Quiz A: 4/18/12

Quiz: Given the following information, set up the calculations required to determine the beta of Dropping Apple’s assets and debt. Plug in as many numbers as possible.

Information on:

Dropping Apple’s stock: current market value = $50,000, beta = 1.4
Dropping Apple’s bonds: maturity = 4 years, maturity value = $55,000, current market value = $40,000
Returns: Dropping Apple’s bonds = 8.3%, U.S. Treasuries that mature in 4 years = 2%
If we value Dropping Apple’s stock as a call on the firm’s assets: the price of a U.S. Treasury that matures for $55,000 in 4 years = $50,811, implied volatility = 49.1%, \( d_1 = 1.0732, d_2 = 0.0914 \)

Note: Bonus WSJ Questions on back of page

\[ A = 50,000 + 40,000 = 90,000 \]
\[ D = N(d_1) = N(1.0732) = .85769 \]
\[ \beta_U = \frac{\beta_E}{\Delta(1 + \frac{d}{E})} = \frac{1.4}{.85769 (1 + \frac{40,000}{55,000})} \]
\[ \beta_D = (1 - \Delta) \left( \frac{A}{D} \right) \beta_U = (1 - .85769) \left( \frac{90,000}{40,000} \right) \beta_U \]
\[ \text{or} \quad \frac{50,000}{40,000} \]
\[ (1 + \frac{50,000}{40,000}) \]