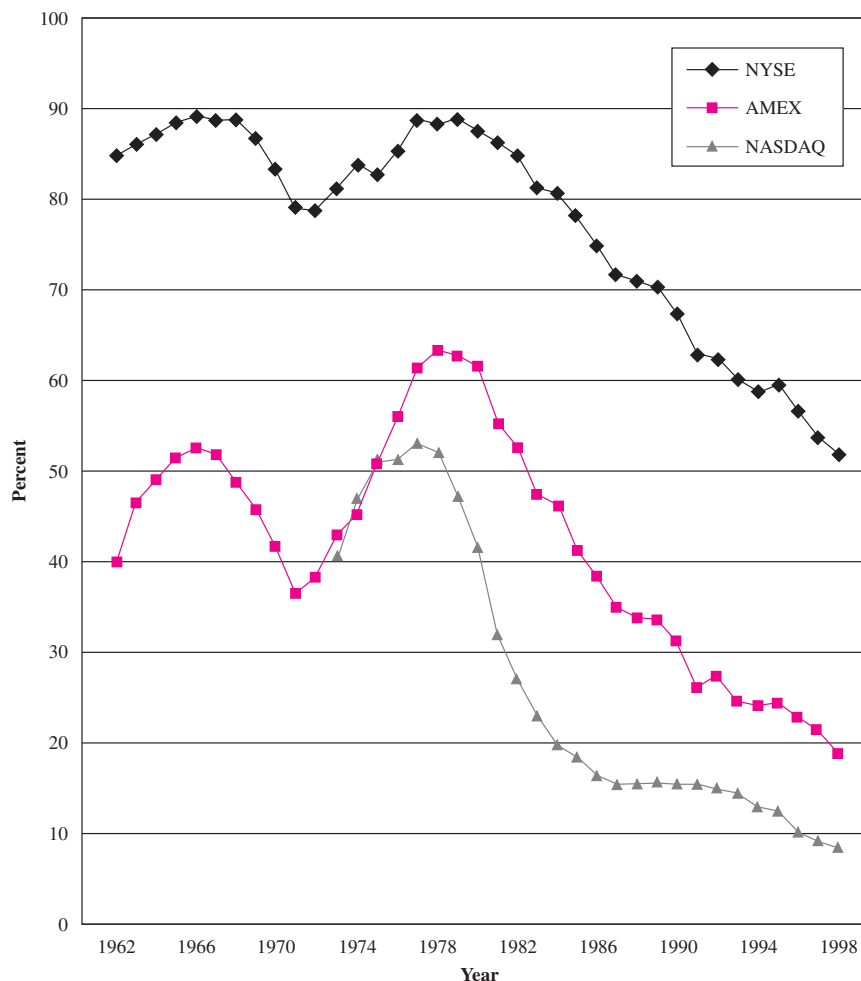
### Corporations Smooth Dividends

In 1956, John Lintner<sup>34</sup> made two important observations concerning dividend policy. First, real-world companies typically set long-run target ratios of dividends to earnings. A firm is likely to set a low target ratio if it has many positive NPV projects relative to available cash flow and a high

<sup>34</sup>J. Lintner, "Distribution and Incomes of Corporations among Dividends, Retained Earnings and Taxes," *American Economic Review* (May 1956).



**FIGURE 18.8** Percent of CRSP Firms Paying Dividends



Source: Figure 5 of E. F. Fama and K. R. French, “Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay,” unpublished paper, Graduate School of Business, University of Chicago (March 1999).

ratio if it has few positive NPV projects. Second, managers know that only part of any change in earnings is likely to be permanent. Because managers need time to assess the permanence of any earnings rise, dividend changes appear to lag earnings changes by a number of periods.

Taken together, Lintner’s observations suggest that two parameters describe dividend policy: the target payout ratio ( $t$ ) and the speed of adjustment of current dividends to the target ( $s$ ). Dividend changes will tend to conform to the following model:

$$\text{Div}_1 - \text{Div}_0 = s \cdot (t\text{EPS}_1 - \text{Div}_0)$$

where  $\text{Div}_1$  and  $\text{Div}_0$  are dividends in the next year and dividends in the current year, respectively.  $\text{EPS}_1$  is earnings per share in the next year.

The limiting cases occur when  $s = 1$  and  $s = 0$ . If  $s = 1$ , the actual change in dividends will be equal to the target change in dividends. Here, the full adjustment occurs immediately.





## IN THEIR OWN WORDS

### Anthony S. Thornley on Why Qualcomm Pays No Dividends

Qualcomm has consistently been able to generate for its shareholders a significantly higher return than the shareholders could get from being paid a dividend. It has no “excess” cash for dividends. If Qualcomm paid a dividend, our shareholders would view it very negatively. Qualcomm would be saying, “We have run out of good profit opportunities.” Our shareholders don’t like

dividends as much as they like the capital gains from Qualcomm’s growth and profitability.

Anthony S. Thornley is Executive Vice President and Chief Financial Officer of Qualcomm. Qualcomm trades on NASDAQ and is part of the Standard & Poor’s 500 Index. Its average annual growth rate in earnings over the past five years has been 65 percent.

