

Quiz A for 4:00 Class: 11/12/12

Name Key

Assume you are planning to buy a put on McDonald's with an exercise price of \$85 that expires 67 days from today on 1/18/13. As soon as the put expires, you plan to buy a second put that expires 95 days from today on 2/15/13. McDonald's stock price currently equals \$84.75 per share. By 1/18/13, you expect McDonald's stock price to fall to \$82 per share and by 2/15/13, you expect McDonald's stock price to fall to \$75 per share. By a year from today (11/12/13), you expect McDonald's stock price to rebound to \$84 per share.

Using the following information, Set up the equations and plug in as many numbers as possible to use the Black-Scholes option pricing model to value this option.

	Between now and:		
	1/18/13	2/15/13	11/12/13
Standard deviation of returns on:			
McDonald's assets	9.4%	11.3%	12.2%
McDonald's stock	18.1%	22.5%	24.3%
McDonald's bonds	1.5%	1.6%	1.8%
An equivalent call	36.6%	44.5%	48.4%
This put	29.0%	31.0%	34.2%
Annualized return on:			
U.S. Treasuries (all < 1%):	0.097%	0.120%	0.204%
McDonald's bonds	0.11%	0.14%	0.22%

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

$$+5 \left(d_1 = \frac{\ln\left(\frac{84.75}{85}\right) + \frac{0.181 \sqrt{\frac{67}{365}}}{2}}{0.181 \sqrt{\frac{67}{365}}} \right) \quad (22)$$

$$+5 \left(PUCK = \frac{85}{(1.00097)^{67/365}} \right) \quad (28)$$

$$+5 \left(d_2 = d_1 - \frac{0.181 \sqrt{\frac{67}{365}}}{2} \right) \quad (11)$$

$$+8 \left(P = PUCK(1 - N(d_2)) - 84.75(1 - N(d_1)) \right) \quad (13)$$

+1 \Rightarrow look up $N(d_1)$ and $N(d_2)$ on tables or with Excel