Quiz B for 2:30 Class: 10/31/12 Name Key

Assume a stock worth $100 will rise by 20% or fall by 10% by one year from today. Assume also that the risk-free interest rate is 2%.

a. What is the value of a call with a $110 strike price?
b. What investments would be required to create a portfolio that duplicates the payoff on the put?
c. What would be the payoff on each part of the portfolio (in part b) if the stock rises 20%?
d. What would be the payoff on each part of the portfolio (in part b) if the stock falls 10%?

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

a. $S_u = 100(1.2) = 120$; $S_d = 100(.9) = 90$

$C_u = 10$, $C_d = 0$

$\Delta = \frac{10-0}{120-90} = \frac{1}{3}$; $B = \frac{0 - 90(\frac{1}{3})}{1.02} = -29.4118$

$C = 100(\frac{1}{3}) - 29.4118 = 3.9216$

b. (Buy $\frac{1}{3}$ of a share) & (short-sell $29.4118 of risk-free bonds)

c. Stock = $40 = \frac{1}{3}(120)$

Bond = $-30 = -29.4118(1.02)$

d. Stock = $30 = \frac{1}{3}(90)$

Bond = $-30 = -29.4118(1.02)$