### Alan J. Fohrer on Why Edison International Pays Dividends

Utility investors like dividends. Historically, Edison International has paid out considerably more than 50 percent of its earnings as dividends. Investors have viewed utilities such as Edison as defensive stocks where dividends are a cushion against stock market volatility. As a utility, Edison has had limited growth opportunities and has been able to finance their growth out of retained

earnings and new stock. In 1994, Edison reduced its dividend reflecting changes in the utility business and Edison’s increasing participation in higher growth, non-utility business.

Alan J. Fohrer is Executive Vice President and Chief Financial Officer of Edison International.

If  $s = 0$ ,  $\text{Div}_1 = \text{Div}_0$ . In other words, there is no change in dividends at all. Real-world companies can be expected to set  $s$  between 0 and 1.

An implication of Lintner’s model is that the dividends-to-earnings ratio rises when a company begins a period of bad times, and the ratio falls when a company reaches a period of good times. Thus, dividends display less variability than do earnings. In other words, firms smooth dividends.

## Dividends Provide Information to the Market

We previously observed that the price of a firm’s stock frequently rises when its current dividend is increased. Conversely, the price of a firm’s stock can fall significantly when its dividend is cut. In other words, there is information content in dividend changes. For example, consider what happened to Pacific Enterprises a number of years ago. Faced with poor operating results, Pacific Enterprises omitted its regular quarterly dividend. The next day the common stock dropped from 24% to 18%. One reason may be that investors are looking at current dividends for clues concerning the level of future earnings and dividends.

## A Sensible Dividend Policy

The knowledge of the finance profession varies across topic areas. For example, capital-budgeting techniques are both powerful and precise. A single net-present-value equation can accurately determine whether a multimillion dollar project should be accepted or rejected. The capital-asset-pricing model and the arbitrage-pricing model provide empirically validated relationships between expected return and risk.

Conversely, the field has less knowledge of capital-structure policy. Though a number of elegant theories relate firm value to the level of debt, no formula can be used to calculate the firm’s optimum debt-equity ratio. Our profession is forced too frequently to employ



## THE PROS AND CONS OF PAYING DIVIDENDS

### Pros

1. Cash dividends can underscore good results and provide support to stock price.
2. Dividends may attract institutional investors who prefer some return in the form of dividends. A mix of institutional and individual investors may allow a firm to raise capital at lower cost because of the ability of the firm to reach a wider market.
3. Stock price usually increases with the announcement of a new or increased dividend.
4. Dividends absorb excess cash flow and may reduce agency costs that arise from conflicts between management and shareholders.

### Cons

1. Dividends are taxed as ordinary income.
2. Dividends can reduce internal sources of financing. Dividends may force the firm to forgo positive NPV projects or to rely on costly external equity financing.
3. Once established, dividend cuts are hard to make without adversely affecting a firm's stock price.

rules of thumb, such as treating the industry's average ratio as the optimal one for the firm. The field's knowledge of dividend policy is, perhaps, similar to its knowledge of capital-structure policy. We do know that:

1. Firms should avoid having to cut back on positive NPV projects to pay a dividend, with or without personal taxes.
2. Firms should avoid issuing stock to pay a dividend in a world with personal taxes.
3. Repurchases should be considered when there are few positive new investment opportunities and there is a surplus of unneeded cash.

The preceding recommendations suggest that firms with many positive NPV projects relative to available cash flow should have low payout ratios. Firms with fewer positive NPV projects relative to available cash flow might want to consider higher payouts. In addition, there is some benefit to dividend stability, and unnecessary changes in dividend payout are avoided by most firms. However, there is no formula for calculating the optimal dividend-to-earnings ratio.

### CASE STUDY: *How Firms Make the Decision to Pay Dividends: The Case of Apple Computer*

■ ■ ■ ■ ■ Perhaps the most important dividend decisions a firm must make are when to pay dividends for the first time and when to omit them once they have started. We study the case of Apple Computer for clues to why firms pay dividends and later on omit them.

In 1976 two young friends, Stephen Wozniak and Steven Jobs, built the Apple I Computer in Jobs's garage in the "Silicon Valley" area of Northern California and founded Apple Computer, Inc. The first Apple was built and sold without a monitor, or keyboard. The Apple II was introduced in 1977 and was targeted at the home and educational markets as a personal computer. The Apple II was very successful, and by 1980 over 130,000 units had been sold and Apple's revenues were \$117



million. In 1980 Apple “went public” with an initial public offering (IPO) of common stock. Shortly thereafter, Wozniak left Apple and John Scully was hired from Pepsi to become president. Apple did not do well with its Lisa (1983) and Apple III computers, but the Macintosh (1984) was a huge hit—primarily in the home and educational markets. In 1985, after a widely publicized struggle for power with Scully, Jobs left to start another computer company called Next.

In many ways 1986 was a watershed year for Apple. By the end of 1986, Apple had revenues of \$1.9 billion and net income of \$154 million. From 1980 to 1986 its annual growth rate in net income was 53 percent. In 1986, with Mac Plus, Apple launched an aggressive effort to penetrate the expanding office computer market—the domain of its main rival IBM. However, its future prospects were not necessarily bright. Much depended on Apple’s ability to do well in the business market. Competition was very intense in early 1987, and Sun Microsystems slashed the price of its least costly computer workstation to try to stop encroachment by the Apple Mac. However, Apple surprised everyone with large earnings gains in the final quarter of 1987 and by disclosing the fact that the sales on Macintosh models had increased by 41 percent.

