

Master Finance

Numerical option pricing

Responsables	Descriptions	Informations
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LANGUE(S) D'ENSEIGNEMENT

Anglais

CONTENU

1) Goals:

The objective of the lecture is twofold:

- Familiarize students with the mechanics of option markets and the different trading strategies involving stocks options (spread, combination,...)
- Familiarize students with the pricing and hedging of vanilla and some exotic options. To do so, two methods are presented: the numerical method using binomial trees and analytical method of Black and Scholes. For this last method, mathematical fundamentals are addressed. We present the Black Scholes framework using the replication portfolio argument and the non-arbitrage rule. Then, after a presentation of the limits of the BS framework, we introduce some stochastic volatility models and some ways to build the local volatility. We deal with parameters calibration, Monte Carlo simulations, numerical issues. Illustrations are on simulated or real data. Then, we discuss the link between vanilla options and real options.

2) Course outline:

1. Mechanics of option markets
2. Properties of stock options
3. Trading strategies involving options
4. Binomial trees
5. Black Scholes framework
6. Exotic equity derivatives
7. Real options

COMPÉTENCES À ACQUÉRIR

- To know the mechanics of option markets
- To know how to put in place the different trading strategies involving options
- To know evaluating the pricing of a basic option

MODALITÉS D'ORGANISATION

Presentation of the theory illustrated by examples and exercices

BIBLIOGRAPHIE, LECTURES RECOMMANDÉES

- Brigo, D. and Mercurio, F., 'Interest Rate Models - Theory and Practice', 1998, 981p, Springer.
- Cont, R., 'Frontiers in Quantitative Finance', 2008, 295p, Wiley.
- J. Hull, Options, Futures et Autres Produits Dérivés, Pearson

Education, 10eme édition

- Martellini, L. and Priaulet, P., 'Fixed Income Securities, Dynamic methods for interest rate risk pricing and hedging', 2001, 252p, Wiley.

PRÉ-REQUIS OBLIGATOIRES

Mathematics and statistics

Finance

PRÉREQUIS RECOMMANDÉS

Stochastic Calculus, linear regressions, Black Scholes model, risk neutral density

VOLUME HORAIRE

- Volume total: 30 heures
- Cours magistraux: 30 heures

CODES APOGÉE

- BFIC12A [ELP]

M3C

Aucune donnée M3C trouvée

POUR PLUS D'INFORMATIONS

[Aller sur le site de l'offre de formation...](#)



Dernière modification le 11/12/2023