

Quiz A for 2:30 Class: 11/28/12

Name Key

Assume your firm is considering whether or not to build a new factory. Your boss has asked you to determine the effect of being able to abandon the factory rather than continuing to operate it. Set up the calculations you would need to provide your boss with an answer.

Information on the factory:

Life of factory = 10 years;

Cost to build factory = \$110,000

Present value today of the factory's cash flows: all 10 years = \$100,000; first three years = \$40,000; first two years = \$30,000

Standard deviation of returns on factory: all 10 years = 45%; first three years = 50%; first two years = 60%

Proceeds if sell factory at any time over the next two years = \$70,000

Information on possible expansion of factory:

Time over which it is possible to expand = three years

Cost of expansion = \$50,000

Present value of expansion's cash flows: PV at the time of expansion = \$45,000, PV today = \$39,000

Standard deviation of returns on expansion: over next three years = 55%; over next eight years = 40%

Life of expansion = five years (once built)

Returns on U.S. Treasuries: 1-year = 3%; 2-year = 4%; 3-year = 5%; 5-year = 7%; 8-year = 9%; 10-year = 12%

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

$$+6 \left(P = PV(CF)(1 - N(d_2)) - S(1 - N(d_1)) \right)$$

$$+6 \left(PV(CF) = \frac{70,000}{(1.04)^{2+6}} \right) \quad (34)$$

$$+3 \left(d_2 = d_1 - \sigma \sqrt{T} \right)$$

$$+3 \left(d_1 = \frac{\ln\left(\frac{S}{PV(CF)}\right)}{\sigma \sqrt{T}} + \frac{\sigma \sqrt{T}}{2} \right)$$

$$+11 \quad \sigma = .6$$

$$+6 \quad T = 2$$

$$+11 \quad S = S^x = 100,000 - 30,000$$

+1 \Rightarrow look up $N(d_1) + N(d_2)$ on table or in Excel