

## Key to Quiz B: 3/28/12

**Quiz:** Assume that Barnes & Noble's stock price is \$14 and that you can buy or sell a call on Barnes & Noble for \$0.75 and can buy or sell a put on Barnes & Noble for \$6.00. The strike price on both options is \$20 and both expire four months from today. You can buy a Treasury bond that matures for \$20 four months from today for \$19.94.

- Given this information, what set of transactions today will generate an arbitrage profit? What is your profit today from these transactions?
- Show that the payoffs of the transactions you set up in part "a" sum to zero if Barnes & Noble's stock price has fallen to \$15 when the options expire four months from today.
- Show that the payoffs of the transactions you set up in part "a" sum to zero if Barnes & Noble's stock price has risen to \$25 when the options expire four months from today.

a.  $S + P = PV(K) + C \Rightarrow 14 + 6 = 19.94 + 0.75 \Rightarrow 20 \neq 20.69$

$\Rightarrow$  buy stock, buy put, short bond, and sell call

$\Rightarrow$  profit =  $CF_0 = -14 - 6 + 19.94 + 0.75 = 0.69$

b.  $S = 15$ :  $CF_t = 15 + 5 - 20 - 0 = 0$

c.  $S = 25$ :  $CF_t = 25 + 0 - 20 - 5 = 0$