

4/3/13

Quiz A: 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 Visa 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 Visa's stock price a) rises to \$175 per share and b) falls to \$165 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 Visa's stock price rises to \$175 per share? When answering part 4) include all dollar amounts and locations for transactions.

Strike price on options = \$170; Expiration of options: 9/20/13 (170 days); Risk-free interest rate = 1.3%

	Bid	Ask
Stock	167.34	167.36
Call	9.60	9.65
Put	10.50	10.60

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

$$P(VK) = \frac{170}{(1.013)^{170/365}} = 168.98$$

$$S+P = C + P(VK)$$

$$\text{Arb} \Rightarrow S+P - C - P(VK) > 0 \Rightarrow 167.34 + 10.50 - 9.65 - 168.98 = -0.79$$

$$\text{or } -S - P + C + P(VK) > 0 \Rightarrow -167.36 - 10.60 + 9.60 + 168.98 = +0.62$$

Trans	CF ₀	CF ₁	
a) Buy stock	-167.36	+175	(9)
b) Buy put	-10.60	+165	(9)
c) Sell call	+9.60	+5	(9)
d) Short risk-free bond	+168.98	-170	(13)
<u>Total</u>	<u>+0.62</u>	<u>0</u>	<u>+3</u>

- 4) a) sell stock for \$175 in market +1
- b) throw away put +1
- c) buy stock for \$175 in market +1
- d) buy back bond for \$170 (or make up \$170 of cash to lender) +1
- sell to call holder for \$170 +1