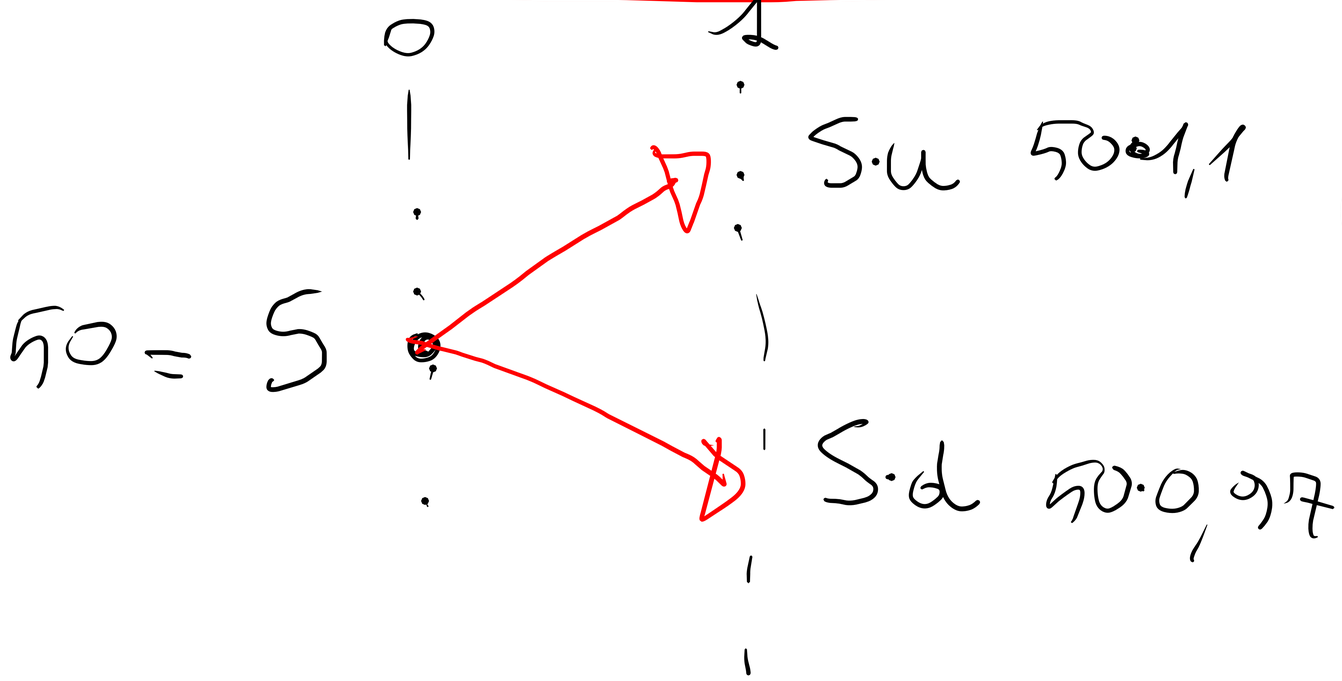
MODELLO BINOMIALE =



OPZIONE DI TIPO CALL/PUT

CONSENTE DI COMPRARE/VENDERE

SOTTOSTANTE = S

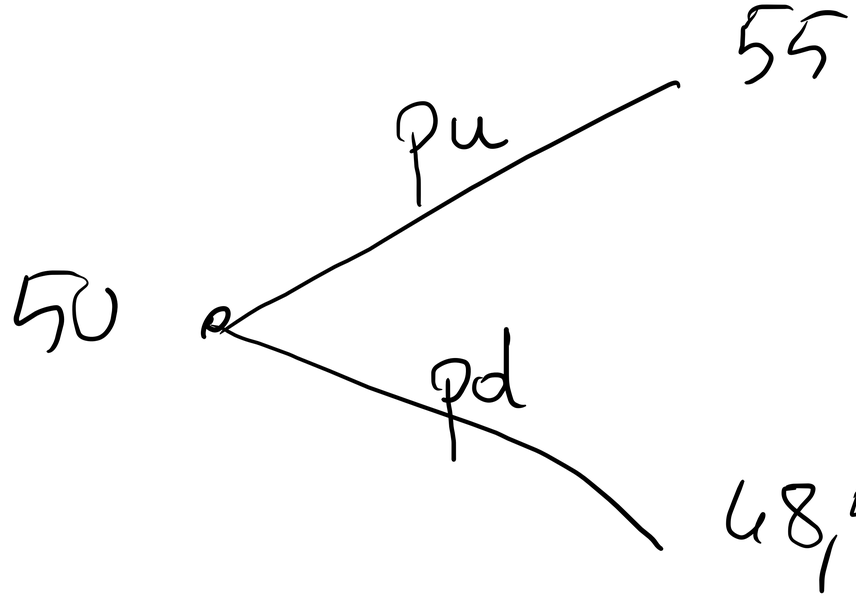
A PREZZO DI ESERCIZIO = X = 50

A UNA DATA FUTURA T

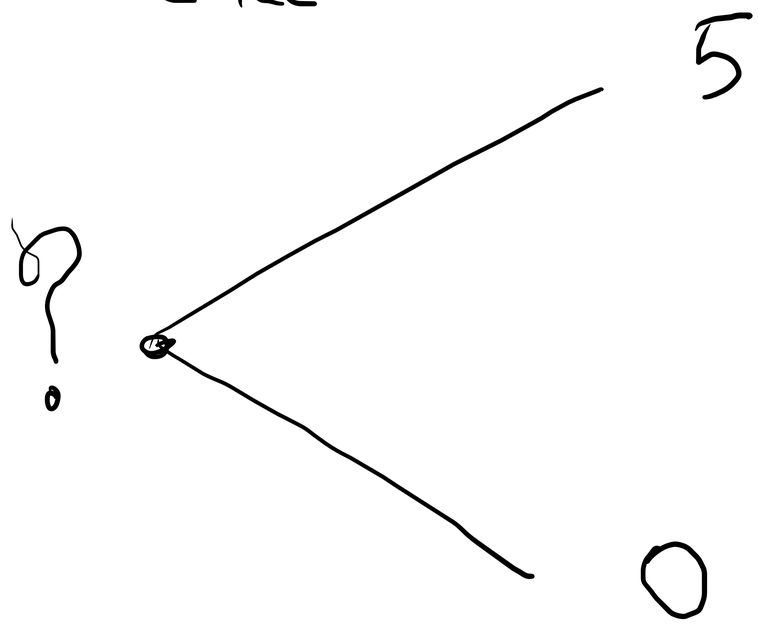
u = UP JUMP FACTOR = 1,1

d = DOWN JUMP FACTOR = 0,97

SOTTOSTANTE



CALL



CALL HA $X = 50$ $\max(S - X, 0)$ = PAYOFF DELLA CALL

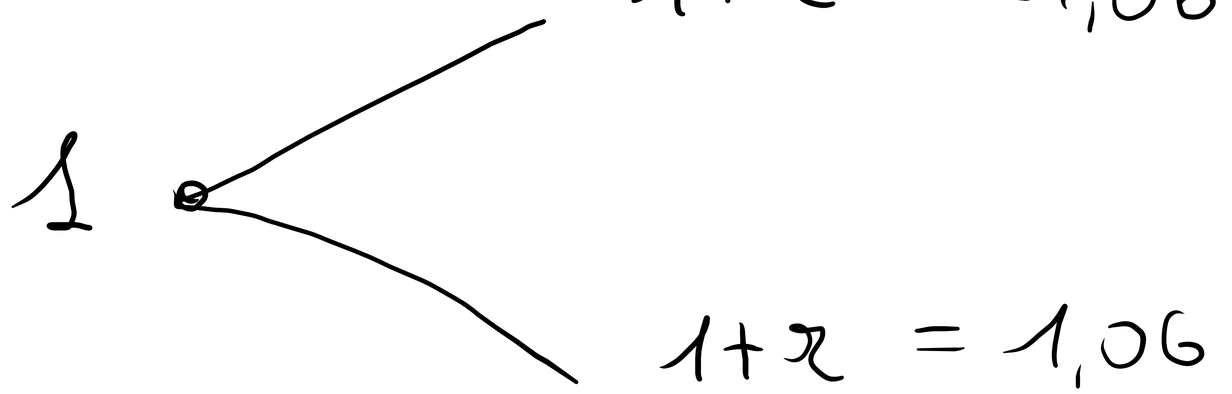
p_u = RISK-NEUTRAL PROBABILITIES

p_d = " " "

ESISTE UN TITOLO PRIVO DI RISCHIO

(MONEY MARKET ACCOUNT)

r = TASSO RISK-FREE = 6%



RISK-NEUTRAL VALUATION DEL SOTTOSTANTE

$$\cancel{S} = \underbrace{\frac{1}{1+r}}_{\text{SCONTATO DI UN PERIODO}} \underbrace{\left[\cancel{S} \cdot u \cdot p_u + \cancel{S} d \cdot p_d \right]}_{\text{VALORE ATTESO ALL'EPOCA 1}}$$

RISK NEUTRAL VALUATION DEL TITOLO RISK-FREE

$$1 = \frac{1}{\cancel{1+r}} \left[\cancel{(1+r)} \cdot p_u + \cancel{(1+r)} p_d \right]$$

$$\begin{cases} 1+r = u \cdot p_u + d \cdot p_d \\ 1 = p_u + p_d \end{cases}$$

$$\begin{bmatrix} u & d \\ 1 & 1 \end{bmatrix} \begin{bmatrix} p_u \\ p_d \end{bmatrix} = \begin{bmatrix} 1+r \\ 1 \end{bmatrix}$$

SOMMA PROBABILITÀ FA 1

CONDIZIONE DI NON ARBITRAGGIO

$$u > 1+r > d$$

$$\begin{cases} p_u = \dfrac{(1+r) - d}{u - d} \\ p_d = 1 - p_u \end{cases}$$

$$C = \frac{1}{1+r}\left[p_u \cdot \underbrace{\text{PAYOFF CALL STATO UP}}_{u} + p_d \cdot \underbrace{\text{PAYOFF CALL STATO DOWN}}_{d} \right]$$

RISK-NEUTRAL VALUATION DELLA CALL