

Understanding Financial Management: A Practical Guide

Problems and Answers

Chapter 2

Dividend Policy

12.1 Dividends and Dividend Policy

1. On July 21, 2006, Simco Corporation declared a \$0.51 quarterly dividend payment with a record date of Friday, August 25, 2006.
 - A. What would be the ex-dividend date?
 - B. If an investor purchased Simco's stock on August 24, 2006, would the investor receive the dividend?
2. Wirtex Inc. has experienced strong earnings over the past year and has \$50 million in excess cash after undertaking all profitable investment projects and paying its regular cash dividends. The board of directors decides to distribute part of this excess cash as a specially designated dividend. What information is this special dividend likely to convey to the market?
3. For the last quarter, Liaz Corporation paid cash dividends of \$0.25 per share. The stock was selling for \$27.50 before the ex-dividend date. If no other events occurred and the capital markets were perfect, what should be the price of the stock on the ex-dividend date? Why?

12.2 The Dividend Puzzle

4. An investor owns 1,000 shares of common stock priced at \$20.20 per share. Assume perfect capital markets.
 - A. The company pays a dividend of \$0.20 per share with which the investor buys additional stock. If the investor buys 10 additional shares and the total value of the common stock remains the same as it was before the dividend payment, how much did the investor pay for each share?
 - B. Now suppose that the company decides not to pay a cash dividend. The investor sells 10 shares at \$20.20 a share to create home-made dividends. What is the total value of the investor's common stock and total wealth before and after selling the 10 shares of stock?

12.3 Factors Influencing the Dividend Decision

5. Assuming each of the following statements characterizes a different company. Holding other factors constant, what is the likely effect of each factor on the firm's dividend payout ratio? That is, is the effect likely to lead to a higher, lower, or no change in the dividend payout ratio? Why?

- A. The majority of the firm's shareholders are wealthy, high-tax bracket individual investors.
- B. The company has many attractive investment opportunities available.
- C. The company is in the early versus later stages of its life cycle.
- D. The company holds a large amount of liquid assets and has easy access to credit.
- E. The company operates in a highly cyclical industry.
- F. The company has restrictive bond covenants and currently generates low earnings.

12.4 Dividend Policies

- 6. During the next year, Lotos Inc. forecasts earnings available to common stockholders of \$35 million and capital spending of \$40 million. The firm plans to maintain its debt-to-equity ratio of 0.25. If the firm followed a pure residual dividend policy, what would be the firm's total dollar amount of cash dividends and its payout ratio?
- 7. Green Leaf Inc. has a capital structure consisting of 70 percent debt and 30 percent equity. The firm uses a pure residual dividend policy and forecasts earnings available to common stockholders of \$400 million for the next year. Using the following table, what would be the firm's total dollar amount of cash dividends and its dividend payout ratio under each scenario?

Residual Approach at Different Levels of Capital Spending							
Scenario	Net income [1]	Capital spending [2]	Additional debt [3]	Retained earnings [4]	Additional stock [2 - (3 + 4)]	Dividend amount [1 - 4]	Dividend payout (%)
(in millions \$)							
1	\$400	\$2,000					
2	400	1,800					
3	400	1,200					
4	400	1,000					
5	400	400					
6	400	0					

- 8. StarCom Corporation earned \$1.95 per share and paid out \$0.78 in dividends. The company expects earnings per share of \$2.20, \$2.35, and \$2.50 over the next three years, respectively.
 - A. If StarCom follows a stable dollar dividend policy, how much should an investor expect to receive in dividends per share over each of the next three years?
 - B. If StarCom follows a policy of having a constant dividend payout ratio, how much should an investor expect to receive in dividends per share over each of the next three years?

12.5 Stock Repurchases

- 9. Dortex Corporation plans to use an open-market repurchase to buy back common stock to move toward a target capital structure consisting of equal amounts of debt and equity. The

firm has \$206 million in debt and 10 million common shares outstanding with a market value of \$257.5 million. To estimate the number of shares needed to reach its target capital structure, management assumes that the firm can repurchase the needed shares at the current market. Thus, management initially decides to ignore any stock price reaction around the announcement date of the repurchase. The firm has been generating steady earnings available to common stockholders of \$28 million per year and expects this trend to continue after the repurchase.

