

Problem Set 8

Due Friday, May 9, 1999

1. Leverage and Earnings Per Share

Leverit Inc. is a firm that produces mechanical equipment. Leverit's only earnings will be received in a year, and will be \$80M with probability 1/6, \$160M with probability 1/3, \$280M with probability 1/3, and \$360M with probability 1/6. Leverit is all-equity financed, but management considers issuing some debt and using the proceeds to buy back shares. Leverit has 100M shares outstanding. The riskless rate is 5%, the market risk-premium is 6%, and Leverit's beta is 1.2.

- (a) What is Leverit's market value, stock price, return on equity, and earnings per share (EPS_1)?
- (b) Assume that Leverit issues zero coupon debt, with a par value of \$20M, and maturity of 1 year. What is the market value of Leverit's debt?
- (c) Assume that there are no market imperfections. What is the new market value of Leverit's equity? What is Leverit's new leverage?
- (d) Denote Leverit's new stock price by P . How many shares can Leverit buy back? (Your answer should be a function of P . Ignore integer constraints.) What is Leverit's new stock price?

Hint: Using the definition of the stock price, i.e.

$$P = \frac{\text{market value of equity}}{\text{number of shares outstanding}},$$

determine an equation for P .

Explain the intuition for your answer.

- (e) What are Leverit's new return on equity and earnings per share?
- (f) Determine Leverit's leverage and earnings per share for a debt payment of \$40M, \$60M, and \$80M. How do earnings per share depend on leverage? Explain the intuition for your answer.

2. False Statements

The following statements are false. Explain briefly but precisely why.

- (a) When a company becomes bankrupt, it is usually in the interests of the shareholders to seek a liquidation rather than a reorganization.
 - (b) Issuing debt hurts the shareholders, since their slice of the cash flow pie decreases.
 - (c) Issuing debt raises the rate of return on both debt and equity. Therefore, it raises the cost of capital.
 - (d) The fact that the yield to maturity on risky debt is higher than the riskless rate, implies that there are costs of financial distress.
 - (e) The airline industry has one of the highest betas, but a high leverage. This is inconsistent with the trade-off theory of capital structure.
 - (f) Issuing debt makes the shareholders better off, because the rate of return on debt is smaller than the rate of return on the company's assets
3. This problem is based on the case "American Chemical Corporation". To solve the problem you may need to make assumptions that are not stated in the case. However, you should read the case very carefully because it contains lots of information. Although we do not expect all students to get the same answer, we expect answers that are carefully derived.

Estimate the weighted average cost of capital appropriate for discounting the Collinsville plant's incremental cash flows.

4. This problem is also based on the case "American Chemical Corporation". However, you do not need to turn in your answer to this question. (You can do so if you wish, but it will not be graded. You must turn in answers to the previous questions.) Thinking about these questions will help you follow the discussion of the case in class.
- (a) Project the incremental cash flows associated with the Collinsville plant without the laminate technology and estimate the acquisition's net present value. Project the incremental cash flows associated with the 1980 investment in laminate technology and estimate the investment's net present value.
 - (b) Is the Collinsville proposal attractive on economic grounds?
 - (c) Assess the strategic issues associated with the proposal. Is Collinsville attractive on strategic grounds?
 - (d) As CEO of Dixon Corporation, would you approve the acquisition of the Collinsville plant at the price and on the terms proposed? Why, or why not?