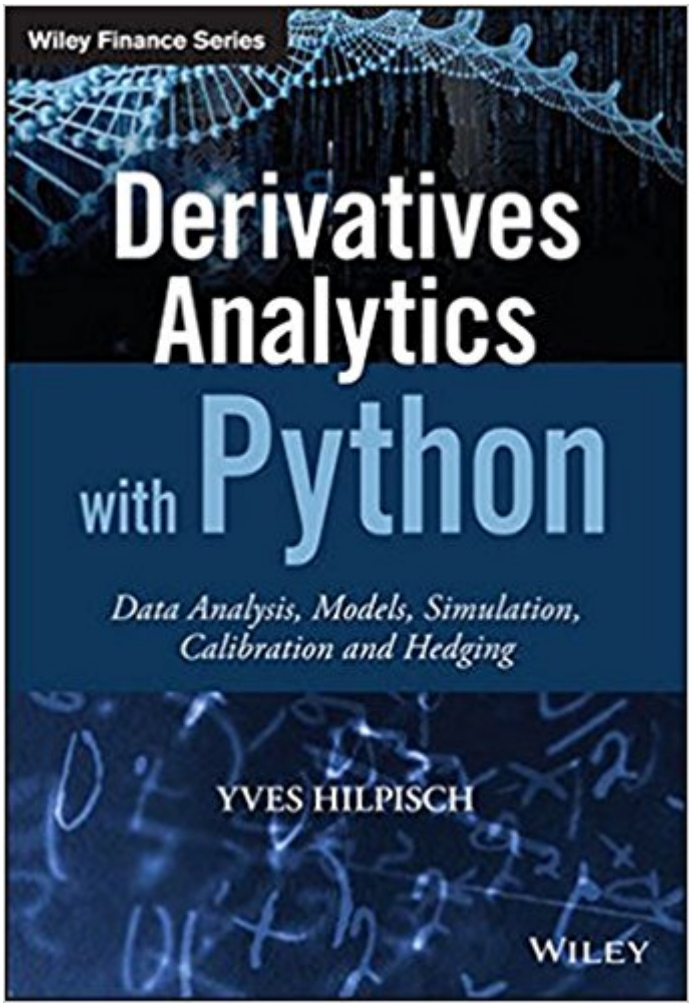
Derivatives Analytics With Python: Data Analysis, Models, Simulation, Calibration And Hedging (The Wiley Finance Series)



Synopsis

Supercharge options analytics and hedging using the power of Python Derivatives Analytics with Python shows you how to implement market-consistent valuation and hedging approaches using advanced financial models, efficient numerical techniques, and the powerful capabilities of the Python programming language. This unique guide offers detailed explanations of all theory, methods, and processes, giving you the background and tools necessary to value stock index options from a sound foundation. You'll find and use self-contained Python scripts and modules and learn how to apply Python to advanced data and derivatives analytics as you benefit from the 5,000+ lines of code that are provided to help you reproduce the results and graphics presented. Coverage includes market data analysis, risk-neutral valuation, Monte Carlo simulation, model calibration, valuation, and dynamic hedging, with models that exhibit stochastic volatility, jump components, stochastic short rates, and more. The companion website features all code and IPython Notebooks for immediate execution and automation. Python is gaining ground in the derivatives analytics space, allowing institutions to quickly and efficiently deliver portfolio, trading, and risk management results. This book is the finance professional's guide to exploiting Python's capabilities for efficient and performing derivatives analytics. Reproduce major stylized facts of equity and options markets yourself Apply Fourier transform techniques and advanced Monte Carlo pricing Calibrate advanced option pricing models to market data Integrate advanced models and numeric methods to dynamically hedge options Recent developments in the Python ecosystem enable analysts to implement analytics tasks as performing as with C or C++, but using only about one-tenth of the code or even less. Derivatives Analytics with Python Ã¢â ¬â • Data Analysis, Models, Simulation, Calibration and Hedging shows you what you need to know to supercharge your derivatives and risk analytics efforts.

Book Information

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Customer Reviews

Market-based valuation of stock index options is an essential task for every buy-side and sell-side decision maker in the derivatives analytics domain. In Derivatives Analytics with Python, you'll discover why Python has established itself in the financial industry and how to leverage this powerful programming language so you can implement market-consistent valuation and hedging approaches. Written for Quant developers, traders, risk managers, compliance officers, and model validators, this reliable resource skillfully covers the four areas necessary to effectively value options: market-based valuation as a process; sound market model; numerical techniques; and technology. Presented in three parts, Part One looks at the risks affecting the value of equity index options and empirical facts regarding stocks and interest rates. Part Two covers arbitrage pricing theory, risk-neutral valuation in discrete time, continuous time, and introduces the two popular methods of Carr-Madan and Lewis for Fourier-based option pricing. Finally, Part Three considers the whole process of a market-based valuation effort and the Monte Carlo simulation as the method of choice for the valuation of exotic and complex index options and derivatives. Practical and informative, with self-contained Python scripts and modules and 5,000+ lines of code provided to help you reproduce the results and graphics presented. In addition, the companion website (http://wiley. quant-platform.com) features all code and IPython Notebooks for immediate execution and automation. Author Yves Hilpisch explores market-based valuation as a process, as well as empirical findings about market realities. By reading this book, you'll be equipped to develop much-needed tools during a market-based valuation with balanced coverage of: Market-based valuation Risk-neutral valuation Discrete market models Black-Scholes-Merton Model Fourier&#45based option pricing Valuation of American options Stochastic volatility and jump-diffusion models Model calibration Simulation and valuation Python is gaining ground in the derivatives analytics space, allowing institutions to quickly and efficiently deliver pricing, trading, and risk management results. Learn to implement market-consistent valuation and hedging approaches for European and American options with the solid guidance found in Derivatives Analytics with Python.

Praise for Derivatives Analytics with Python "Another excellent offering from Dr Hilpisch. This book has a very good coverage of derivatives analytics and their implementations in Python." —Alain Ledon, Adjunct Professor, Baruch Master in Financial Engineering "A thorough overview of the state of the art in equity derivatives pricing and how to apply it using Python, with an implementer's eye to detail." —Dr Mark Higgins, CEO, Washington Square Technologies,former co-head of Quantitative Research for JPMorgan's Investment Bank "There is currently much excitement about the application of Python to Quant Finance in both academia and the financial markets. Yves' monumental undertaking guides the reader through the mathematical and numerical aspects of derivative valuation with programming in Python, in an expert and pedagogical manner. I will be making his publication the standard text for all my Computational Finance courses." —Dr Riaz Ahmad, Fitch Learning and Department of Mathematics,University College London "A must read for any practitioner who is serious about implementing Python across their derivatives platform. Dr Hilpisch excels at simplifying complex state-of-the-art techniques for both the pricing and hedging of derivatives in Python that both operators and academics will appreciate." —Bryan Wisk, Founder and CIO, Asymmetric Return Capital, LLC

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