

1. Record Nr.	UNINA9910583480203321
Titolo	Financial engineering // edited by John R. Birge, Vadim Linetsky
Pubbl/distr/stampa	Amsterdam ; ; London, : North-Holland, 2008
ISBN	9786611055134 9781281055132 1281055131 9780080553252 0080553257
Descrizione fisica	1 online resource (1027 p.)
Collana	Handbooks in operations research and management science ; ; v. 15
Altri autori (Persone)	BirgeJohn R LinetskyVadim
Disciplina	658.15224
Soggetti	Financial engineering Finance
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	Front cover; Financial Engineering; Copyright page; Contents; Part I: Introduction; Introduction to the Handbook of FinancialEngineering; References; Chapter 1. An Introduction to Financial Asset Pricing; 1. Introduction; 2. Introduction to derivatives and arbitrage; 3. The core of the theory; 4. American type derivatives; Acknowledgements; References; Part II: Derivative Securities: Models and Methods; Chapter 2. Jump-Diffusion Models for Asset Pricing in Financial Engineering; 1. Introduction; 2. Empirical stylized facts; 3. Motivation for jump-diffusion models 4. Equilibrium for general jump-diffusion models5. Basic setting for option pricing; 6. Pricing call and put option via Laplace transforms; 7. First passage times; 8. Barrier and lookback options; 9. Analytical approximations for American options; 10. Extension of the jump-diffusion models to multivariate cases; References; Chapter 3. Modeling Financial Security Returns Using Levy Processes; 1. Introduction; 2. Modeling return innovation distribution using Levy processes; 3. Generating stochastic volatility by applying stochastic time changes 4. Modeling financial security returns with time-changed Levy

processes; 5. Option pricing under time-changed Levy processes; 6. Estimating Levy processes with and without time changes; 7. Concluding remarks; Acknowledgements; References; Chapter 4. Pricing with Wishart Risk Factors; 1. Introduction; 2. Wishart process; 3. Pricing; 4. Examples; 5. Concluding remarks; References; Chapter 5. Volatility; 1. Introduction; 2. A model of price formation with microstructure effects; 3. The variance of the equilibrium price; 4. Solutions to the inconsistency problem; 5. Equilibrium price variance estimation: directions for future work; 6. The variance of microstructure noise: a consistency result; 7. The benefit of consistency: measuring market quality; 8. Volatility and asset pricing; Acknowledgements; References; Chapter 6. Spectral Methods in Derivatives Pricing; 1. Introduction; 2. Self-adjoint semigroups in Hilbert spaces; 3. One-dimensional diffusions: general results; 4. One-dimensional diffusions: a catalog of analytically tractable models; 5. Symmetric multi-dimensional diffusions; 6. Introducing jumps and stochastic volatility via time changes; 7. Conclusion; References; Chapter 7. Variational Methods in Derivatives Pricing; 1. Introduction; 2. European and barrier options in the Black-Scholes-Merton model; 3. American options in the Black-Scholes-Merton model; 4. General multi-dimensional jump-diffusion models; 5. Examples and applications; 6. Summary; References; Chapter 8. Discrete Barrier and Lookback Options; 1. Introduction; 2. A representation of barrier options via the change of numeraire argument; 3. Convolution, Broadie-Yamamoto method via the fast Gaussian transform, and Feng-Linetsky method via Hilbert transform; 4. Continuity corrections

Sommario/riassunto

The remarkable growth of financial markets over the past decades has been accompanied by an equally remarkable explosion in financial engineering, the interdisciplinary field focusing on applications of mathematical and statistical modeling and computational technology to problems in the financial services industry. The goals of financial engineering research are to develop empirically realistic stochastic models describing dynamics of financial risk variables, such as asset prices, foreign exchange rates, and interest rates, and to develop analytical, computational and statistical methods and
