

Quiz B for 4:00 Class: 04/17/13

Name Key

Using the following information, set up the calculations (write out equations and plug in the numbers) needed to determine the value of a call on Citigroup that expires on July 19, 2013 (93 days from today) and which has a strike price of \$45. You plan to hold this call only through June 21, 2013 (65 days from today). Risk-free interest rates (all less than 1%) vary by maturity as follows: 5/16 = 0.030%, 5/23 = 0.020%, 5/30 = 0.035%, 6/6 = 0.040%, 6/13 = 0.036%, 6/20 = 0.041%, 6/27 = 0.042%, 7/5 = 0.046%, 7/11 = 0.056%, 7/18 = 0.051%, and 7/25 = 0.057%. Note: All of the following are per-share data related to Citigroup.

Actual or expected values as of:

	4/17	6/21	7/19
Assets	183	185	188
Stock	46	47	49
Debt	137	138	139

Expected standard deviation between now and:

	4/17	6/21	7/19
Assets	19%	20%	21%
Stock	28%	29%	31%
Debt	13%	14%	15%
This call	95%	97%	98%
Equivalent put	98%	101%	103%

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

$$+3 \quad d_1 = \frac{\ln\left(\frac{46^{+4}}{PV(K)}\right)}{0.31 \sqrt{\frac{93+2}{365}^{+2}}} + \frac{.31 \sqrt{\frac{93+2}{365}^{+2}}}{2} \quad (15)$$

$$+3 \quad PV(K) = \frac{45^{+7}}{(1.00051)^{93/365^{+2}}} \quad (19)$$

$$+3 \quad d_2 = d_1 - \frac{.31 \sqrt{\frac{93+2}{365}^{+2}}}{2} \quad (7)$$

$$+4 \quad C = 46^{+4} (N(d_1)) - PV(K) N(d_2) \quad (8)$$

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