To demonstrate its faith in its future, to underscore the recent success of the Mac, and to attract more institutional investors, on April 23, 1987, Apple declared its first ever quarterly dividend of \$.12 per share. It also announced a two-for-one stock split. The stock market reacted very positively to the announcement of Apple’s initial dividend. On the day of the announcements, its stock increased by \$1.75. Over a four-day time span the stock rose by about 8 percent.

The initial dividend turned out to be a positive portent, and the next four years were good years for Apple. At the end of 1990, Apple’s revenues, profits, and capital spending had achieved record highs.

	1986	1990	Growth per Annum from 1986 to 1990	1997	Growth per Annum from 1990 to 1997
Revenues (in millions)	\$1,902	\$5,558	31%	\$7,081	4%
Net income (in millions)	154	475	33	−379	NA
Capital spending (in millions)	66	223	36	63	−16
Stock price	\$ 20	\$ 48	24	\$ 24	−10
Long-term debt (in millions)	0	0	0	950	NA
Dividends per share	0	\$ .45		0	−100

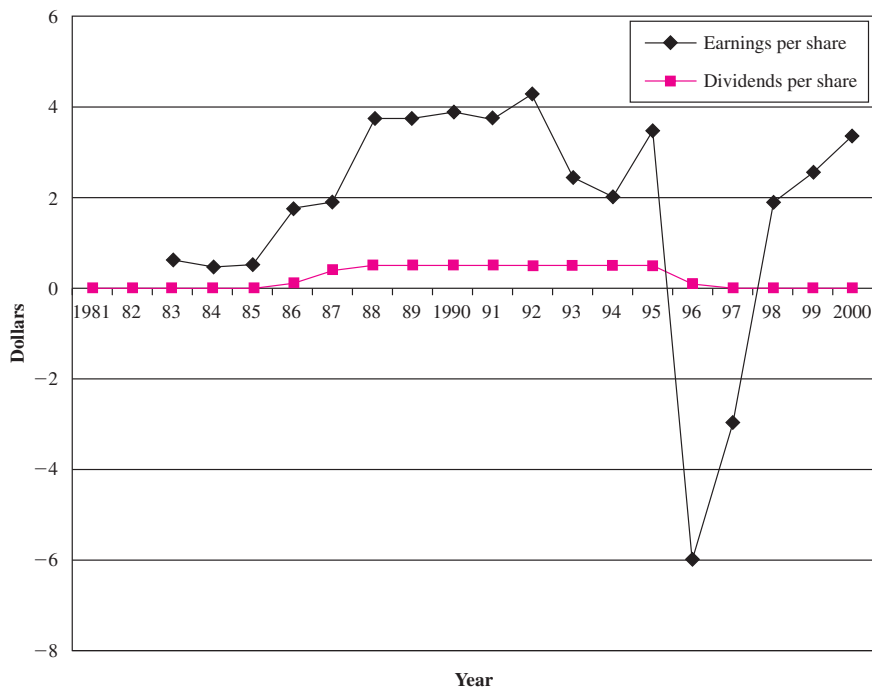
Why do firms like Apple decide to pay dividends? There is no single answer to this question. In Apple’s case, one part of the answer can be traced to Apple’s attempt to “signal” the stock market about the potential growth and positive NPV prospects of its attempt to penetrate the office computer market. The payment of dividends can also “ratify” good results. Apple’s initial dividend served to convince the market that Apple’s success was not temporary.

Why did Apple announce a two-for-one stock split at the same time of its announcement of an initial cash dividend? It is often said that a stock split without a cash dividend is like giving shareholders two five-dollar bills for a \$10 bill. Your wallet feels thicker but you are no better off. However, a stock split accompanied by a cash dividend can amplify the positive signal and pack a more powerful message than would be true otherwise. In addition, firms sometimes split their shares, because they believe a low stock price may attract more individual investors and as a consequence increase liquidity. However, the evidence is not clear on this point, and some firms like Berkshire Hathaway disdain stock splits. (Its stock was recently selling at \$67,000 a share.)

Was Apple’s decision to offer an initial dividend the best decision for the company? This is an impossible question to answer precisely. However, the stock market’s positive reaction and Apple’s subsequent performance suggest it was a good decision. Unfortunately, the years since 1990 have not been as good for Apple. Its revenue growth has moderated and its profits have declined due to a difficult transition from a high-priced, high-quality producer of personal computers to a more competitively priced producer. It experienced losses in 1996 and 1997. Apple’s small market share has become a problem because software developers have been more interested in producing products that could run on Intel-based machines. At the end of 1997, Apple’s stock price was at \$24 per share—lower than in 1990. In Figure 18.9, we plot Apple’s earnings per share and dividends per share from



■ **FIGURE 18.9** Dividend Pattern of Apple Computer from 1983 to 2000



1981 to 1997. As can be seen, dividend changes have tended to lag earnings changes. In 1992, when earnings per share increased from \$3.74 to \$4.33 there was no change in dividend payouts. And when in 1993, earnings per share declined to \$2.45, Apple did not change its dividend payouts. However, Apple's dividend was completely omitted in 1996.