- A. How many shares does Dortex need to repurchase to achieve its target capital structure?
 - B. What is the dollar impact of the repurchase on Dortex's earnings per share (EPS)?
10. Trinity & Co. has \$80 million in earnings available to common stockholders and 20 million shares outstanding. The current share price of the company's stock is \$25. Management plans to distribute \$40 million in excess cash to stockholders by repurchasing outstanding shares at a tender offer of \$2 above the current market price.
- A. What are Trinity's current earnings per share and its price/earnings ratio before the stock repurchase?
 - B. What are the firm's expected earnings per share and stock price immediately after the stock repurchase?

12.6 Cash Dividends versus Stock Repurchases

11. Glenwood Industries is considering a stock repurchase. One of Glenwood's financial managers argues that the firm should use the open-market repurchase method because it will help to bring up the low liquidity of the stock. Is the financial manager's contention correct?

12.7 Dividend Reinvestment Plans

12. Dominion Utilities plans to establish a dividend reinvestment plan for its shareholders and needs to decide whether to use a market plan or a new issue plan. Dominion is a capital intensive company that incurs high flotation costs when it raises external funds. The firm's ownership is dispersed among a large number of small investors. Similar to other utilities, the company has a high dividend payout ratio. What are the benefits of using a new issue plan?

12.8 Stock Dividends

13. Aliston Corporation has 16 million shares of common stock outstanding with a par value of \$1 and a market price of \$5. The company plans to issue a 10 percent stock dividend. How should Aliston account for the stock dividend?

Problems 14 and 15 refer to Famosa Inc.

14. Famosa Inc. has 12 million shares of \$4 par value common stock, retained earnings of \$50 million, and additional paid-in capital of \$10 million. The firm declared a 2 percent stock dividend and the pre-dividend stock price is \$30 per share.
- A. How many additional shares did the firm distribute to common stockholders?

- B. What amount did the firm transfer to the common stock and additional paid-in capital accounts from the retained earnings account?
15. An investor owns 2,000 shares of Famosa's 12 million shares outstanding. Before the firm issued a 2 percent stock dividend, its stock was selling for \$30 per share and the firm's earnings available to common stockholders was \$36 million. Assume perfect capital markets and no signaling effects.
- A. What was the theoretical price of Fomosa's stock after the stock dividend?
 - B. What was the firm's earnings per share before and after the stock dividend?
 - C. How much was the investor's common stock worth before and after the stock dividend?
16. PLC Inc. is considering a 10 percent stock dividend on its 8 million common shares outstanding. The market price of the stock is \$21.89 per share and the company generated \$3.00 in earnings per share before the 10 percent stock dividend. The company maintains a dividend payout ratio of 20 percent.
- A. Assuming perfect capital markets, what should be the theoretical price of PLC's stock after the 10 percent stock dividend?
 - B. If PLC does not issue the 10 percent stock dividend, what would be the firm's cash dividends per share?
 - C. If PLC first issued the stock dividend and then paid the cash dividend, what would be the firm's cash dividends per share?
 - D. If an investor currently owns 100 shares of PLC's stock, what total amount of cash dividends would an investor receive under the scenarios described in 16B and 16C?

12.9 Stock Splits and Reverse Splits

17. The price of Centron's stock has grown substantially over the past year. The company's board of directors decided to declare a 3-for-1 stock split to bring the stock price into a more favorable trading range. The stock has a par value of \$3 and is currently trading at \$90 per share. The company has 5 million shares outstanding, \$20 million in retained earnings, and total stockholders' equity of \$100 million.
- A. What are the balances in Centron's shareholders' equity accounts before and after the stock split?
 - B. What should be the theoretical price of the stock after the stock split?
18. Following the announcement of disappointing earnings for the last quarter, Neptune's stock price dropped to \$3. In order to maintain its listing on AMEX, Neptune's board of directors decides to declare a 1-for-4 reverse stock split. The company has 10 million shares outstanding at par value of \$1 per share.
- A. What was the par value per share and the number of shares outstanding after the reverse stock split?
 - B. How is the price of the stock likely to react to the reverse stock split?
19. Sage Industries announces a 1-for-4 reverse stock split. The firm's stock price before the reverse stock split is \$8. Stockholders' equity data for the firm are shown below.

