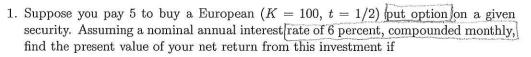
M451/551 Quiz 4

February 10, Prof. Connell

Name: Enrique Areyan You do not need to simplify numerical expressions.



(a)
$$S(1/2) = 102$$
;

(b)
$$S(1/2) = 98$$
.

Hence, (a) value = 0. since s(1/2)=102 7, 100 = K So the P.U. of not return is [-5 1]

(b) value =
$$z$$
 since $s(1/z) = 98 < 100 = x
So the p.v. of this option is: $2(1+0.06)^6 = 2(1.005)^{-6}$$

Heno, the p.s. of not return is:

2. At t=0, the price of a certain stock is S(0)=\$50. At t=1, the price is either S(1)=\$80 or S(1)=\$30. A certain option contract is worth \$10 if the stock price is \$80, and is worth \$0 if the stock price is \$30. Assuming no arbitrage opportunities, and continuously compounded interest of 5%, what is the price of the option at time t=0?

Let
$$x$$
 be # of shares and y # of options.
Then value of portfolio a time Δ is
$$\begin{cases}
80 \times 10y & \text{if } S(1) = 80 \\
30x & \text{if } S(1) = 30
\end{cases}$$

We warst to have: $80 \times 10 \text{ g} = 30 \times = 150 \times = -10 \text{ g} = > \text{ y} = -5 \times 100 \text{ price the option consider: } 9a.n = value - cost., where cost = <math>50 \times + 10 \text{ g} = 50 \times -5 \times 0$. @ time o value = $30 \times 10^{-5} \text{ g} = 50 \times 10^{-5} \text{ g}$

Hence gain = 30 x e 0.05 - 50 x +5 xC @ time 0

But we want no arbitrage, which meas gain =0 =>

 $0 = 30 \times e^{-0.05} - 50 \times + 5 \times C$ = $\times (30 e^{-0.05} - 50 + 5 C)$, since we assume $\times 70$, it follows:

$$30e^{-0.05}$$
 => $5c = 50 - 30e^{-0.05}$

So the cost of the option, assuming no arbitrage, in present value dollars is \$10-60.05