of the unlevered firm and the tax shield, and what is the maximum price Hastings would bid for Vandell now?

(25-5) Merger Analysis

Marston Marble Corporation is considering a merger with the Conroy Concrete Company. Conroy is a publicly traded company, and its beta is 1.30. Conroy has been barely profitable, so it has paid an average of only 20% in taxes during the last several years. In addition, it uses little debt, having a target ratio of just 25%, with the cost of debt 9%.

If the acquisition were made, Marston would operate Conroy as a separate, wholly owned subsidiary. Marston would pay taxes on a consolidated basis, and the tax rate would therefore increase to 35%. Marston also would increase the debt capitalization in the Conroy subsidiary to $w_d = 40\%$ for a total of $22.27 million in debt by the end of Year 4 and pay 9.5% on the debt. Marston's acquisition department estimates that Conroy, if acquired, would generate the following free cash flows and interest expenses (in millions of dollars) in Years 1–5:

Year	Free Cash Flows	Interest Expense
1	$1.30	$1.2
2	1.50	1.7
3	1.75	2.8
4	2.00	2.1
5	2.12	?

In Year 5 Conroy's interest expense would be based on its beginning-of-year (that is, the end-of-Year-4) debt, and in subsequent years both interest expense and free cash flows are projected to grow at a rate of 6%.

These cash flows include all acquisition effects. Marston's cost of equity is 10.5%, its beta is 1.0, and its cost of debt is 9.5%. The risk-free rate is 6%, and the market risk premium is 4.5%.

a. What is the value of Conroy's unlevered operations, and what is the value of Conroy's tax shields under the proposed merger and financing arrangements?

b. What is the dollar value of Conroy's operations? If Conroy has $10 million in debt outstanding, how much would Marston be willing to pay for Conroy?

(25-6) Merger Valuation with Change in Capital Structure

VolWorld Communications Inc., a large telecommunications company, is evaluating the possible acquisition of Bulldog Cable Company (BCC), a regional cable company. VolWorld's analysts project the following post-merger data for BCC (in thousands of dollars, with a December 31 year-end):

	2007	2008	2009	2010	2011	2012
Net sales		$450	$518	$ 555	$ 600	$ 643
Selling and administrative expense		45	53	60	68	73
Interest		40	45	47	52	54
Total net operating capital	$800	850	930	1,005	1,075	1,150

Tax rate after merger: 35%

Cost of goods sold as a percent of sales: 65%

BCC's pre-merger beta: 1.40

Risk-free rate: 6%

Market risk premium: 4%

Terminal growth rate of free cash flows: 7%

1 million shares outstanding and a target capital structure consisting of 30% debt. Vandell's debt interest rate is 8%. Assume that the risk-free rate of interest is 5% and the market risk premium is 6%. Both Vandell and Hastings face a 40% tax rate.

Easy Problem 1

(25-1) Valuation

Vandell's free cash flow (FCF_0) is $2 million per year and is expected to grow at a constant rate of 5% a year; its beta is 1.4. What is the value of Vandell's operations? If Vandell has $10.82 million in debt, what is the current value of Vandell's stock? (Hint: Use the corporate valuation model of Chapter 15.)

Intermediate Problems 2–3

(25-2) Merger Valuation

Hastings estimates that if it acquires Vandell, interest payments will be $1,500,000 per year for 3 years, after which the current target capital structure of 30% debt will be maintained. Interest in the fourth year will be $1.472 million, after which interest and the tax shield will grow at 5%. Synergies will cause the free cash flows to be $2.5 million, $2.9 million, $3.4 million, and then $3.57 million, in Years 1 through 4, after which the free cash flows will grow at a 5% rate. What is the unlevered value of Vandell and what is the value of its tax shields? What is the per share value of Vandell to Hastings Corporation? Assume Vandell now has $10.82 million in debt.

(25-3) Merger Bid

On the basis of your answers to Problems 25-1 and 25-2, if Hastings were to acquire Vandell, what would be the range of possible prices that it could bid for each share of Vandell common stock?

Challenging Problems 4–6

(25-4) Merger Valuation with Change in Capital Structure

Assuming the same information as for Problem 25-2, suppose Hastings will increase Vandell's level of debt at the end of Year 3 to $30.6 million so that the target capital structure is now 45% debt. Assume that with this higher level of debt