

PART IV

1. Ogden Optical Company has estimated the following costs of debt and equity capital (with bankruptcy and agency costs) for various proportions of debt in its capital structure:

Proportion of Debt (B/B+E)	Cost of Debt, k_i	Cost of Equity, k_e
0.00	-	10.0%
0.10	4.0%	10.1
0.20	4.2	10.3
0.30	4.4	10.8
0.40	4.8	11.4
0.50	5.5	12.5
0.60	6.6	14.5
0.70	8.0	18.0

Determine the firm's optimal structure.

2. Two firms, No Leverage, Inc. and High Leverage, Inc., have equal levels of operating risk and differ only in their capital structure. No Leverage is unlevered and High Leverage has \$500,000 of perpetual debt in its capital structure. Assume that the perpetual annual income of both firms available for stockholders is paid out as dividends. Hence, the growth rate for both firms is zero. The income tax rate for both firms is 40 percent. Assume that there are no financial distress costs or agency costs. Given the following data:

	No Leverage, Inc.	High Leverage, Inc.
Equity in capital structure	\$1,000,000	\$500,000
Cost of equity, k_e	10%	13%
Debt in capital structure	-	\$500,000
Pretax cost of debt, k_d	-	7%
Net operating income (EBIT)	\$ 100,000	\$100,000

- Determine the market value of No Leverage, Inc.
 - Determine the market value of High Leverage, Inc.
 - Present value of the tax shield to High Leverage, Inc.
3. Capital Structure with a Corporate Income Tax:

Financial Data on Firms U and L		
	Firm U	Firm L
Equity amount in capital structure, E	\$6,000	\$4,000
Cost of equity, k_e	10%	11.25%
Debt amount in capital structure, B		\$2,000
Cost of debt, k_d		5%
Net operating income (EBIT)	\$1,000	\$1,000
Less interest payments to debtholders	-	100
Income before taxes	\$1,000	\$ 900
Corporate tax, $T=40\%$	400	360

Income available to stockholders (dividend)	\$ 600	\$ 540
Total income available to security holders	\$ 600	\$ 640

- a. If the equity amount in its capital structure decreases to \$3,000 and the debt amount increases to \$3,000, calculate the value of firm L.
- b. For firm L (with equity = \$3,000 and debt = \$3,000), calculate the income available to the stockholders and the cost of equity.
4. McGee Corporation has fixed operating costs of \$10 million and a variable cost ratio of 0.65. The firm has a \$20 million, 10 percent bank loan and a \$6 million, 12 percent bond issue outstanding. The firm has 1 million shares of \$5 (dividend) preferred stock and 2 million shares of common stock (\$1 par). McGee's marginal tax rate is 40 percent. Sales are expected to be \$80 million.
- Compute McGee's degree of operating leverage at an \$80 million sales level.
 - Compute McGee's degree of financial leverage at an \$80 million sales level.
 - If sales decline to \$70 million, forecast McGee's earnings per share.
5. Connelly, Inc. expects sales of silicon chips to be \$30 million this year. Because this is a very capital-intensive business, fixed operating costs are \$10 million. The variable cost ratio is 40 percent. The firm's debt obligations consist of a \$2 million, 10 percent bank loan and a \$10 million bond issue with a 12 percent coupon rate. The firm has 100,000 shares of preferred stock outstanding that pays a \$9.60 dividend. Connelly has 1 million shares of common stock outstanding and its marginal tax rate is 40 percent.
- Compute Connelly's degree of operating leverage.
 - Compute Connelly's degree of financial leverage.
 - Compute Connelly's degree of combined leverage.
 - Compute Connelly's EPS if sales decline by 5 percent.
6. Emco Products has a present capital structure consisting only of common stock (10 million shares). The company is planning a major expansion, At this time, the company is undecided between the following two financing plans (assume a 40 percent marginal tax rate):
- Plan 1: Equity financing. Under this plan, an additional 5 million shares of common stock will be sold at \$10 each.
 - Plan 2: Debt financing. Under this plan, \$50 million of 10 percent long-term debt will be sold.
- One piece of information the company desires for its decision analysis is an EBIT-EPS analysis.
- Calculate the EBIT-EPS indifference point.
 - Graphically determine the EBIT-EPS indifference point.
- Hint: Use EBIT=\$10 million and \$25 million.
- What happens to the indifference point if the interest rate on debt increases and the common stock sales price remains constant?
 - What happens to the indifference point if the interest rate on debt remains constant and the common stock sales price increases?

7. Morton Industries is considering opening a new subsidiary in Boston, to be operated as a separate company. The company's financial analysts expect the new facility's average EBIT level to be \$6 million per year. At this time, the company is considering the following two financing plans (use a 40 percent marginal tax rate in your analysis):
- Plan 1: Equity financing, Under this plan, 2 million common shares will be sold at \$10 each.
 - Plan 2: Debt-equity financing. Under this plan, \$10 million of 12 percent long-term debt and 1 million common shares at \$10 each will be sold.
 - a. Calculate the EBIT-EPS indifference point.
 - b. Calculate the expected EPS for both financing plans.
 - c. What factors should the company consider in deciding which financing plan to adopt?
 - d. Which plan do you recommend the company adopt?
8. Myers Implements is attempting to develop and market a new garden tractor. Fixed costs to develop and produce the new tractor are estimated to be \$10,000,000 per year. The variable cost to make each tractor has been estimated at \$2,000. The marketing research department has recommended a price of \$4,000 per tractor.
- a. What is the breakeven level of output for the new tractor?
 - b. If management expects to generate a target profit of \$2,000,000 from the tractor each year, how many tractors must be sold?
9. The Sweet Times Candy Company has the following equity accounts on its balance sheet:
- | | |
|--|---------------|
| Common stock (\$1 par, 500,000 shares) | \$ 500,000 |
| Contributed capital in excess of par | 2,000,000 |
| Retained earnings | 13,000,000 |
| | ----- |
| Total common stockholders' equity | \$ 15,500,000 |
- The current market price of the firm's share is \$50.
- a. If the firm declares a 10 percent stock dividend, what will be the impact on the firm's equity accounts?
 - b. If the firm currently pays no cash dividend, what is the impact of a 10 percent stock dividend on the wealth position of the firm's existing stockholders?
 - c. If the firm currently pays a cash dividend of \$1 per share and this per-share dividend rate does not change after the 10 percent stock dividend, what impact would you expect the stock dividend to have on the wealth position of existing shareholders?
10. The Emco Steel Company has experienced a slow (3 percent per year) but steady increase in earnings per share. The firm consistently has paid out an average of 75 percent of each year's earnings as dividends. The stock market evaluates Emco primarily on the basis of its dividend payout, because growth prospects are modest.
- Emco's management presents a proposal to the board of directors that would require the outlay of \$50 million to build a new plant in the rapidly expanding Florida market. The expected annual return on the investment in this plant is estimated to be in excess of 30 percent, more than twice



the current company average. To finance this investment, a number of alternatives are being considered. They include the following:

- a. Finance the expansion with externally raised equity.
- b. Finance the expansion with 50 percent externally generated equity and 50 percent internally generated equity. This alternative would necessitate a dividend cut for this year only.
- c. Finance the expansion with a mix of debt and equity similar to their current relative proportions in the capital structure. Under this alternative, dividends would not be cut. Rather, any equity needs in excess of that which could be provided internally would be raised through a sale of new common stock.

Evaluate these various financing alternatives with reference to their effects on the dividend policy and common stock values of the company.