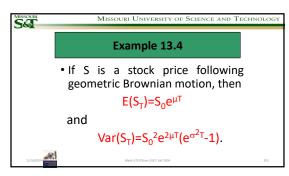


197

MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY

MISSOURI MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY Theorem 13.3 If X has a lognormal distribution with parameters μ and σ , then $E(X)=e^{\mu+\sigma^2/2}$ and $Var(X)=e^{2\mu+\sigma^2}(e^{\sigma^2}-1).$



Example 13.2 (continued) · Consider a stock with an initial price of \$40, an expected return

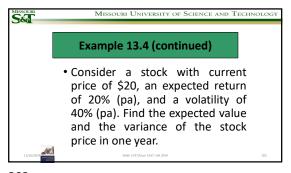
MISSOURI

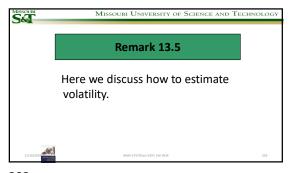
of 16% (pa), and a volatility of 20% (pa). Find a 95%-confidence interval for $S_{1/2}$.

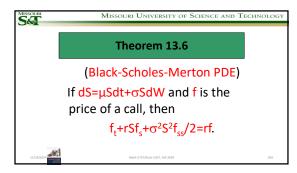
199

200

201







202 203 204

Remark 13.7

• (BSM) has many solutions, but we are looking for a solution that satisfies the boundary condition

f=(S-K)+ when t=T

for a European call, or

f=(K-S)+ when t=T

for a European put.

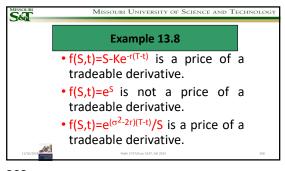
Remark 13.7 (continued)

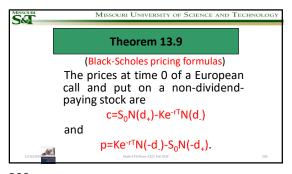
• The portfolio from the proof of Theorem 13.6 is not permanently riskless, only during Δt. To keep the portfolio riskless, frequent adjustments are to be made.

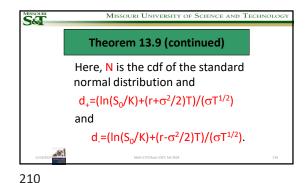
Remark 13.7 (continued)

• Any f that satisfies (BSM) is called a price of a tradeable derivative.

205 206 207

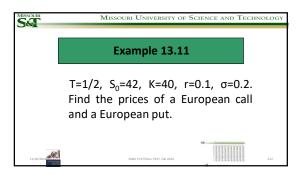


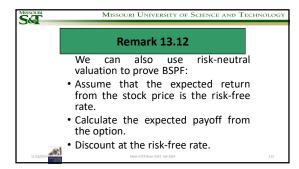




208 209

211





212 213