Now we have another question, why did Apple omit its dividend in 1996? The firm had experienced several market setbacks. It was forced to retreat from its much heralded “cloning” strategy. In an important shift in strategic thinking, Apple had started licensing its Mac operating system to other manufacturers. Unfortunately, instead of attracting new buyers, this policy was eroding its own base and sales fell sharply. As a consequence, Apple experienced operating losses of \$742 million in 1996 and \$379 million in 1997.

Looking back at Figure 18.9, it can be seen that Apple's dividends have been more stable over time than its earnings. This is typical of the dividend policy of most firms. Stability cannot be maintained forever in the face of huge operating losses and most companies ultimately slash dividends if the losses continue.

Apple has not yet resumed its dividend, despite the fact that its earnings per share climbed to \$3.45 in 2000. Its recent stock price was \$109—a record high. Current sales appear strong, especially for its iMac consumer product. The market has responded well to its iBook and Power Book portables. A deal with EarthLink could make Apple the exclusive internet access provider bundled with Macs. Now we ask the question: Should Apple resume its dividend payout? ■ ■ ■ ■ ■



## 18.10 SUMMARY AND CONCLUSIONS

1. The dividend decision is important because it determines the payout received by shareholders and the funds retained by the firm for investment. Dividend policy is usually reflected by the current dividend-to-earnings ratio. This is referred to as the payout ratio. Unfortunately, the optimal payout *ratio* cannot be determined quantitatively. Rather, one can only indicate qualitatively what factors lead to low- or high-dividend policies.
2. The dividend policy of the firm is irrelevant in a perfect capital market because the shareholder can effectively undo the firm's dividend strategy. If a shareholder receives a greater dividend than desired, he or she can reinvest the excess. Conversely, if the shareholder receives a smaller dividend than desired, he or she can sell off extra shares of stock. This argument is due to MM and is similar to their homemade-leverage concept, discussed in Chapter 15.
3. Even in a perfect capital market, a firm should not reject positive NPV projects to increase dividend payments.
4. Although the MM argument is useful in introducing the topic of dividends, it ignores many factors in practice. We show that personal taxes and new-issue costs are real-world considerations that favor low dividend payouts. With personal taxes and new-issue costs, the firm should not issue stock to pay a dividend. However, our discussion does not imply that all firms should avoid dividends. Rather, those with high cash flow relative to positive NPV opportunities might pay dividends due to legal constraints and/or a dearth of investment opportunities.
5. The expected return on a security is positively related to its dividend yield in a world with personal taxes. This result suggests that individuals in low or zero tax brackets should consider investing in high-yielding stocks. However, the result does not imply that firms should avoid all dividends.
6. The general consensus among financial analysts is that the tax effect is the strongest argument in favor of low dividends and the preference for current income is the strongest argument in favor of high dividends. Unfortunately, no empirical work has determined which of these two factors dominates, perhaps because the clientele effect argues that dividend policy is quite responsive to the needs of stockholders. For example, if 40 percent of the stockholders prefer low dividends and 60 percent prefer high dividends, approximately 40 percent of companies will have a low dividend payout, and 60 percent will have a high payout. This sharply reduces the impact of an individual firm's dividend policy on its market price.
7. Research has shown that many firms appear to have a long-run target dividend-payout policy. Firms that have few (many) positive NPV projects relative to available cash flow will have high (low) payouts. In addition, firms try to reduce the fluctuations in the level of dividends. There appears to be some value in dividend stability and smoothing.
8. The stock market reacts positively to increases in dividends (or an initial dividend payment) and negatively to decreases in dividends. This suggests that there is information content in dividend payments.

## KEY TERMS

Clientele 515  
Date of payment 497  
Date of record 496  
Declaration date 496  
Ex-dividend date 496

Homemade dividends 501  
Information-content effect 514  
Regular cash dividends 495  
Stock dividend 496  
Stock split 496



## SUGGESTED READINGS

*The breakthrough in the theory of dividend policy is contained in*

Miller, M., and F. Modigliani. “Dividend Policy, Growth and the Valuation of Shares.” *Journal of Business* (October 1961).

*A survey of dividend policy can be found in*

Allen, Franklin, and Roni Michaely. “Dividend Policy.” In R. A. Jarrow, V. Maksimovic, and W. T. Ziemba (eds.), *Handbooks in Operations Research and Management Science: Finance*. Amsterdam: Elsevier Science (1995), 793–838.

*Current trends in dividend policy are examined in*

Fama, Eugene F., and Kenneth R. French. “Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay?” (March 1999). Graduate School of Business, University of Chicago, Unpublished paper.

## QUESTIONS AND PROBLEMS

### The Mechanics of Dividend Payouts

18.1 Identify and describe each of the following dates that are associated with a dividend payment on common stock:

February 16  
February 24  
February 26  
March 14

18.2 On April 5, the board of directors of Capital City Golf Club declared a dividend of \$.75 per share payable on Tuesday, May 4, to shareholders of record as of Tuesday, April 20. Suppose you bought 350 shares of Capital City stock on April 6 for \$8.75 a share. Assume there are no taxes, no transaction costs, and no news between your purchase and sale of the stock. If you were to sell your stocks on April 16, how much would you be able to sell your stock for?

18.3 The Mann Company belongs to a risk class for which the appropriate discount rate is 10 percent. Mann currently has 100,000 outstanding shares selling at \$100 each. The firm is contemplating the declaration of a \$5 dividend at the end of the fiscal year that just began. Answer the following questions based on the Miller and Modigliani model, which is discussed in the text.

