DESCRIPTION

This book covers foreign exchange options from the point of view of the finance practitioner. It contains everything a quant or trader working in a bank or hedge fund would need to know about the mathematics of foreign exchange—not just the theoretical mathematics covered in other books but also comprehensive coverage of implementation, pricing and calibration.

With content developed with input from traders and with examples using real-world data, this book introduces many of the more commonly requested products from FX options trading desks, together with the models that capture the risk characteristics necessary to price these products accurately. Crucially, this book describes the numerical methods required for calibration of these models—an area often neglected in the literature, which is nevertheless of paramount importance in practice. Thorough treatment is given in one unified text to the following features:

- Correct market conventions for FX volatility surface construction
- Adjustment for settlement and delayed delivery of options
- Pricing of vanillas and barrier options under the volatility smile
- Barrier bending for limiting barrier discontinuity risk near expiry
- Industry strength partial differential equations in one and several spatial variables using finite differences on nonuniform grids
- Fourier transform methods for pricing European options using characteristic functions
• Stochastic and local volatility models, and a mixed stochastic/local volatility model

• Three-factor long-dated FX model

• Numerical calibration techniques for all the models in this work

• The augmented state variable approach for pricing strongly path-dependent options using either partial differential equations or Monte Carlo simulation

Connecting mathematically rigorous theory with practice, this is the essential guide to foreign exchange options in the context of the real financial marketplace.

ABOUT THE AUTHOR

Dr Iain J. Clark, (London, UK), is Head of Foreign Exchange Quantitative Analysis at Dresdner Kleinwort in London, where he set up and runs the team responsible for developing pricing libraries for the front office. Previously, he was Director of the Quantitative Research Group in Lehman Brothers, Fixed Income Quantitative Analyst at BNP Paribas and has also worked in FX Commodities Derivatives research at JP Morgan. He holds an MSc in Mathematics from the University of Edinburgh, and a PhD in Applied Mathematics from the University of Queensland, Australia. Dr Clark is a regular speaker at key finance events, and has presented at London Imperial College, The Bachelier Society Annual Conference, London Imperial College, world business Strategies annual Conference, Risk events, Marcus Evans events and many more.

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