Quiz B for 4:00 Class: 11/14/12 Name Key

Use the following information to set up the calculations required to determine a) the portfolio of DR Horton (DHI) stock and risk-free bonds required to duplicate a put on DHI that expires on 5/17/13 (184 days from today) with a strike price of $20 and to b) determine the beta of the put. You plan to hold the put for 93 days through 2/15/13.

Information on market values per share of:
DHI assets = 40; DHI stock = 19.25; DHI bonds = 20.75; this put = 2.63; an equivalent call = 1.83

Information on book values per share of:
DHI assets = 50; DHI stock = 20; DHI bonds = 30

Information on standard deviation of returns on:
DHI assets = 20%; DHI stock = 40%; DHI bonds = 10%; this put = 80%; an equivalent call = 110%

Information on betas on:
DHI assets = 1.1; DHI stock = 1.39; DHI bonds = 0.3

Information on required returns on:
DHI assets = 8.7%; DHI stock = 10.7%; DHI bonds = 3.1%

Information on expected dividends on DHI stock: 2/8 (86 days) = 0.038; 5/10 (177 days) = 0.039; 8/11 (270 days) = 0.04

Information on returns on Treasury returns (all < 1%) maturing on: 2/8 = 0.071%, 2/14 = 0.091%; 5/10 = 0.112%; 5/16 = 0.132%; 8/11 = 0.162%

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

+4 $\beta_p = \left(\frac{\Delta S^x}{\Delta S^x + B}\right)\beta_s = \left(\frac{\Delta S^x}{\Delta S^x + B}\right) 1.39$ +6 10

+4 $\Delta = -(1 - N(d_1))$

+4 $d_1 = \frac{\ln\left(\frac{S^x}{PV(K)}\right)}{\sigma\sqrt{T}} + \frac{\sigma\sqrt{T}}{2} = \frac{\ln\left(\frac{S^x}{PV(K)}\right)}{.4\sqrt{\frac{184}{365}}} + \frac{.4\sqrt{\frac{184}{365}}}{2}$ +3 +2 +3 +2 14

+4 $S^x = 19.25 - \frac{0.038}{(1.107)^{86/365}} - \frac{0.039}{(1.107)^{177/365}}$ +5 +1 +1 +2 +1 +1 +2 17

+4 $PV(K) = \frac{20}{(1.00132)^{184/365}}$ +5 +5 +2 16

+4 $B = PV(K)(1 - N(d_2))$ 4

+4 $d_2 = d_1 - .4\sqrt{\frac{184}{365}}$ +3 +2 9

+1 N( ) = look up on table or in Excel