

4/3/13
 Quiz C: 03/25/13

Name & Class Time Key

Notes: In solving the following I recommend setting up a table like we did in chapter 3, but this is not required. All answers should be on a per-share basis. Use a "+" for an inflow and a "-" for an outflow. I will assume an inflow if no sign is given.

Based on the following information on Citigroup stock and options, 1) what set of transactions today will generate an arbitrage profit today, 2) what is your arbitrage profit today, 3) at expiration of the options, what are the cash flows on your individual positions and on your total portfolio if Citigroup's stock price a) rises to \$50 per share and b) falls to \$40 per share, 4) what set of transactions or actions generate each of the cash flows from your individual positions at the expiration of the options if Citigroup's stock price falls to \$40 per share? When answering part 4) include all dollar amounts and locations for transactions.

Strike price on options = \$45; Expiration of options: 7/19/13 (107 days); Risk-free interest rate = 1.0%

	Bid	Ask
Stock	43.78	43.80
Call	2.88	2.91
Put	3.20	3.30

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

$$PV(45) = \frac{45}{(1.01)^{107/365}} = 44.87$$

$$STP = C + PV(45)$$

$$\Rightarrow \text{Arb} = STP - C - PV(45) > 0 \Rightarrow 43.78 + 3.20 - 2.91 - 44.87 = -0.80 \times$$

$$\text{or } -S - P + C + PV(45) > 0 \Rightarrow -43.80 - 3.30 + 2.88 + 44.87 = +0.65 \checkmark$$

Trans	CF ₀	CF ₁	CF ₂
a) buy stock	-43.80	+50	+40
b) buy put	-3.30	0	+5
c) sell call	+2.88	-5	0
d) short sell risk-free bond	+44.87	-45	-45
Total	+0.65	0	0

- 4) a) sell stock for \$40 in market
 b) buy stock for \$40 in market
 c) +1 new away call
 d) buy back bond for \$45