

Quiz A for 9:45 Class: 08/01/13

Name Key

Notes: In solving the following I recommend setting up a table. Answer everything 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.

Assume Facebook's stock trades at \$36.80 per share and that the price of a call that expires on 9/21/13 (51 days from today) with a \$40 strike price is \$1.24 and that the price of a put that expires on 9/21/13 (51 days from today) with a strike price of \$40 is \$4.00. Assume also that the risk-free interest rate is 0.8%.

- What set of transactions today will earn you an arbitrage profit today? What is your profit?
- What cash flows will your individual transactions today create one year from today if Facebook's stock ends up at \$36 on 9/21 and if Facebook's stock ends up at \$43 on 9/21? What are the total cash flows for your arbitrage portfolio on 9/21 if Facebook's stock ends up at \$36 and if it ends up at \$43?
- What transactions or actions on 9/21 generate each of the individual cash flows in part (b) if Facebook's stock price ends up at \$43? Note: Be sure to specify where each transaction occurs.

$$S + P = C + PV(K) \quad \frac{40}{(1.008)^{51/365}} = 1.24 + 39.9555$$

$$36.8 + 4 = 1.24 + 39.9555$$

$$40.8 \neq 41.195$$

buy sell

Trans	CF ₀	CF ₁ 36	CF ₁ 43
+5 Buy stock	-36.8 ⁺³	+36 ⁺³	+43(a) ⁺³ (10)
+5 Buy put	-4 ⁺³	+4 ⁺³	0 (b) ⁺³ (12)
+5 sell call	+1.24 ⁺³	0 ⁺³	-3 (c) ⁺³ (13)
+5 short risk-free bond	+39.96 ⁺³	-40 ⁺³	-40 (d) ⁺³ (14)
<u>Total</u>	<u>+0.40⁺³</u>	<u>0⁺²</u>	<u>0⁺²</u>

- ✓ = +1
- (a) sell stock for \$43 in market ✓
 - (b) don't exercise put ✓
 - (c) buy stock for \$43 in market a sell for \$40 to holder of call ✓
 - (d) buy bond for \$40 in market + return to lender of bond ✓
or pay \$40 to lender of bond ✓