Sage Industries: Stockholders' Equity Accounts	
Common stock (\$3 par, 10,000,000 shares)	\$30,000,000
Additional paid-in capital	4,000,000
Retained earnings	18,000,000
Total stockholders' equity	\$52,000,000

- A. What effects does the reverse stock split have on the firm's stockholders' equity accounts?
- B. What is the theoretical price of the firm's stock after the reverse split?
- C. Is the theoretical price after the reverse split likely to occur in practice?

Answers

- 1A. The ex-dividend date would be August 23, 2006, two business days before the record date.
- 1B. An investor buying the stock after the ex-dividend date would not receive the dividend.
2. A specially designated dividend often conveys that a company has excess cash above its present and near-term needs. Declaring a specially designated dividend allows the company to increase the dividend for the year without investors expecting the higher dividend to continue in the future. In addition, the extra dividend may convey to investors that the company does not necessarily view the previous strong earnings to be permanent.
3. In a world with perfect capital markets, the stock price should fall by the amount of the dividend to $\$27.50 - \$0.25 = \$27.25$ because investors who buy the stock on or after the ex-dividend date will not receive the dividend. Thus, the drop in the stock price on the ex-dividend date would be an indication of market efficiency because the market rationally attaches a value to the cash dividend. In practice, however, the change in the stock price may differ from the amount of the dividend due to such factors as taxes, transaction costs, and other relevant news occurring on or around the ex-dividend date.
- 4A. An investor with 1,000 shares would receive $(1,000 \text{ shares}) (\$0.20) = \$200$ in dividends. If the investor bought 10 additional shares, the investor would pay $(\$20,200/1010 \text{ shares}) = \20 per share. The total value of common stock would remain at $\$20,200$.

Dividend Irrelevance by Reversing Dividends		
	Before Receiving Dividends	After Receiving Dividends
1. Shares of common stock owned	1000	1010
2. Price per share of common stock	\$20.20	\$20.00
3. Total value of common stock [1 x 2]	\$20,200.00	\$20,200.00

- 4B. By selling 10 shares, the investor's total value of common stock would decrease by $(10 \text{ shares})(\$20.20 \text{ per share}) = \202 from $\$20,200$ to $\$19,998$. The investor's total wealth before and after selling the 10 shares would remain the same at $\$20,200$. Before the sale, the investor's wealth was $(1,000 \text{ shares})(\$20.20 \text{ per share}) = \$20,200$. After the sale, the investor's wealth was also $\$20,200$, which consisted of $\$19,998$ (990 shares at $\$20.20$ per share) in common stock plus $\$202$ (10 shares sold at a price of $\$20.20$ per share) in cash.

Illustration of Dividend Irrelevance by Creating Dividends		
	Before Selling 10 Shares	After Selling 10 shares
1. Shares of common stock owned	1000	990
2. Price per share of common stock	\$20.20	\$20.20
3. Total value of common stock [1 x 2]	\$20,200.00	\$19,998.00
4. Cash holdings	0.00	\$202.00
5. Total wealth [3 + 4]	\$20,200.00	\$20,200.00

