1. Record Nr. UNINA9910827249303321

Autore	Iacus Stefano M (Stefano Maria)
Titolo	Option pricing and estimation of financial models with R / / Stefano M. Iacus
Pubbl/distr/stampa	Chichester, West Sussex, U.K., : Wiley, 2011
ISBN	9786613405197 9781283405195 1283405199 9781119990086 1119990084 9781119990079 1119990076
Edizione	[1st edition]
Descrizione fisica	1 online resource (474 p.)
Classificazione	MAT029000
Disciplina	332.64/53
Soggetti	Options (Finance) - Prices Probabilities Stochastic processes Time-series analysis R (Computer program language)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Option Pricing and Estimation of Financial Models with R; Contents; Preface; 1 A synthetic view; 1.1 The world of derivatives; 1.1.1 Different kinds of contracts; 1.1.2 Vanilla options; 1.1.3 Why options?; 1.1.4 A variety of options; 1.1.5 How to model asset prices; 1.1.6 One step beyond; 1.2 Bibliographical notes; References; 2 Probability, random variables and statistics; 2.1 Probability; 2.1.1 Conditional probability; 2.2 Bayes' rule; 2.3 Random variables; 2.3.1 Characteristic function; 2.3.2 Moment generating function; 2.3.3 Examples of random variables; 2.3.4 Sum of random variables 2.3.5 Infinitely divisible distributions2.3.6 Stable laws; 2.3.7 Fast Fourier Transform; 2.3.8 Inequalities; 2.4 Asymptotics; 2.4.1 Types of convergences; 2.4.2 Law of large numbers; 2.4.3 Central limit theorem;

2.5 Conditional expectation; 2.6 Statistics; 2.6.1 Properties of estimators; 2.6.2 The likelihood function; 2.6.3 Efficiency of estimators; 2.6.4 Maximum likelihood estimation; 2.6.5 Moment type estimators; 2.6.6 Least squares method; 2.6.7 Estimating functions; 2.6.8 Confidence intervals; 2.6.9 Numerical maximization of the likelihood; 2.6.10 The -method; 2.7 Solution to exercises
2.8 Bibliographical notesReferences; 3 Stochastic processes; 3.1 Definition and first properties; 3.1.1 Measurability and filtrations; 3.1.2 Simple and quadratic variation of a process; 3.1.3 Moments, covariance, and increments of stochastic processes; 3.2 Martingales; 3.2.1 Examples of martingales; 3.2.2 Inequalities for martingales; 3.3 Stopping times; 3.4 Markov property; 3.4.1 Discrete time Markov chains; 3.4.2 Continuous time Markov processes; 3.4.3 Continuous time Markov chains; 3.5 Mixing property; 3.6 Stable convergence; 3.7 Brownian motion; 3.7.1 Brownian motion and random walks
3.7.2 Brownian motion is a martingale3.7.3 Brownian motion and partial differential equations; 3.8 Counting and marked processes; 3.9 Poisson process; 3.10 Compound Poisson process; 3.11 Compensated Poisson processes; 3.12 Telegraph process; 3.12.1 Telegraph process and partial differential equations; 3.12.2 Moments of the telegraph process; 3.12.3 Telegraph process and Brownian motion; 3.13 Stochastic integrals; 3.13.1 Properties of the stochastic integral; 3.13.2 Ito formula; 3.14 More properties and inequalities for the Ito integral; 3.15 Stochastic differential equations
3.15.1 Existence and uniqueness of solutions3.16 Girsanov's theorem for diffusion processes; 3.17 Local martingales and semimartingales; 3.18 Levy processes; 3.18.1 Levy-Khintchine formula; 3.18.2 Levy jumps and random measures; 3.18.3 Ito-Levy decomposition of a Levy process; 3.18.4 More on the Levy measure; 3.18.5 The Ito formula for Levy processes; 3.18.6 Levy processes and martingales; 3.18.7 Stochastic differential equations with jumps; 3.18.8 Ito formula for Levy driven stochastic differential equations; 3.19 Stochastic differential equations in Rn; 3.20 Markov switching diffusions
3.21 Solution to exercises

Sommario/riassunto

Presents inference and simulation of stochastic process in the field of model calibration for financial times series modelled by continuous time processes and numerical option pricing. Introduces the bases of probability theory and goes on to explain how to model financial times series with continuous models, how to calibrate them from discrete data and further covers option pricing with one or more underlying assets based on these models. Analysis and implementation of models goes beyond the standard Black and Scholes framework and includes Markov switching models, Levy models and other mod