Case 54

Ace Repair, Inc.

Cost of Capital

Directed

In 1978, while he was taking a course on entrepreneurship as a business student at a large state university, Peter Vanderhein wrote a term paper on the management of auto repair shops. Peter's uncle owned a repair shop, and Peter had worked for him as well as for several other body shops when he was in high school and college. Once he began taking business courses, Peter came to recognize that most shops were inefficient, especially in the way they managed their inventories and receivables. This inefficiency resulted in excessive stocks of some items, shortages of others, frequent stock-outs, late payments, bad debt losses, and many dissatisfied customers. Still, in spite of their inefficiency, the average repair shop appeared to be fairly profitable. Peter concluded that an opportunity existed to buy inefficient auto repair shops, consolidate them into a concern that was large enough to use computers to manage inventories and receivables, and thereby increase profitability sharply. He also felt that volume discounts, improved training, and other economies of scale, would give a further boost to profits.

With encouragement from his family and professors, Vanderhein decided to put his theory to the test, and in 1979 he started Ace Repair, Inc. Ed Adams, Peter's uncle, wanted to retire, and he agreed to sell out subject to a "purchase money mortgage" which would be repaid from the business' cash flow. Peter was also able to borrow $100,000 from some family friends, and he arranged a $50,000 bank loan secured by the business' assets. He used this $150,000 to purchase computers and software, and to train his employees in the use of the new equipment.

Adams agreed to help Peter set things up and then help the shop's employees adapt to the new procedures. Everything went well, and profits rose even more rapidly than under Peter's optimistic forecasts. By early 1981, Peter felt that the bugs were out of his shop management system, so with Ed's help, he began to look seriously for additional acquisitions. He took over two new shops later in 1981, sending employees from the first shop to help run the new ones. The operations of the acquired shops were as successful as those of the first shop. He bought three additional shops in 1982, and acquisitions continued at an increasing pace thereafter. By 1995, Ace Repair controlled a total of 243 shops located throughout the Midwest.

Peter used a mix of securities—common stock, preferred stock, and first mortgage bonds—in addition to retained earnings to finance acquisitions and open de novo shops, while using trade credit plus bank loans to help meet working capital needs. Peter has also considered the use of convertible securities, but to date no convertibles have been issued. Currently, Ace has 6.2261 million com-

mon shares outstanding, of which Peter owns 17 percent. The stock sells in the over-the-counter market for $30.50 per share.

Since the company's inception, Peter has been directly and tirelessly involved in all facets of the business. He is satisfied with the service his shops provide, with the company's inventory and receivables management, and with the marketing aspects of the business. However, he has become increasingly uneasy about the finance function, in which he has no special expertise. The controller has overseen most financial matters, but with the rapid growth in the scope and size of the business, financial decisions have become increasingly complex. Further, competition from large corporations such as Sears, Wal-Mart, and auto dealerships has been increasing. So, by 1995, Vanderhein concluded that to ensure continued success, he must establish a finance group that was as competent and sophisticated as those of his competitors. Therefore, in late 1995, he hired Adam Naranjo, a senior financial executive with a major retail chain, as vice president and chief financial officer (CFO).

Naranjo began by reviewing the existing capital investment procedures. After going over the procedures manuals and the supporting analyses for recent capital investment decisions, he concluded that the overall procedures were generally appropriate: The firm relied on discounted cash flow criteria to arrive at accept/reject decisions for most projects; it estimated future cash flows on an incremental basis; and it discounted cash flows at the firm's weighted average cost of capital (WACC). However, the estimate of the cost of capital itself was questionable.

