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Thumb; 1.3.7 The Risk Neutral Density; 1.4 Applications; 1.4.1 Asset Allocation; 1.4.2 Pricing, Hedging and Risk Management; 1.5 General Remarks on Notation; 1.6 Summary and Conclusions; 1.7 Appendix - Quotes; 2 Diffusion Models; 2.1 Introduction and Objectives; 2.2 Local Volatility Models; 2.2.1 The Bachelier and the Black-Scholes Model; 2.2.2 The Hull-White Model; 2.2.3 The Constant Elasticity of Variance Model; 2.2.4 The Displaced Diffusion Model; 2.2.5 CEV and DD Models 2.3 Stochastic Volatility Models; 2.3.1 Pricing European Options; 2.3.2 Risk Neutral Density; 2.3.3 The Heston Model (and Extensions); 2.3.4 The SABR Model; 2.3.5 SABR - Further Remarks; 2.4 Stochastic Volatility and Stochastic Rates Models; 2.4.1 The Heston-Hull-White Model; 2.5 Summary and Conclusions; 3 Models with Jumps; 3.1 Introduction and Objectives; 3.2 Poisson Processes and Jump Diffusions; 3.2.1 Poisson Processes; 3.2.2 The Merton Model; 3.2.3 The Bates Model; 3.2.4 The Bates-Hull-White Model; 3.3 Exponential Levy Models; 3.3.1 The Variance Gamma Model; 3.3.2 The Normal Inverse Gaussian Model 3.4 Other Models; 3.4.1 Exponential Levy Models with Stochastic Volatility; 3.4.2 Stochastic Clocks; 3.5 Martingale Correction; 3.6 Summary and Conclusions; 4 Multi-Dimensional Models; 4.1 Introduction and Objectives; 4.2 Multi-Dimensional Diffusions; 4.2.1 GBM Baskets; 4.2.2 Libor Market Models; 4.3 Multi-Dimensional Heston and SABR Models; 4.3.1 Stochastic Volatility Models; 4.4 Parameter Averaging; 4.4.1 Applications to CMS Spread Options; 4.5 Markovian Projection; 4.5.1 Baskets with Local Volatility; 4.5.2 Markovian Projection on Local Volatility and Heston Models 4.5.3 Markovian Projection onto DD SABR Models; 4.6 Copulae; 4.6.1 Measures of Concordance and Dependency; 4.6.2 Examples; 4.6.3 Elliptical Copulae; 4.6.4 Archimedean Copulae; 4.6.5 Building New Copulae from Given Copulae; 4.6.6 Asymmetric Copulae; 4.6.7 Applying Copulae to Option Pricing; 4.6.8 Applying Copulae to Asset Allocation; 4.7 Multi-Dimensional Variance Gamma Processes; 4.8 Summary and Conclusions; PART II NUMERICAL METHODS AND RECIPES; 5 Option Pricing by Transform Techniques and Direct Integration 5.1 Introduction and Objectives

Sommario/riassunto

Financial Modelling - Theory, Implementation and Practice is a unique combination of quantitative techniques, the application to financial problems and programming using Matlab. The book enables the reader to model, design and implement a wide range of financial models for derivatives pricing and asset allocation, providing practitioners with complete financial modelling workflow, from model choice, deriving prices and Greeks using (semi-) analytic and simulation techniques, and calibration even for exotic options. The book is split into three parts. The first part considers
