Quiz B: 4/18/12

**Quiz:** Given the following information, set up the calculations required to determine the beta of Spain's Leverage Inc.'s assets and debt. Plug in as many numbers as possible.

**Information on:**

Spain's Leverage stock: current market value = $20,000, beta = 1.2
Spain's Leverage bonds: maturity = 6 years, maturity value = $80,000, current market value = $50,000
Returns: Spain's Leverage bonds = 8.1%, U.S. Treasuries that mature in 6 years = 3%
If we value Spain's Leverage stock as a call on the firm's assets: the price of a U.S. Treasury that matures for $85,000 in 4 years = $66,999, implied volatility = 28.1%, $d_1 = 0.4081, $d_2 = -0.2809$

**Note:** Bonus WSJ Questions on back of page

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A = 20,000 + 50,000 = 70,000
\]

\[
\Delta = N(d_1) = N(0.4081) = 0.65910
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\[
\beta_L = \frac{\beta_E}{\Delta(1+\frac{d_1}{2})} = \frac{1.2}{0.65910(1 + \frac{50,000}{20,000})}
\]

\[
\beta_D = (1 - \Delta)^{\frac{A}{D}} \beta_L = (1 - 0.65910) \left(\frac{10,000}{50,000}\right) \beta_L
\]

\[
= \frac{1}{1 + \frac{20,000}{50,000}}
\]