In the most recent capital budgeting exercise, at year-end 1995, the controller used a before-tax debt cost of 10 percent, which was equal to the coupon rate on Ace's last (1993) long-term first mortgage bond issue. These bonds are rated single A, will mature in 17 years, and can be called in 3 years. For the cost of equity, the controller used the year-end earnings yield (E/P) of 7.5 percent, based on an earnings per share of $2.30 and a share price of $30.50. His justification for using the E/P yield was that since investors were getting $2.30 of earnings for a $30.50 investment, they were willing to accept a 7.5 percent rate of return on their money. Also, the controller noted that if the company could sell stock for $30.50 per share and then invest the proceeds at a 7.5 percent rate of return, earnings per share would remain at $2.30. He also noted that this 7.5 percent is an after-tax cost, and it is below the after-tax cost of debt. Of course, the controller wants the company to sell stock only to finance projects that will earn more than the 7.5 percent cost of equity, hence will increase earnings per share. Table 4 (2) contains the quotation of the company's preferred stock. This security has a par value of $100 and new issues would have a flotation cost of $2.50 per share.

Given estimates of the capital components' costs, the controller calculated the WACC on the basis of weights as determined from the balance sheet shown in Table 2. These book value weights differ from the market value weights and from the company's target capital structure as reported in Table 4, part 11.

In early January 1996, Naranjo decided to hire your consulting firm to conduct a cost of capital analysis and to make a critical evaluation of the current estimation procedures. Naranjo provided you with the financial statements given in Tables 1 and 2, plus the information in Tables 3 and 4.

You must critique Ace's current procedures for estimating the costs of debt and equity, and then use the data to estimate Ace's component costs of capital, WACC, and marginal cost of capital schedule. You must also decide whether to use your estimate of the marginal weighted average cost of capital as the hurdle/discount rate for all of the firm's projects.

Naranjo is also interested in your views on the weights used to calculate the WACC. The controller has been using book weights based on the actual capital structure, but considering long-term capital only. His reasoning was that this is the way the capital used for capital budgeting purposes has actually been raised, and also that Moody's, S&P, and all security analysts whose reports he has seen focus on actual capital structures based on actual accounting statements. He chose not to use market value weights in part because investors apparently do not focus on market value weights, and also because market value weights would be unstable, hence would result in a fluctuating WACC, and as a result would destabilize the capital budgeting process. He has toyed with the idea of using the

target capital structure weights, but he correctly pointed out that the targets have never been attained, and there is no reason to expect them to be attained anytime soon. Naranjo wants your opinion on (1) what weights should be used, and (2) how much difference the choice of weights would make in the calculated WACC.

If Naranjo likes your report—if he thinks it is logical, technically correct, and well presented—he will hire your firm for other consulting assignments and recommend you to his friends. He might even offer you the job as treasurer of Ace Repair. In any event, a well-received report will give your career a big boost, so you want to do a good job. To help structure your analysis and report, answer the following questions.

QUESTIONS

1. a. Discuss the specific items of capital that should be included in the WACC.
   b. The comptroller currently finds the weights for the weighted average cost of capital (WACC) from information from the balance sheet shown in Table 2. Compute the book value weights that the comptroller currently uses for the company's capital structure.
   c. Based on the suggestion that the focus should be on market values, compute the weights of debt, preferred stock, and common stock.
   d. Are book value or market value weights better for calculating the firm's weighted average cost of capital?

2. a. Critique Ace Repair's current method of estimating its before-tax cost of debt.
   b. Is the earnings yield (E/P) an appropriate measure of the firm's cost of equity?

3. a. What is the best estimate of Ace's cost of debt?
   b. Should flotation costs be included in the component cost of debt calculation? Explain.
   c. Should the nominal cost of debt or the effective annual rate be used? Explain.
   d. How valid is an estimate of the cost of debt based on the yield to maturity of Ace's debt (ignore the call provision in 3 years) if the firm plans to issue 20-year long-term debt?
   e. What other methods could be used to estimate the cost of debt if, for example, Ace's outstanding debt had not been traded recently?

4. a. What is Ace's cost of preferred stock?
   b. Ace's preferred stock is more risky to investors than its debt, yet the before-tax yield on its preferred is lower than the yield on A-rated debt issues. Why does this occur?
   c. What if Ace's preferred stock required the establishment of a sinking fund that calls for the retiring 5 percent of the initial issue of preferred stock each year at par? How would the cost of preferred stock change and be handled in the WACC calculation?