Question	Effect on Dividend Payout Ratio (DPR)	Reason
5A. Wealthy, high-tax bracket investors	Lower DPR	High-tax bracket investors often prefer to avoid the tax liability associated with investments in companies that pay high dividends. Meeting the needs of such investors would lead to a lower DPR.
5B. Attractive Investments	Lower DPR	A company with numerous investment opportunities, such as a growth company, may need large amounts of capital to fund these investments. Consequently, the DPR would tend to be lower.
5C. Early stages of The life cycle	Lower DPR	A company in the start-up and initial public offering stages typically needs funds and faces high costs of external financing. Therefore, such a company would tend to have a low or zero DPR.
5C. Later stages of the life cycle	Higher DPR	A company in the maturity or decline stage often has fewer profitable investment opportunities. Shareholders may be able to earn higher returns than if the company retains additional earnings. Thus, a company in the later stages of its life cycle would tend to have a higher DPR than the same company in the earlier stages.
5D. Liquid assets and credit	Higher DPR	A company with large liquid assets and easy access to credit may have a larger dividend payout because these conditions enable it to have sufficient funds for growth and other purposes.
5E. Cyclical industry	Lower DPR	Dividend paying firms often prefer to have stable dividends and to avoid cutting dividends. If a company operates in a highly cyclical industry, maintaining a high level of dividends may be problematic. Thus, such firms tend to have lower DPRs.
5F. Restrictive bond covenants	Lower DPR	Restrictive bond covenants and low earnings typically limit the company's ability to pay dividends. Thus, such companies tend to have low dividend payouts.

6. Since Lotos Inc. has a debt-to-equity ratio of 0.25, its capital structure would consist of 20 percent debt $0.25/(1 + 0.25)$ and 80 percent equity. The equity portion used to finance capital expenditures would be $(\$40 \text{ million})(0.80) = \32 million . Since the firm expects to earn \$35 million, it would use \$32 million for capital spending and pay out the remaining $\$35 \text{ million} - \$32 \text{ million} = \$3 \text{ million}$ in cash dividends. The firm's dividend payout ratio would be $\$3 \text{ million}/\$35 \text{ million} = 8.57 \text{ percent}$.
7. To illustrate how to fill out the following table, assume scenario 1. If the firm plans to spend \$2,000 million on capital investments for the next year, it needs $(0.70)(\$2,000 \text{ million}) = \$1,400 \text{ million}$ in debt and $(0.30)(\$2,000 \text{ million}) = \600 million in equity to maintain its existing capital structure. With forecasted income of \$400 million, the firm would retain the entire \$400 million in internal equity and would raise an additional $(\$2,000 \text{ million}) - (\$1,400 \text{ million} + \$400 \text{ million}) = \$200 \text{ million}$. Since the firm used the entire \$400 million in

earnings available to common stockholders, it would pay out no cash dividends and have a dividend payout of 0 percent.

Residual Approach at Different Levels of Capital Spending							
Scenario	Net income [1]	Capital spending [2]	Additional debt [3]	Retained earnings [4]	Additional stock [2 - (3 + 4)]	Dividend amount [1 - 4]	Dividend payout (%)
(in millions \$)							
1	\$400	\$2,000	\$1,400	\$400	\$200	\$0	0%
2	400	1,800	1,260	400	140	0	0
3	400	1,200	840	360	0	40	10
4	400	1,000	700	300	0	100	25
5	400	400	280	120	0	280	70
6	400	0	0	0	0	400	100

