Corpfin mod 15: Stockholder dividends practice problems

(The attached PDF file has better formatting.)

Brealey and Myers, Chapter 16

** Exercise 15.1: Dividend dates

In 20X1, a firm pays a regular quarterly dividend of $0.35 a share.

A. Match each of the following set of dates:

(A1) 17 July 20X1	(B1) Record date
(A2) 11 August 20X1	(B2) Payment date
(A3) 12 August 20X1	(B3) Ex-dividend date
(A4) 14 August 20X1	(B4) Last with-dividend date
(A5) 1 September 20X1	(B5) Declaration date

B. On one of these dates the stock price is likely to fall by about the value of the dividend. Which date? Why?
C. The firm's stock price in August 20X1 is $52. What is the dividend yield?
D. If earnings per share for 20X1 are $4.56, what is the percentage payout rate?
E. Suppose that in 20X1, the firm pays a 10% stock dividend. What is the expected fall in price?

Part A: The order of the dates in Column B should match the order of the dates in Column A.

The Board of Directors (or other managing body) declares a stockholder dividend (B1) and that shareholders *recorded* as owning the stock on the *record date* receive it. Recording of ownership on the company's books takes two or three days after purchase of the stock. The last date of purchase that is recorded for the dividend is the last with-dividend date (B4 = August 11 here). The next day is the ex-dividend date (B3 = August 12); the stock now sells without a dividend for the new owners. The ownership is recorded a day or two later (B1 = August 14). The firm pays the cash (B2) a week or two later. See Brealey and Myers page 392.

Part B: An investor who buys the stock on August 11 receives the dividend; an investor who buys the stock on August 12 does not receive the dividend. The stock price falls on the ex-dividend date, August 12.

Part C: The dividend yield is the annual dividend divided by the stock price. This is a quarterly dividend; the same dividend (or a similar dividend) is paid in January, April, and November. The sum of the four dividends is 4 × $0.35 = $1.40. The stock price in mid-year is $52, so the dividend yield is $1.40 / $52 = 2.69%.

Part D: The payout rate is dividends / earnings = $1.40 / $4.56 = 30.70%.

Part E: Before the stock dividend, ten shares are worth 10 × $52 = $520. With the stock dividend, the ten share become eleven shares, which are still worth $520. Each share is worth $520 / 11 = $47.27.

** Exercise 15.2: Dividends vs share repurchase

Earnings per Share for 20X5	$5.50
Number of Shares Outstanding	40 million
Target Payout Ratio	50%
Planned Dividend per Share	$2.75
Stock Price, Year-end 20X5	$130.00

- The firm plans to pay the entire dividend early in January 20X6.
- The corporate tax rate and personal tax rate are both zero.

A. What is the firm's expected stock price on the ex-dividend date?
B. Suppose the firm cancels the dividend and announces that it will use the money to repurchase shares. What happens to the stock price on the announcement date? Assume that investors learn nothing about the firm's prospects from the announcement. How many shares does the firm need to purchase?
C. Suppose the firm increases dividends to $5.50 per share and then issues new shares to recoup the extra cash paid out as dividends. What happens to the with- and ex-dividend share prices? How many shares will be issued? Assume that investors learn nothing about the firm's prospects from the announcement.

Part A: On the ex-dividend date, the firm's stock price drops by the amount of the dividend, so $130 – $2.75 = $127.25.

Note: Final exam problems give the earnings per share and payout ratio; you derive the dividend per share.

Part B: No cash dividend is paid, so the stock price does not change; it remains $130.00.

The cash used to repurchase shares is 50% × $5.50 × 40 million = $110.00 million. Each share costs $130, so the firm repurchases $110 million / $130 = 846,154 shares.

Question: What difference does it make if the firm pays a dividend or repurchases shares? The firms pays the same amount to shareholders, so the firm's value after the payment is the same. Why do the share prices differ in these two scenarios?

Answer: If the firm pays a cash dividend, it has 40 million shares outstanding at $127.25 a share, for a total value of $5,090 million.

If the firm repurchases 84,615 shares, it has (40 million – 846,154) shares outstanding at $130 a share, for a total value of $5,090 million.

Part C: The with-dividend stock price remains $130; the announcement of a larger future dividend doesn't change the stock price. The ex-dividend stock price is $130 – $5.50 = $124.50. The extra cash paid out is 40 million × $2.75 = $110.00 million. The firm must issue $110 million / $124.50 = 883,534 shares.

** Exercise 15.3: Payout ratio and price-earnings ratio

Would each firm listed below likely distribute a high or low proportion of current earnings (i.e., have a high or low payout ratio in the current year)?

A. Firms with high systematic risk (high CAPM betas).
B. Firms with high unique risk but average CAPM betas.
C. Firms that have unexpectedly low profits the current year.
D. Firms that expect poor profits in the coming years but have normal profits in the current year.
E. Growth firms with valuation future investment opportunities (high present value of growth opportunities).

Part A: Firms with high risk have volatile earnings. Firms dislike reducing the dividend per share, so these firms are likely to have low average payout ratios that can be met even if poor years.

Part B: Random fluctuations in earnings may stem from either systematic risk or unique. Firms with high risk tend to have low average payout ratios.

Part C: Firms tend not to reduce dividends unless they lack the cash to pay them. It the firm has low profits in the most recent year and it pays its normal stockholder dividend, the ratio of dividend to current earnings is high.

Part D: Firms that expect lower profits in the coming years often reduce current dividends in the current year, so the reduction in future years is less sharp.

Part E: Firms with high present value of growth opportunities tend to have low payout ratios, so they can plow back their profits into their positive NPV projects.