5. a. Why is there a cost associated with retained earnings?
   b. What is Ace's cost of retained earnings, based on the CAPM approach and the analysts' long run forecast rate of growth?
   c. Why might one consider the T-bond rate to be a better estimate of the risk-free rate than the T-bill rate? Why might one argue for the use of the T-bill rate?
   d. How do historical betas, adjusted historical betas, and fundamental betas differ? Would Ace's historical beta be a better or a worse measure of its future market risk than the historical beta for a portfolio would be for the portfolio's future market risk? Explain.

e. What are some alternative ways to obtain a market risk premium for use in a CAPM cost-of-equity calculation? Discuss both the possibility of obtaining estimates from outside organizations and also ways which Ace could calculate a market risk premium itself.

6. a. What is Ace's discounted cash flow (DCF) cost of retained earnings?
   b. Suppose Ace, over the last few years, has had an 18 percent average return on equity (ROE) and has paid out 20 percent of its net income as dividends. Under what conditions could this information be used to help estimate the firm's expected future growth rate, g? Estimate k_s using this procedure for determining g.
   c. What was the firm's historical dividend growth rate using the point-to-point method? Using the linear regression method?

7. Use the bond-yield-plus-risk-premium method to estimate Ace's cost of retained earnings.

8. Based on all the information available, what is your best estimate for k_s? Explain how you decided what weight to give to each estimating technique.

9. What is your estimate of Ace's cost of new common stock, k_e? What are some potential weaknesses in the procedures used to obtain this estimate?

10. a. Compute Ace's WACC's based on the company's target capital structure and construct the marginal cost of capital (MCC) schedule. How large could the company's capital budget be before it is forced to sell new common stock? Ignore depreciation at this point.
    b. Would the MCC schedule remain constant beyond the retained earnings break point, no matter how much new capital it raised? Explain. Again, ignore depreciation.
    c. How does depreciation affect the MCC schedule? If depreciation were simply ignored, would this affect the acceptability of proposed capital projects? Explain.

11. Should the corporate cost of capital as developed above be used for all projects? If not, what type of adjustments should be made?

TABLE 1

Ace Repair, Inc.: Income Statement
for the Year Ended December 31, 1995
(In Thousands of Dollars)

Net sales	$400,467
Cost of goods sold	$320,477
Gross profit	$ 79,990
Admin and selling exp	$ 34,040
Depreciation	$ 4,080
Miscellaneous expenses	$ 10,132
Total operating exp	$ 48,252
EBIT	$ 31,738
Interest on ST loans	$ 3,016
Interest on LT debt	$ 3,600
Total interest	$ 6,616
Before-tax earnings	$ 25,122
Taxes (40%)	$ 10,049
Earnings bef. pref. div.	$ 15,073
Preferred dividends	$ 800
Net income available to common	$ 14,273
Dividends on common stock	$ 2,855
Additions to retained earnings	$ 11,418
EPS	$ 2.30
DPS	$ 0.46

TABLE 2

Ace Repair, Inc.: Balance Sheet
December 31, 1995
(In Thousands of Dollars)

Assets		*Liabilities and Equities*	
Cash and securities	$ 5,000	Accounts payable	$ 38,987
Accounts receivable	46,286	S-T bank loans	35,480
Inventory	74,065	Accruals	14,662
Current Assets	$125,351	Current liabilities	$ 89,129
Land, buildings, plant, and equipment	$106,463	Long-term bonds	40,000
Accumulated depreciation	(13,388)		
		Total liabilites	$129,129
Net fixed assets	$ 93,075		
		Preferred stock	10,000
		Common stock	20,000
		Retained Earnings	59,297
		Total common equity	$ 79,297
Total assets	$218,426	Total liab. and equity	$218,426

TABLE 3

Selected Ratios, Ace Repair, Inc.

