

Quiz B for 2:30 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 put on Goldman Sachs that expires on June 21, 2013 (65 days from today) and which has a strike price of \$145. You plan to hold this put only through May 17, 2013 (30 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 Goldman Sachs.

Actual or expected values as of:

	4/17	5/17	6/21
Assets	1138	1133	1130
Stock	143	140	138
Debt	995	993	992

Expected standard deviation between now and:

	4/17	5/17	6/21
Assets	20%	22%	23%
Stock	30%	32%	34%
Debt	10%	12%	13%
Equivalent call	90%	92%	95%
This put	88%	89%	91%

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

$$+3 \left(d_1 = \frac{\ln\left(\frac{143}{1000}\right)}{0.34 \sqrt{\frac{65}{365} + 2}} + \frac{0.34 \sqrt{\frac{65}{365} + 2}}{2} \right) \quad (15)$$

$$+3 \left(P_{VK} = \frac{145}{(1.00041)^{65/365}} \right) \quad (19)$$

$$+3 \left(d_2 = d_1 - 0.34 \sqrt{\frac{65}{365} + 2} \right) \quad (7)$$

$$+4 \left(P = P_{VK} (1 - N(d_2)) - 143 (1 - N(d_1)) \right) \quad (8)$$

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