- What will be the price of the stock on the ex-dividend date if the dividend is declared?
- What will be the price of the stock at the end of the year if the dividend is not declared?
- If Mann makes \$2 million of new investments at the beginning of the period, earns net income of \$1 million, and pays the dividend at the end of the year, how many shares of new stock must the firm issue to meet its funding needs?
- Is it realistic to use the MM model in the real world to value stock? Why or why not?

18.4 On February 17, the board of directors of Exertainment Corp. declared a dividend of \$1.25 per share payable on March 18 to all holders of record on March 1. All investors are in the 31-percent tax bracket.

- What is the ex-dividend date?
- Ignoring personal taxes, how much should the stock price drop on the ex-dividend date?

### The Benchmark Case: An Illustration of the Irrelevance of Dividend Policy

18.5 The growing-perpetuity model expresses the value of a share of stock as the present value of the expected dividends from that stock. How can you conclude that dividend policy is irrelevant when this model is valid?



- 18.6 Andahl Corporation stock, of which you own 500 shares, will pay a \$2-per-share dividend one year from today. Two years from now Andahl will close its doors; stockholders will receive liquidating dividends of \$17.5375 per share. The required rate of return on Andahl stock is 15 percent.
- What is the current price of Andahl stock?
  - You prefer to receive equal amounts of money in each of the next two years. How will you accomplish this?
- 18.7 The net income of Novis Corporation, which has 10,000 outstanding shares and a 100-percent payout policy, is \$32,000. The expected value of the firm one year hence is \$1,545,600. The appropriate discount rate for Novis is 12 percent.
- What is the current value of the firm?
  - What is the ex-dividend price of Novis's stock if the board follows its current policy?
  - At the dividend declaration meeting, several board members claimed that the dividend is too meager and is probably depressing Novis's price. They proposed that Novis sell enough new shares to finance a \$4.25 dividend.
    - Comment on the claim that the low dividend is depressing the stock price. Support your argument with calculations.
    - If the proposal is adopted, at what price will the new shares sell and how many will be sold?
- 18.8 Gibson Co. has a current period cash flow of \$1.2 million and pays no dividends, and the present value of forecasted future cash flows is \$15 million. It is an all-equity-financed company with 1 million shares outstanding. Assume the effective personal tax rate is zero.
- What is the share price of the Gibson stock?
  - Suppose the board of directors of Gibson Co. announces its plan to pay out 50 percent of its current cash flow as cash dividends to its shareholders. How can Jeff Miller, who owns 1,000 shares of Gibson stock, achieve a zero payout policy on his own?

#### Taxes, Issuances Costs, and Dividends

- 18.9 National Business Machine Co. (NBM) has \$2 million of extra cash. NBM has two choices to make use of this cash. One alternative is to invest the cash in financial assets. The resulted investment income will be paid out as a special dividend at the end of three years. In this case, the firm can invest in Treasury bills yielding 7 percent, or an 11 percent preferred stock. Only 30 percent of the dividends from investing in preferred stock would be subject to corporate taxes. Another alternative is to pay out the cash as dividends and let the shareholders invest on their own in Treasury bills with the same yield. The corporate tax rate is 35 percent, and the individual tax rate is 31 percent. Should the cash be paid today or in three years? Which of the two options generates the highest after-tax income for the shareholders?
- 18.10 The University of Pennsylvania pays no taxes on capital gains, dividend income, or interest payments. Would you expect to find low-dividend, high-growth stock in the university's portfolio? Would you expect to find tax-free municipal bonds in the portfolio?
- 18.11 In their 1970 paper on dividends and taxes, Elton and Gruber reported that the ex-dividend-date drop in a stock's price as a percentage of the dividend should equal the ratio of 1 minus the ordinary income tax rate to 1 minus the capital gains rate; that is,

$$\frac{P_e - P_b}{D} = \frac{1 - T_o}{1 - T_c}$$

where

$P_e$  = The ex-dividend stock price

$P_b$  = The stock price before it trades ex-dividend

$D$  = The amount of the dividend

$T_o$  = The tax rate on ordinary income

$T_c$  = The effective tax rate on capital gains



Chapter 18 Dividend Policy: Why Does It Matter?

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*Note:* As we pointed out in the text, effective tax rate of capital gains is less than the actual tax rate, because their realization may be postponed. Indeed, because investors could postpone their realizations indefinitely, the effective rate could be zero.

- a. If  $T_o = T_c = 0$ , how much will the stock's price fall?
  - b. If  $T_o \neq 0$  and  $T_c = 0$ , how much will it fall?
  - c. Explain the results you found in (a) and (b).
  - d. Do the results of Elton and Gruber's study imply that firms will maximize shareholder wealth by not paying dividends?
- 18.12 After completing its capital spending for the year, Carlson Manufacturing has \$1,000 extra cash. Carlson's managers must choose between investing the cash in Treasury bonds that yield 8 percent or paying the cash out to investors who would invest in the bonds themselves.
- a. If the corporate tax rate is 35 percent, what tax rate on ordinary income would make the investors equally willing to receive the dividend and to let Carlson invest the money?
  - b. Is the answer to part (a) reasonable? Why or why not?
  - c. Suppose the only investment choice is stock that yields 12 percent. What personal tax rate will make the stockholders indifferent to the outcome of Carlson's dividend decision?
  - d. Is this a compelling argument for a low dividend payout ratio? Why or why not?

