Quiz A for 2:30 Class: 11/20/13 Name Key

Short Answer 1 (15 points): What would you use for S when calculating the beta of a call on OneExchange Inc that expires five months from today? Be specific. (market value) of (stock) +8/+7

Short Answer 2 (15 points): What rate would you use when calculating PV(K) when determining the value of being able to abandon a project over the next three years if the project's cash flows end up being lower than expected? Be specific. (3-year) (risk-free rate) +8/+7

Problem (75 points): The beta of 3Million Products' equity is 1.3. Use the following information to set up the calculations needed to determine the beta of 3Million Products' assets and debt. Note: If you are solving for something other than the left-hand side of the equation, state what you are solving for.

Book values: equity = $15 million, debt = $8 million
Market values: equity = $35 million, debt = $6.5 million.
Promised payments on bonds: no coupons, but the bonds mature for $10 million five years from today
Annual returns on Treasury securities by maturity: 1-year = 0.15%, 2-year = 0.28%, 3-year = 0.59%, 4-year = 0.99%, 5-year = 1.25%, 10-year = 2.53%, 20-year = 3.51%, 30-year = 3.77%.
Return on bonds with the same credit rating as 3Million Products: 1-year = 5%, 2-year = 6%, 5-year = 9%, 10-year = 10%, 20-year = 12%, 30-year = 15%.
Standard deviation of returns on: equity = 39%, debt = 9%

Wall Street Journal Questions are on the back of this page.

+4 $\left(\beta_U = \frac{1.3}{\Delta\left(1+\frac{6.5}{35}\right)}\right)$ (17)

+4 $(\Delta = N(d_1) \Rightarrow$ look up on table or using Excel (same for $N(d_2)$)) +1 (5)

+4 $\left(d_1 = \frac{\ln\left(\frac{A}{PVCK}\right)}{\sigma\sqrt{5}} + \frac{\sigma\sqrt{5}}{2}\right)$ +1 (6)

$A = 6.5 + 35$ +6 (6)

+4 $(PVCK = \frac{10}{(1.0125)^5})$ +6 +2 (18)

+4 $(35 = \Delta A(N(d_1)) - PVCK\,N(d_2))$ (4)

+4 $(d_2 = d_1 - \sigma\sqrt{5})$ +2 (6)

+4 $\left(\beta_D = (1-\Delta)\frac{A}{6.5}\beta_U\right)$ +3 (7)

+6 solve for σ that makes hold (6)