Question #67355, Economics / Finance

Determine the price of a European put option on a non-dividend paying stock when the stock price is sh. 69, the strike price is sh. 70, the risk-free rate is 5% per annum, the volatility is 35% per annum, and the time to maturity is three months

Answer:

In this case, $S_0 = 69$, $K = 70$, $r = 0.05$, $\sigma = 0.35$, and $T = 0.5$.

$$d_1 = \frac{\ln(69/70) + (0.05 + 0.35^2/2) \times 0.5}{0.35\sqrt{0.5}} = 0.1666$$

$$d_2 = d_1 - 0.35\sqrt{0.5} = -0.0809$$

The price of the European put is

$$70e^{-0.05 \times 0.5}N(0.0809) - 69N(-0.1666)$$

$$= 70e^{-0.025} \times 0.5323 - 69 \times 0.4338$$

$$= 6.40$$

or $6.40.

Source: https://www.coursehero.com/file/pfc8s9/Problem-1312-Assume-that-a-non-dividend-paying-stock-has-an-expected-return-of/