**Expected Return, Dividends, and Personal Taxes**

- 18.13 A political advisory committee recently recommended wage and price controls to prevent the spiraling inflation that was experienced in the 1970s. Members of the investment community and several labor unions have sent the committee reports that discuss whether or not dividends should be under the controls.

The reports from the investment community demonstrated that the value of a share of stock is equal to the discounted value of its expected dividend stream. Thus, they argued that any legislation that caps dividends will also hold down share prices, thereby increasing companies' costs of capital.

The union reports conceded that dividend policy is important to firms that are trying to control costs. They also felt that dividends are important to stockholders, but only because the dividend is the shareholder's wage. In order to be fair, the unions argued, if the government controls labor's wage, it should also control dividends.

Discuss these arguments and explain the fallacy in them.

- 18.14 Deaton Co. and Grebe, Inc., are in the same risk class. Shareholders expect Deaton to pay a \$4 dividend next year when the stock will sell for \$20. Grebe has a no-dividend policy. Currently, Grebe stock is selling for \$20 per share. Grebe shareholders expect a \$4 capital gain over the next year. Capital gains are not taxed, but dividends are taxed at 25 percent.
- a. What is the current price of Deaton Co. stock?
  - b. If capital gains are also taxed at 25 percent, what is the price of Deaton Co. stock?
  - c. Explain the result you found in part (b).
- 18.15 Payall Inc., Payless Inc., and Paynone Inc. are equally risky. They follow a 100-percent, 50-percent, and zero payout policy, respectively. The expected share prices at dates 0 and 1 for Paynone Inc. are \$100 and \$125. The market prices are set so that their after-tax expected returns are equal. What should the current share prices of Payless Inc. and Payall Inc. be? Assume the marginal personal tax rate on dividends is 25 percent, and the effective tax rate on capital gain is zero.
- 18.16 Suppose the Du Pont Company currently has outstanding series 4.50, nonconvertible preferred stock that pays an annual dividend of \$4.50. Du Pont has also issued 11-percent bonds that will mature in 10 years. The stock and bonds have about the same risk.
- a. The current price of the 4.50 preferred stock is 50%. What is its dividend yield?
  - b. The bonds were sold at par. What is their yield to maturity?



- c. As a financial consultant, you want to know the after-tax yields for each of these investments. The corporate tax rate is 34 percent and the personal tax rate is 28 percent. Compute the after-tax yields on Du Pont's preferred stock and its bonds for each of the following groups:
  - i. General Motors's tax-exempt pension.
  - ii. General Motors Corporation.
- d. Which group do you believe owns the most Du Pont stock?

#### Real-World Factors Favoring a High-Dividend Policy

- 18.17 The bird-in-the-hand argument, which states that a dividend today is safer than the uncertain prospect of a capital gain tomorrow, is often used to justify high dividend-payout ratios. Explain the fallacy behind the argument.
- 18.18 The desire for current income is not a valid explanation for preference for high-current-dividend policy, as investors can always create homemade dividends by selling a portion of their stocks. Comment.
- 18.19 Your aunt is in a high tax bracket and would like to minimize the tax burden of her investment portfolio. She is willing to buy and sell in order to maximize her after-tax returns and she has asked for your advice. What would you suggest she do?

#### A Resolution of Real-World Factors?

- 18.20 In the May 4, 1981, issue of *Fortune*, an article entitled "Fresh Evidence That Dividends Don't Matter" stated, "All told, 115 companies of the 500 [largest industrial corporations] raised their payout every year during the period [1970–1989]. Investors in this . . . group would have fared somewhat better than investors in the 500 as a whole: the median total [annual compound] return of the 115 was 10.7% during the decade versus 9.4% for the 500." Is this evidence that investors prefer dividends to capital gains? Why or why not?
- 18.21 Last month Central Virginia Power Company, which had been having trouble with cost overruns on a nuclear plant that it had been building, announced that it was "temporarily suspending dividend payments due to the cash flow crunch associated with its investment program." When the announcement was made, the company's stock price dropped from 28½ to 25. What do you suspect caused the change in the stock price?
- 18.22 Southern Established Inc. has been paying out regular quarterly dividends ever since 1983. It just slashed the dividend by half in the current fiscal quarter and a more severe cut is to be underway. Southern's stock price dropped from \$35.25 to \$31.75 when the dividend cut was announced. Explain the possible reasons for this price drop.
- 18.23 Cap Henderson owns Neotech stock because its price has been steadily rising over the past few years and he expects its performance to continue. Cap is trying to convince Widow Jones to purchase some Neotech stock, but she is reluctant because Neotech has never paid a dividend. She depends on steady dividends to provide her with income.
  - a. What preferences are these two investors demonstrating?
  - b. What argument should Cap use to convince Widow Jones that Neotech stock is the stock for her?
  - c. Why might Cap's argument not convince Widow Jones?
- 18.24 If the market places the same value on \$1 of dividends as on \$1 of capital gains, then firms with different payout ratios will appeal to different clienteles of investors. One clientele is as good as another; therefore, a firm cannot increase its value by changing its dividend policy. Yet empirical investigations reveal a strong correlation between dividend payout ratios and other firm characteristics. For example, small, rapidly growing firms that have recently gone public almost always have payout ratios that are zero; all earnings are reinvested in the business. Explain this phenomenon if dividend policy is irrelevant.
- 18.25 In spite of the theoretical argument that dividend policy should be irrelevant, the fact remains that many investors like high dividends. If this preference exists, a firm can boost its share price by increasing its dividend-payout ratio. Explain the fallacy in this argument.



