

Quiz A for 2:30 Class: 11/14/12

Name Key

Use the following information to set up the calculations required to determine a) the portfolio of Home Depot (HD) stock and risk-free bonds required to duplicate a put on HD that expires on 5/17/13 (184 days from today) with a strike price of \$60 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:

HD assets = 100; HD stock = 63.65; HD bonds = 36.35; this put = 1.52; an equivalent call = 4.85

Information on book values per share of:

HD assets = 50; HD stock = 20; HD bonds = 30

Information on standard deviation of returns on:

HD assets = 10%; HD stock = 17%; HD bonds = 5%; this put = 50%; an equivalent call = 30%

Information on betas on:

HD assets = 0.8; HD stock = 1.03; HD bonds = 0.2

Information on required returns on:

HD assets = 6.6%; HD stock = 8.2%; HD bonds = 2.4%

Information on expected dividends on HD stock: 11/29 (15 days) = 0.29; 3/6 (112 days) = 0.30; 6/14 (212 days) = 0.31

Information on returns on Treasury returns (all < 1%) maturing on: 11/29 = 0.071%, 2/14 = 0.091%; 3/7 = 0.112%; 5/16 = 0.132%; 6/14 = 0.139%

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

- +4 $\beta_p = \left(\frac{\Delta S^X}{\Delta S^X + B} \right) \beta_s = \left(\frac{\Delta S^X}{\Delta S^X + B} \right) 1.03$ (10)
- +4 $d_1 = - (1 - N(d_1))$ (4)
- +4 $d_1 = \frac{\ln\left(\frac{S^X}{PV(K)}\right) + \frac{\sigma \sqrt{T}}{2}}{\frac{\sigma \sqrt{T}}{2}} = \frac{\ln\left(\frac{S^X}{PV(K)}\right) + \frac{.17 \sqrt{\frac{184+2}{365}}}{2}}{\frac{.17 \sqrt{\frac{184+2}{365}}}{2}}$ (14)
- +4 $S^X = 63.65 - \frac{.29^{+1}}{(1.082)^{+2/365}} - \frac{0.30^{+1}}{(1.082)^{+112/365}}$ (17)
- +4 $PV(K) = \frac{60}{(1.00132)^{+181/365}}$ (16)
- +4 $B = PV(K) (1 - N(d_2))$ (4)
- +4 $d_2 = d_1 - \frac{.17 \sqrt{\frac{184+2}{365}}}{2}$ (9)
- +1 $N(\cdot) \Rightarrow$ look up on tables or in excel