

Activities problem(s)  
c16 2,7,14,and 21,  
c17 7 and 25



**ASSIGN  
BUSTER**

Baruk Industries has no cash and a debt obligation of \$36 million that is now due. The market value of Baruk's assets is \$81 million, and the firm has no other liabilities. Assume perfect capital markets.

a. Suppose Baruk has 10 million shares outstanding. What is Baruk's current share price?

$$81 - 36 / 10 = \$4.5 \text{ share}$$

b. How many new shares must Baruk issue to raise the capital needed to pay its debt obligation?

$$36 / 4.5 = 8 \text{ million shares}$$

c. After repaying the debt, what will Baruk's share price be?

$$81 / 18 = \$4.5 \text{ share}$$

You have received two job offers. Firm A offers to pay you \$85,000 per year for two years. Firm B offers to pay you \$90,000 for two years. Both jobs are equivalent. Suppose that firm A's contract is certain, but that firm B has a 50% chance of going bankrupt at the end of the year. In that event, it will cancel your contract and pay you the lowest amount possible for you to not quit. If you did quit, you expect you could find a new job paying \$85,000 per year, but you would be unemployed for 3 months while you search for it.

a. Say you took the job at firm B, what is the least firm B can pay you next year in order to match what you would earn if you quit?

My earnings will be \$63,750, which is  $\frac{3}{4}$  of \$85,000.

b. Given your answer to part (b), and assuming your cost of capital is 5%, which offer pays you a higher present value of your expected wage?

$$A = 85 + 85 / 1.05 = \$165.95k$$

$$B = 90 + \frac{1}{2} (90 + 63.75) / 1.05 = \$163.21k$$

c. Based on this example, discuss one reason why firms with a higher risk of

bankruptcy may need to offer higher wages to attract employees.

Employees must be given a higher wage in this scenario so that an employee will be motivated to take the job even if there is a risk of bankruptcy.

Marpor Industries has no debt and expects to generate free cash flows of \$16 million each year. Marpor believes that if it permanently increases its level of debt to \$40 million, the risk of financial distress may cause it to lose some customers and receive less favorable terms from its suppliers. As a result, Marpor's expected free cash flows with debt will be only \$15 million per year. Suppose Marpor's tax rate is 35%, the risk-free rate is 5%, the expected return of the market is 15%, and the beta of Marpor's free cash flows is 1.10 (with or without leverage).

a. Estimate Marpor's value without leverage.

$$r = 5\% + 1.1 \times (15\% - 5\%) = 16\%$$

$$V = 16 / 0.16 = \$100 \text{ million}$$

b. Estimate Marpor's value with the new leverage.

$$r = 5\% + 1.1 \times (15\% - 5\%) = 16\%$$

$$V = 15 / 0.16 + 0.35 \times 40 = \$107.75 \text{ million}$$

You own your own firm, and you want to raise \$30 million to fund an expansion. Currently, you own 100% of the firm's equity, and the firm has no debt. To raise the \$30 million solely through equity, you will need to sell two-thirds of the firm. However, you would prefer to maintain at least a 50% equity stake in the firm to retain control.

a. If you borrow \$20 million, what fraction of the equity will you need to sell to raise the remaining \$10 million? (Assume perfect capital markets.)

$$\text{Market value of firm Assets} = 30 / (2 / 3) = \$45 \text{ million.}$$

$$\text{Equity is worth } 45 - 20 = 25$$

$10/25 = 40\%$  of the equity needs to be sold.

b. What is the smallest amount you can borrow to raise the \$30 million without giving up control? (Assume perfect capital markets.)

$$5 * (45 - x) + x = 30$$

$$X = \$15 \text{ million}$$

Natsam Corporation has \$250 million of excess cash. The firm has no debt and 500 million shares outstanding with a current market price of \$15 per share. Natsam's board has decided to pay out this cash as a one-time dividend.

a. What is the ex-dividend price of a share in a perfect capital market?

$$\$250 / \$500 = \$0.50 \text{ dividend pay off per share}$$

Shares will drop by this amount to \$14.50

b. If the board instead decided to use the cash to do a one-time share repurchase, in a perfect capital market what is the price of the shares once the repurchase is complete?

\$15

c. In a perfect capital market, which policy, in part (a) or (b), makes investors in the firm better off?

Both policies will be the same.

Raviv Industries has \$100 million in cash that it can use for a share repurchase. Suppose instead Raviv invests the funds in an account paying 10% interest for one year.

a. If the corporate tax rate is 40%, how much additional cash will Raviv have at the end of the year net of corporate taxes?

$$100 \times 10\% \times (1 - 40\%) = \$6 \text{ m}$$

b. If investors pay a 20% tax rate on capital gains, by how much will the

value of their shares have increased, net of capital gains taxes?

$$\$6 \times (1 - 0.20) = \$4.8 \text{ million}$$

c. If investors pay a 30% tax rate on interest income, how much would they have had if they invested the \$100 million on their own?

$$100 \times 10\% \times (1 - 0.30) = \$7 \text{ million}$$

d. Suppose Raviv retained the cash so that it would not need to raise new funds from outside investors for an expansion it has planned for next year. If it did raise new funds, it would have to pay issuance fees. How much does Raviv need to save in issuance fees to make retaining the cash beneficial for its investors? (Assume fees can be expensed for corporate tax purposes.)

$$\$1 \times (1 - 0.40) \times (1 - 0.20) = \$0.$$

$$\text{fees} = (7 - 4.8) / 0.48 = \$4.583 \text{ million.}$$