**What We Know and Do Not Know about Dividend Policy**

- 18.26 The Sharpe Co. has a period 0 dividend of \$1.25. Its target payout ratio is 40 percent. The period 1 EPS is expected to be \$4.5.
- If the adjustment rate is 0.3 as defined in the Lintner Model, what will be the Sharpe Co. dividend in period 1?
  - If the adjustment rate is 0.6 instead, what is the dividend in period 1?
- 18.27 Empirical research found that there have been significant increases in stock price on the day an initial dividend (i.e., the first time a firm pays a cash dividend) is announced. What does this finding imply about the information content of initial dividends?

## Appendix 18A STOCK DIVIDENDS AND STOCK SPLITS

In addition to the cash dividend, companies may issue stock dividends or split their stock. Since stock dividends and stock splits are quite similar, we treat them together. We begin with examples of these two strategies. Next, their benefits and costs to the firm are discussed.

### Example of a Stock Dividend

Imagine a company with 10,000 shares of stock, each selling at \$60. With a stock dividend of 10 percent, each stockholder receives one additional share for each 10 that he or she originally owned. Therefore the total number of shares outstanding after the dividend is 11,000. Note that the stockholders receive no cash and that each shareholder's percentage of the total outstanding stock remains the same. Thus a case can be made that a stock dividend is of no value to the firm. More will be said on this later.

Imagine that, before the stock dividend, the equity portion of the firm's balance sheet looks like this:

Common stock (par value set at \$12 per share)	\$120,000
Capital in excess of par value	200,000
Retained earnings	180,000
<b>Total owner's equity</b>	<b>\$500,000</b>

A seemingly arbitrary accounting procedure is used to adjust the balance sheet after the stock dividend. Since 1,000 new shares are issued, \$12,000 ( $1,000 \times \$12$ ) is transferred to common stock after the dividend. The market price of \$60 is \$48 above the par value. Thus  $\$48 \times 1,000 = \$48,000$  is shifted to the excess capital account. Because the total value of owner's equity is unchanged by a stock dividend, \$60,000 is withdrawn from retained earnings.

After the stock dividend, owner's equity for the firm is represented as:

Common stock (par value set at \$12 per share)	\$132,000
Capital in excess of par value	248,000
Retained earnings	120,000
<b>Total owner's equity</b>	<b>\$500,000</b>

There is actually a good reason behind this procedure. Accountants fear that stock dividends could be used to impress a naive stockholder, even if the firm is doing poorly. This type of accounting treatment limits this possibility, since a stock dividend can never be greater than retained earnings.



## Example of a Stock Split

A stock split is similar conceptually to a stock dividend. In a three-for-one split, each shareholder receives two additional shares of stock for each one held originally. Again, no cash is paid out, and the percentage of the entire firm that each shareholder owns is unaffected. However, the accounting of splits differs from the accounting of stock dividends. Imagine in our previous example that a three-for-one-split occurs, raising the number of shares to 30,000. The owner's equity after the split is represented as:

Common stock (30,000 shares with par value set at \$4 per share)	\$120,000
Capital in excess of par value	200,000
Retained earnings	180,000
<b>Total owner's equity</b>	<b>\$500,000</b>

Note that for three of the categories the figures on the right are completely unaffected by the split. Only the par value is changed, being reduced here to \$4 per share.

Since stock dividends and stock splits are similar, the dividing point between them is arbitrary.

## Value of Stock Splits and Stock Dividends

The laws of logic tell us that stock splits and stock dividends can (1) leave the firm's value unaffected, (2) increase the value of the firm, or (3) decrease its value. Unfortunately, the issues are complex enough that one cannot easily determine which of the three relationships holds.

## The Benchmark Case

A strong case can be made that stock dividends and splits do not change either the wealth of any shareholder or the wealth of the firm as a whole. For example, imagine a firm with \$100 of earnings and 100 shares outstanding, implying EPS of \$1. With a price-earnings ratio of 10, the price per share is \$10 and the total market value of the firm is \$1,000. Now imagine a 2-for-1 stock split where the number of shares rises to 200 and EPS falls to \$0.50. Given the same P/E ratio of 10, the value of each share of stock is now \$5. However, with twice the number of shares, the value of the entire firm is still \$1,000. The wealth of each stockholder remains the same since the doubling in the number of shares is offset by the halving of the stock price. This result is sensible because (1) total earnings of the firm are held constant, and (2) the percentage of the firm owned by each investor is unchanged.

The same results would hold for a stock dividend. Imagine that the total number of shares is increased by 10 percent to 110. Given that EPS drops to  $\$100/110 = \$0.90909$ , the price per share should fall to \$9.0909. Therefore the total value of the firm should remain at \$1,000. The wealth of each stockholder should not change because, as with a split, the percentage of the firm that each investor owns remains the same.

Although these results are relatively obvious, they are developed in the idealized world of a perfect capital market. The typical financial manager is aware of many real-world complexities, and for that reason the stock split or stock dividend decision is not treated lightly in practice.

