ici

Chapter 1

State of the art

1.1 Moments

1.2 The Brownian motion

1.2.1 Construction

1.2.2 Characterization of a Brownian motion by its moments

1.2.3 Quadratic variation

Explain why ItÃt''s lemma

1.3 ItÃt''s lemma

1.3.1 Problem solving formula

Explain how useful the formula is in this context. Show the relation between the formula and the tailor approximation.

1.3.2 ItÃt''s formula for Brownian motion

1.3.3 Properties

quadratic variation, ...

1.4 GARCH model: Expecting volatility

1.4.1 Empirical ,theoretical, and implied volatility

1.4.2 model

fdsajklfhdjfhjdfhdlhfdjdsah fdsajklfhdjfhjdfhdlhfdjdsah fdsajklfhdjfhjdfhdlhfdjdsah fdsajklfhdjfhjdfhdlhfdjdsah fdsajklfhdjfhjdfhdlhfdjdsah fdsajklfhdjfhjdfhdlhfdjdsah fdsajklfhdjfhjdfhdlhfdjdsah fdsajklfhdjfhjdfhdlhfdjdsah fdsajklfhdjfhjdfhdlhfdjdsah

1.5 A stochastic stock price evolution

1.5.1 overview

matrix with variable -> continuous / discrete

1.5.2 Abstract model with continuous time component

Construction throught ITO

1.5.3 Abstract model with discrete time component

why so useful + compare it with ito ?

1.5.4 Parameters

mu, sd, ... moments (lognormal)

1.5.5 Definition of the mean and volatility

Garch model for volatility

1.6 Black-Scholes-Merton equation

1.6.1 Philosophy

1.6.2 Assumptions

1.6.3 The greeks

1.6.4 The model

1.6.5 Hedgind strategy with the greeks and the model

1.7 Volatility smiles

1.8 Alternatives to Black-Scholes-Merton