

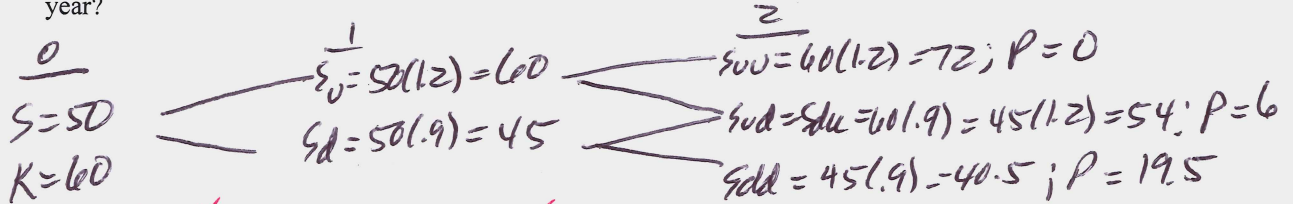
Quiz B for 11:30 Class: 08/06/13

Name Key

Note: Answer everything on a per-share basis.

Assume that Dellay Computers has a current stock price of \$50 per share and its stock price will rise by 20% or fall by 10% each of the next two years. You would like to build a portfolio today that is equivalent to a put that expires two years from today with a \$60 strike price. The risk-free interest rate is 1%.

- What portfolio today is equivalent to the put?
- What will it cost today to build this portfolio?
- How will you need to rebalance your portfolio one year from today if Dellay's stock price falls next year?



(18)  $\Delta_u = \frac{0 - 6}{72 - 54} = -0.3333$ ;  $B_u = \frac{6 - (-0.3333)(54)}{1.01} = 23.7624$

$P_u = 60(-0.3333) + 23.7624 = 3.7624$

(18)  $\Delta_d = \frac{6 - 19.5}{54 - 40.5} = -1$ ;  $B_d = \frac{19.5 - (-1)(40.5)}{1.01} = 59.4059$

$P_d = 45(-1) + 59.4059 = 14.4059$

(18)  $\Delta = \frac{3.7624 - 14.4059}{60 - 45} = -0.7096$ ;  $B = \frac{14.4059 - (-0.7096)(45)}{1.01} = 45.8779$

$P = 50(-0.7096) + 45.8779 = 10.3993$

a. short-sell 0.7096 shares + buy \$45.8779 of bonds

b. \$10.3993

c. change in shares =  $-1 - (-0.7096) = -0.2904 \Rightarrow$  short-sell 0.2904 shares

Change in bonds: Buy \$13.0693 bonds

Calculation:

$0.2904(45)$

or

$59.4059 - 45.8779(1.01)$