## Popular Trading Range

Proponents of stock dividends and stock splits frequently argue that a security has a proper **trading range**. When the security is priced above this level, many investors do not have the funds to buy the common trading unit of 100 shares, called a *round lot*. Although securities can be purchased in *odd-lot* form (fewer than 100 shares), the commissions are more expensive here. Thus firms will split the stock to keep its price in this trading range.



Although this argument is a popular one, its validity has recently been questioned.<sup>35</sup> Mutual funds, pension funds, and other institutions have steadily increased their trading activity since World War II and now handle a sizable percentage of total trading volume. Because these institutions can buy and sell in such huge amounts, they would not regard securities in the popular trading range with any special favor. In fact, whether because of the rise of institutions or some other factor, odd-lot trades comprise a quite small proportion of the market today.

## Costs with Stock Splits or Stock Dividends

The reasoning in the previous paragraph minimizes the benefits of a stock split or dividend. In addition, some authors state that there are costs associated with these financial procedures. For example, Copeland argues that two types of transaction costs rise following a stock split. He further reasons that both of these cost increases ultimately reduce the liquidity of the stock, an unexpected result because a rise in liquidity through a broadening of the stockholder base often is given as a reason for a split.<sup>36</sup>

Copeland finds that brokerage fees, measured in percentages, increase after a split. This result is not surprising, since most published price lists of commissions show that brokerage fees for low-priced securities are a larger percentage of sales price than they are for high-priced securities. For example, commissions are generally higher for 400 shares of a security selling at \$10 than for 100 shares of a security selling at \$40.

The bid-ask spread is the difference between the price at which you sell a security to a dealer and the price at which you buy a security from a dealer. For example, a bid-ask spread of 49 1/2–50 means that an individual can sell a share to the dealer at \$49.50 and buy a share at \$50, implying a round-trip loss to the investor of \$0.50. Copeland finds that the bid-ask spread, expressed as a percentage of sales price, rises after a stock split. This finding is consistent with other work showing that the bid-ask spread is higher in percentage terms for lower-proceed securities.<sup>37</sup> The data suggest that the benefits to the stockholder associated with a stock dividend or stock split are not clearly greater than the costs to him.

## Reverse Split

A less frequently encountered financial maneuver is the **reverse split**. In a one-for-three reverse split, each investor exchanges three old shares for one new share. The par value is tripled in the process. As mentioned previously with stock splits and stock dividends, a case can be made that, in a theoretical model, a reverse split changes nothing substantial about the company.

Given real-world imperfections, three related reasons are cited for reverse splits. First, transactions costs to shareholders are often less after the reverse split. This follows the conclusions of Copeland that brokerage commissions per dollar traded rise as the price of the stock falls. Second, the liquidity and marketability of a company's stock are improved when its price is raised to the "popular trading range." Third, stocks selling below a certain level are not considered "respectable," implying that investors bias downward their estimates of these firms' earnings, cash flow, growth, and stability. Some financial analysts argue that a reverse split can achieve instant respectability.

<sup>35</sup>For example, see T. Copeland, "Liquidity Changes Following Stock Splits," *Journal of Finance* (March 1979).

<sup>36</sup>Although Copeland's empirical work included only stock splits, the same factors should apply to the stock dividend case.

<sup>37</sup>See H. Demsetz, "The Cost of Transacting," *Quarterly Journal of Economics* 82 (February 1968); and H. Stoll, "The Supply of Dealer Services in Securities Markets," *Journal of Finance* 33 (September 1978).



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Part IV Capital Structure and Dividend Policy

CONCEPT  
QUESTIONS  
?

- What is a stock dividend? A stock split?
- What are the values of a stock dividend and a stock split?

## KEY TERMS

Reverse split 531  
Trading range 530

## SUGGESTED READING

*New evidence on how the market reacts to stock splits and stock dividends is in*  
Ranking, G., and Earl Stice. “The Market Reaction to the Choice of Accounting Method for  
Stock Splits and Large Stock Dividends.” *Journal of Financial and Quantitative Analysis*  
(June 1997).



# Long-Term Financing

## PART V

- 19 Issuing Securities to the Public 534
- 20 Long-Term Debt 563
- 21 Leasing 586

**P**ART IV discussed capital structure; we determined the relationship between the firm's debt-equity ratio and the firm's value. The debt we used in Part IV was stylized. In fact, there are many different types of debt. In Part V we discuss how financial managers choose the type of debt that makes the most sense, including straight debt, debt with options, and leasing.

In Chapter 19 we describe the ways firms sell securities to the public. In general, a public issue can be sold as a general cash offer to investors at large, as a privately placed issue with a few institutions, or as a privileged subscription (in the case of equities). We describe the features of these methods and point out some puzzling trends.

In Chapter 20 we describe some basic features of long-term debt. One of the special features of most long-term bonds is that they can be called by the firms before the maturity date. We try to explain why call provisions exist. There are many types of long-term debt, including floating-rate bonds, income bonds, and original-issue discount bonds. We discuss why they exist.

Chapter 21 describes a special form of long-term debt called *leasing*. In general, a rental agreement that lasts for more than one year is a lease. Leases are a source of financing and displace debt in the balance sheet. Many silly reasons are given for leasing, and we present some of them. The major reason for long-term leasing is to lower taxes.