- 8A. Under a stable dollar dividend policy, the investor should expect to receive \$0.78 per share each year in dividends.
- 8B. The firm's current dividend payout ratio is $\$0.78/\$1.95 = 40$ percent. Thus, an investor should expect to receive the following dividends during the next three years:
 Year 1: $(0.40) (\$2.20) = \0.88
 Year 2: $(0.40) (\$2.35) = \0.94
 Year 3: $(0.40) (\$2.50) = \1.00
- 9A. Dortex's target debt-to-equity ratio is 1.0 because it wants to have equal amounts of debt (\$206 million) and equity (\$206 million). The firm's stock is current selling at $(\$257.5 \text{ million in earnings})/(10 \text{ million shares}) = \25.75 per share. To achieve this target debt-to-equity ratio, the firm must repurchase $(\$257.5 \text{ million} - \$206 \text{ million})/\$25.75 = 2$ million shares.
- 9B. Dortex's current earnings per share is $(\$28 \text{ million}/10 \text{ million}) = \2.80 . After the repurchase of 2 million shares, the firm's EPS should rise to $(\$28 \text{ million})/(10 \text{ million} - 2 \text{ million}) = \3.50 . Thus, the repurchase should lead to an increase in EPS of $\$3.50 - \$2.80 = \$0.70$.
- 10A. Trinity's current earnings per share is $(\$80 \text{ million in earnings})/(20 \text{ million shares}) = \4 and its price/earnings ratio is $(\$25 \text{ market price})/(\$4 \text{ EPS}) = 6.25$.
- 10B. With \$40 million available to repurchase shares, Trinity should be able to repurchase about $(\$40 \text{ million})/(\$27 \text{ market price}) = 1.481$ million shares. Thus, the expected earnings per share after the repurchase should be $(\$80 \text{ million})/(20 \text{ million} - 1.481 \text{ million shares}) = \4.32 . The stock price immediately after the repurchase should be $(\$4.32 \text{ EPS})(6.25 \text{ P/E ratio}) = \27 .
11. Open-market repurchases, which typically involve a gradual buy-back of shares, may lead to an increase in trading activity during the repurchase program. Nevertheless, the liquidity of the stock could fall below the original level once the repurchase program is completed

because there are fewer shares outstanding after the repurchase. Although the financial manager may be partially correct, the issue of how the repurchase would affect Greenwood's liquidity is an empirical one.

12. Compared to a market plan, a new issue plan is particularly attractive for companies in capital-intensive industries, such as utilities, that want to avoid the high flotation costs and negative signals often associated with a new offering. A new issue plan also enables a firm to reduce its debt ratio, provide funds for capital investment, and improve cash flows by reducing dividend disbursements.
13. Aliston should make the following transfers among its stockholders' equity accounts:
- Reduce retained earnings by $(16,000,000)(0.10)(\$5) = \$8,000,000$.
 - Increase common equity by $(16,000,000)(0.10)(\$1) = \$1,600,000$.
 - Increase additional paid-in capital by $\$8,000,000 - \$1,600,000 = \$6,400,000$.
- 14A. The firm distributed $(12 \text{ million shares})(0.02) = 240,000$ shares to common stockholders as a result of the 2 percent stock dividend.
- 14B. As a result of the 2 percent stock dividend, retained earnings would decrease by $(12 \text{ million shares})(0.02)(\$30 \text{ market price}) = \$7,200,000$. The common stock account would increase by $(240,000 \text{ shares})(\$4 \text{ par value}) = \$960,000$, and the paid-in capital account would increase by $\$7,200,000 - \$960,000 = \$6,240,000$.

Before a 2 Percent Stock Dividend		After a 2 Percent Stock Dividend	
Common stock (\$4 par, 12,000,000 shares)	\$48,000,000	Common stock (\$4 par, 12,240,000 shares)	\$48,960,000
Additional paid-in capital	10,000,000	Additional paid-in capital	16,240,000
Retained earnings	50,000,000	Retained earnings	42,800,000
Total stockholders' equity	\$108,000,000	Total stockholders' equity	\$108,000,000

- 15A. The theoretical price of Famosa's stock after the 2 percent stock dividend would be:

$$P_A = \frac{P_B}{1 + SD_p} = \frac{\$30}{(1 + 0.02)} = \$29.41$$

- 15B. The firm's EPS before the stock dividend was $(\$36 \text{ million earnings}/\$12 \text{ million shares}) = \3.00 . After the stock dividend, the firm's EPS would decrease to $\$2.94$ [$\$36 \text{ million earnings}/(12 \text{ million shares})(1.02)$] = \$2.94
- 15C. The investor's common stock is worth $(2,000 \text{ shares})(\$30 \text{ market price}) = \$60,000$ before the stock dividend and $(2,000 \text{ shares})(1.02)(\$29.41 \text{ new stock price}) = \$60,000$ after the stock dividend.

