The Cox-Ross-Rubinstein Formula

The Binomial Market

Question

“Arbitrage”

Answer (pt 1)

Theorem: the Law of One Price

Given two self-financing portfolios P_1, P_2 with payoffs V_1, V_2 and current prices C_1, C_2, if

$$\mathbb{P}(V_1 \geq V_2) = 1$$

then we must have $C_1 \geq C_2$ to avoid arbitrage.

If $T = 1$...

Risk-neutral measure

Board-cleaning break

Call options

Example

$T = 3$ $u = 1.2$ $d = 0.8$ $r = 0.1$ $s = 100$

K= 110

$$S_3 \in \{51.2, 76.8, 115.2, 172.8\}$$

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