

Quiz 5 Solutions

Security Analysis - Finance 40610
Professor Shane A. Corwin
Fall Semester 2007

Instructions: Please answer all of the questions completely and show all of your work. You may use a formula sheet and a calculator. The quiz is worth 25 points.

1. (11 points) You are valuing a firm using a discounted cash flow model based on consolidated financial statements. Based on a free cash flow to the firm (FCFF) model, you estimate the value of operating cash flows for this firm to be \$1.9 billion. The firm has no debt and has 120 million outstanding shares of common stock. The firm also has the following non-operating assets:
- (i) cash (T-Bills) valued at \$350 million.
 - (ii) a 5% holding in company ABC, classified as a minority passive investment
 - (iii) an 80% holding in company XYZ, classified as a majority active investment

The minority interest associated with company XYZ is listed on the balance sheet at \$165 million. Company ABC has 10 million shares outstanding and its stock is currently trading at \$50 per share. Company XYZ has 50 million shares outstanding and its stock is currently trading at \$23 per share.

Based on this information, estimate the total value of equity and the price per share for your firm.

Income from a minority holding, such as that in company ABC, is not included in operating income. As a result, the value of our holding in ABC will not show up in the firm value we estimated based on FCFF. We need to add 5% ABC's market value to our estimate of firm value.

For a majority holding, such as that in XYZ, our the reported financial statements are consolidated. As a result, 100% of the income from XYZ is included in operating income and 100% of the value of XYZ will show up in the firm value we estimated based on FCFF. We must subtract therefore subtract the 20% of XYZ's market value that someone else owns.

The market value of ABC equals: $10\text{m shares} \times \$50 = \$500\text{m}$

The market value of XYZ equals: $50\text{m shares} \times \$23 = \$1150\text{m}$

Equity value equals: $\$1900\text{m} + \$350\text{m} + (0.05)(\$500) - (0.20)(\$1150) = \$2045\text{m}$

Estimated stock price equals: $\$2045/120\text{m shares} = \17.04

2. (14 points) You are valuing Home Depot based on a free cash flow to equity (FCFE) model. Based on the FCFE model, you estimate the value of equity to be \$85 billion. However, this estimate ignores employee stock options outstanding. The firm's 10K provides the following description of outstanding employee stock options.

Shares outstanding	1,970 mil
Employee options outstanding	66 mil
Current stock price	\$40.00
Average option exercise price	\$38.00
Black-Scholes option price	\$5.50
Marginal tax rate	38.0%

- a) (7 points) Calculate the estimated price per share for Home Depot using the Treasury-Stock method to account for existing employee stock options.

$$P = \frac{85000 + 66(38)}{1970 + 66} = \$42.98$$

- b) (7 points) Calculate the estimated price per share for Home Depot using the Black-Scholes model to account for existing employee stock options.

$$P = \frac{85000 - (66)(5.5)(1 - .38)}{1970} = \$43.03$$