16A. The theoretical price of PLC’s stock after the 10 percent stock dividend would be:

$$P_A = \frac{P_B}{1 + SD_p} = \frac{\$21.89}{(1 + 0.10)} = \$19.90$$

16B. If PLC does not issue the 10 percent stock dividend, the firm’s cash dividends per share would be $(\$3.00)(0.20) = \0.60 .

16C. PLC’s total earnings is $(\$3.00 \text{ EPS})(8,000,000 \text{ shares}) = \$24,000,000$. After the 10 percent stock dividend, the total number of common shares outstanding would be $(8,000,000 \text{ shares})(1 + 0.10) = 8,800,000$. PLC’s earnings per share after the 10 percent stock dividend would be $(\$24,000,000)/(8,800,000 \text{ shares}) = \2.7273 . If PLC first issued the stock dividend and then paid the cash dividend, the firm’s cash dividends per share would be $(\$2.7273)(0.20) = \0.5455 .

16D. If PLC does not issue the 10 percent stock dividend, an investor owning 100 shares of PLC’s stock would receive total cash dividends of $(100)(\$0.60) = \60.00 . If PLC first issued the stock dividend and then paid the cash dividend, the investor would receive total cash dividends of $(100)(1 + 0.10)(\$0.5455) = \60.00 . The total amount of the dividends should be the same with or without stock dividend.

17A. The stock split does not change the dollar amount in any stockholders’ equity accounts because the increase in the number of shares outstanding offsets the decrease in the par value per share. The 3-for-1 stock split triples the number of outstanding shares to 15 million and decreases the par value by one-third to \$1 per share

- Common stock before the stock split: $(\$3 \text{ par})(5,000,000 \text{ shares}) = \$15,000,000$.
- Additional paid-in capital: $\$100,000,000 - \$20,000,000 - \$15,000,000 = \$65,000,000$.
- Par value after the stock split: $\$3 \text{ par}/3 = \1 par .
- Number of shares outstanding after the stock split: $(3)(5,000,000 \text{ shares}) = 15,000,000 \text{ shares}$.
- Common stock after the stock split: $(\$1)(15,000,000 \text{ shares}) = \$15,000,000$

Before a 3-for-1 Stock Split		After a 3-for-1 Stock Split	
Common stock (\$3 par, 5,000,000 shares)	\$15,000,000	Common stock (\$1 par, 15,000,000 shares)	\$15,000,000
Additional paid-in capital	65,000,000	Additional paid-in capital	65,000,000
Retained earnings	20,000,000	Retained earnings	20,000,000
Total stockholders’ equity	\$100,000,000	Total stockholders’ equity	\$100,000,000

17B. The stock price theoretically should decrease by about one-third to \$30 per share.

18A. After the reverse stock split, the par value per share would increase four-fold to $(\$1 \text{ par value})(4) = \4 and the number of shares outstanding would decrease to $(10,000,000 \text{ shares})/4 = 2,500,000$.

18B. The share price should theoretically increase four-fold to \$12. However, investors often interpret a reverse stock split as a negative signal, so the new stock price is likely to be below the theoretical value.

- 19A. A 1-for-4 reverse stock split reduces the number of outstanding shares from 10 million to 2.5 million and increases the par value from \$3 to \$12 per share. Other accounts in the stockholders' equity section of the balance sheet remain the same as before the reverse stock split.

Before a 1-for-4 Reverse Stock Split		After a 1-for-4 Reverse Stock Split	
Common stock (\$3 par, 10,000,000 shares)	\$30,000,000	Common stock (\$12 par, 2,500,000 shares)	\$30,000,000
Additional paid-in capital	4,000,000	Additional paid-in capital	4,000,000
Retained earnings	18,000,000	Retained earnings	18,000,000
Total stockholders' equity	\$52,000,000	Total stockholders' equity	\$52,000,000

- 19B. The share price should theoretically quadruple from \$8 to about \$32 immediately after the reverse split.
- 19C. In practice, the market often views a reverse stock split as a negative signal so the stock price is likely to be lower than the theoretical value of \$32.