

## Quiz 5 Solutions

Security Analysis - Finance 40610  
Professor Shane A. Corwin  
Fall Semester 2006

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**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.

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1. (10 points) You are valuing a company called HighTech Corporation using the firm's consolidated financial statements. Based on a free cash flow to the firm (FCFF) model, you estimate the value of operating cash flows for HighTech to be \$1.5 billion. The firm also has cash & marketable securities valued at \$425 million and no debt.

In addition, HighTech has holdings in two other firms. HighTech owns a 15% stake in ChipMaker Inc., which is classified as a minority passive investment. The market capitalization of ChipMaker Inc. is \$775 million. HighTech also owns a 90% stake in WebPortal, which is classified as a majority active investment. The minority interest in WebPortal is listed on HighTech's balance sheet at \$50 million and the market capitalization of WebPortal is \$900 million.

Calculate the estimated price per share for HighTech Corporation assuming the firm has 100 million shares outstanding.

<i>Firm Value = Value of FCFF + Cash &amp; Securities - Debt</i>	$= 1500 + 425 - 0 = \$1,925.00m$
<i>+ Passive Investments of 15%(775)</i>	$+ 116.25m$
<i>- Minority Interests of 10%(900)</i>	$- 90.00m$
<i>Total Firm Value</i>	$= \$1,951.25m$

$$\text{Estimated Price} = \frac{1951.25}{100} = \$19.513 \text{ per share}$$

2. (15 points) You are valuing Nike using a free cash flow to equity (FCFE) model. You estimate the present value of FCFE at \$22,572 million. You also collect the following additional data:

Shares outstanding	256 mil
Current stock price	\$80.00
Employee options outstanding	20 mil
Average option exercise price	\$65.00
Black-Scholes option price	\$29.75
Marginal tax rate	38.0%

- a) (6 points) Calculate the estimated price per share using the Treasury-Stock method to account for existing employee stock options.

$$\text{Estimated Price} = \frac{\$22572m + 20m(\$65)}{256m + 20m} = \frac{\$23872m}{276m} = \$86.493$$

- b) (4 points) An analyst at your firm comes to you with the following estimate of price per share for Nike, based on the Black-Scholes value of employee options:

$$\frac{\$22572 - \$29.75(20mil)}{256mil + 20mil} = \$79.63$$

Briefly explain any errors in the analyst's method.

There are two errors. First, you should subtract only the after-tax value of existing employee stock options. Second, after subtracting the estimated value of employee options, you should divide by the number of common stock shares outstanding (not the diluted number of shares).

- c) (5 points) Calculate the correct price per share for Nike using the Black-Scholes model to account for existing employee stock options.

$$\text{Estimated Price} = \frac{\$22572m - \$29.75(20m)(1 - 0.38)}{256m} = \frac{\$22203.1m}{256m} = \$86.731$$