Current ratio	1.41 times
Quick ratio	0.58 times
Total debt/total assets	59.1%
Long-term debt/long-term capital	30.9%
Times interest earned	4.80 times
Inventory turnover	5.41 times
Days sales outstanding	41.61 days
Total assets turnover	1.83 times
Profit margin	3.56%
P/E ratio	13.26 times
Market/book ratio	2.39 times
Payout ratio	20.0%

TABLE 4

Selected Data on Ace Repair, Inc.

1. The end-of-year bond quote on Ace's long-term, semiannual bond as reported in the financial press is as follows:

Bonds	Cur Yld	Vol	Close	Net Chg
ACE10s12	8.3	30	120.90	+½

These bonds will become callable in 3 years at a price of $1,100.

2. End-of-year quotes on Ace's common and perpetual preferred stock were as follows:

52 Weeks Hi	52 Weeks Lo	Stock	Sym	Div	Yld %	PE	Vol 100s	Hi	Lo	Close	Net Chg
31.5	26.5	Ace	ACER	0.46	1.5	13.3	256	31	30	30	+½
110_	98_	Acepf	ACEP	8.00	7.6	—	67	105	102_	105	+¾

3. End-of-year quotes on long-term treasury bonds were obtained from *The Wall Street Journal:*

Coupon Rate	Maturity Mo. /Yr.	Bid	Asked	Chg	Ask Yld
10 ⅜	Dec. 05	133:06	133:10	–3	6.27
10 ⅝	Dec. 15	144:08	144:10	–6	6.61
7 ⅞	Dec. 25	113:22	113:24	–6	6.57

4. End-of-year quotes on treasury bills were also obtained from *The Wall Street Journal*:

Maturity	Days to Mat.	Bid	Asked	Chg	Ask Yld
Mar 30	90	5.44	5.42	0	5.59
June 29	181	5.40	5.38	+.01	5.61
Sept 19	265	5.31	5.29	0	5.55

5. Ace's federal-plus-state tax rate is 40%.

6. The firm's last dividend (D_0) was $0.46. Here are the earnings and dividends per share over the last 5 years:

TABLE 4 (continued)

Selected Data on Ace Repair, Inc.

Year	DPS	EPS
1991	$0.12	$0.60
1992	0.30	0.84
1993	0.30	1.17
1994	0.33	1.64
1995	0.46	2.30

Some analysts may expect the same rate of growth in the future as in the past, while others probably expect it to decline as new competition enters the market. The average of all published analysts' "long run" forecasts—which are generally not specific but are often for the next 5 to 7 years—is a rate of about 16 percent.

7. A prominent investment banking firm recently estimated that the market risk premium is 6 percentage points over 30-year Treasury bonds. Security analysts have asked portfolio managers what risk premium they demand on a given company's stock over bonds. The analysts have compiled results which generally indicated a 3–5% premium above bond returns. Furthermore, based on historical data, Ibbotson Associates has found that the return premium of stocks over T-bonds has averaged about 7.0 percent from 1926 through 1995. Ace's historical beta as measured by several analysts is 1.3.

8. The going interest rate on an index of A-rated long-term corporate bonds is 8.0 percent.

9. Ace is forecasting earnings of $17,127,000 and depreciation of $4,500,000 for 1996. As in the recent past, about 20 percent of earnings will be paid out as dividends.

10. Ace's investment bankers believe that a new issue of common stock would require total flotation costs—including underwriting costs, market pressure from increased supply, and market pressure from negative signaling effects—of 30 percent.

11. Several years ago Vanderhein wrote into the company's strategic business plan the statement that Ace's target capital structure calls for 30 percent long-term debt, 5 percent preferred stock, and 65 percent common equity. However, he was not sure whether the target should be based on book or market values. A professor who consulted with the company suggested that the focus should be on market values, but he noted that most bond rating agencies, security analysts, and corporate executives focus on book values.