



Latest Developments: Interest Rate Modelling & Interest Rate Exotic & Hybrid Products

London: 30th March – 1st April 2009

This workshop provides THREE booking options

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Register to ANY TWO days of the workshop and receive £200 discount

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Early Bird Discount:

15% Before 31st December 2008 and 10% Before 31st January 2009

Topics:

Day 1: The LMM-SABR Model: The New Paradigm for Pricing, Calibrating, Hedging Interest-Rate Derivatives Modelling in the Presence of Smiles

- The LIBOR Market Model framework (deterministic volatility)
- Deriving the Drifts of the Forward Rates
- The SABR Model
- Qualitative Hedging Behaviour
- Combining LMM and SABR
- Analytical Approximation to Swaption Prices
- Calibrating
- Calibrating the Volatility Function
- Empirical Evidence
- Statistical Behaviour of Fitted Parameters, and How to Use This Information for Hedging
- Hedging under Conditions of Market Turmoil

Presenter:

Riccardo Rebonato: Global Head of Market Risk, CM & Head of Quantitative Research, Royal Bank of Scotland

Day 2: Interest Rate Modelling & Interest Rate Exotic & Hybrid Products

- Analytical formulas for pricing CMS products in the LMM model
- Simultaneous calibration to European swaptions and European CMS products
- Approximation of the European CMS products for the BGM SV model: basic idea
- Numerical Methods for Markov Functional Models and Their Stability
- Markov functional models
- Stable numerical schemes
- Theory of Interest Rate Term Structure: Dynamics and Calibration with Stochastic Volatility
- Parameterisation and calibration of interest rate dynamics
- New interest rate models with stochastic volatility
- Adjusters, Internal adjusters, and Pricing Callable Exotics
- External adjusters
- Extension to other callable exotic

Presenters:

Alexandre Antonov: Senior Quantitative Analyst, NumeriX

Dorje C. Brody: Reader in Mathematics, Imperial College London

Lane P Hughston: Professor of Financial Mathematics, Imperial College London

Pat Hagan: Head, Quantitative Analytics, Chief Investment Office, JP Morgan

Jochen Theis: Head of Quantitative Risk Management EMEA, Merrill Lynch

Topics:

Day 3: Interest Rate Modelling & Interest Rate Exotic & Hybrid Products

- **Interest Rate Exotics and GPU Computing**
- **Stochastic monetary policy models**
- **Calibration against swaptions, exotic baskets and correlation data**
- **Valuing and trading interest rate derivatives in a short rate model with stochastic volatility**
- **A model with Heston volatility**
- **Historical and relative value analysis**
- **Stochastic interest rates for local volatility hybrids models**
- **Bias for local volatility model with stochastic Interest rates**
- **Reduced form for hull and white type models**
- **Pricing long-dated derivatives with stochastic interest rates and stochastic volatility**
- **Incorporating stochastic interest rates in stochastic volatility models**
- **The Schöbel-Zhu-Hull-White (SZHW) model**

Presenters:

Claudio Albanese: Independent Consultant

Eric Benhamou: CEO, Pricing Partners

Roger Lord: Quantitative Analyst/Associate Director, Rabobank International

Julien Turc: Head of Quantitative Strategy, Société Générale

Day 1: The LMM-SABR Model: The New Paradigm for Pricing, Calibrating, Hedging Interest-Rate Derivatives Modelling in the Presence of Smiles:

Riccardo Rebonato, Royal Bank of Scotland

The LIBOR Market Model framework (deterministic volatility)

- Deriving the Drifts of the Forward Rates
- Specifying the volatility
- Specifying the correlation
- Calibrating

The SABR Model

- Pricing formulae
- Special Cases
- Qualitative Hedging Behaviour
- Pitfalls

Combining LMM and SABR

- Deriving the Drifts of the Forward Rates
- Deriving the Drifts of the Volatilities
- Analytical Approximation to Swaption Prices

Calibrating

- Calibrating the Volatility Function
- Calibrating the Volatility of Volatility
- Calibrating the Correlation Structure
- When to use to Implied Approach and When to Use the Historical Approach

Empirical Evidence

- Estimating the Volatilities
- Estimating the Volatility of Volatility
- Estimating the Correlation Structure
- Statistical Behaviour of Fitted Parameters, and How to Use This Information for Hedging

Hedging

- Hedging under Normal Market Conditions: How to Quantify the Exposure to Level, Slope and Curvature of the Smile
- Hedging under Conditions of Market Turmoil

Day schedule: 09:00 – 17:00

Break: 10:30 – 10:45

Lunch: 12:30 – 13:30

Break: 15:15 – 15:30

Day 2: Interest Rate Modelling & Interest Rate Exotic & Hybrid Products

09:00 – 10:30 / Analytical Formulas for Pricing CMS Products in / the LMM Model: Alexandre Antonov, NumeriX

Simultaneous calibration to European swaptions and European CMS products
Approximation of the European CMS products for the BGM SV model: basic idea
Case studies:

- Approximation of the CMS swaps and CMS caps
- Approximation of the CMS spread options

Numerical experiments

10:30 – 10:45 Break

10:45 – 12:30 / Numerical Methods for Markov Functional Models / and Their Stability: Jochen Theis, Merrill Lynch

- Markov functional models
- General approach to implementation
- Examples of stability issues
- Accuracy estimation and consequences
- Stable numerical schemes

12:30 – 13:30 Lunch

13:30 – 15:00 / Theory of Interest Rate Term Structure: Dynamics / and Calibration with Stochastic Volatility:

Dorje C Brody & Lane P Hughston, Imperial College London

- Overview of the pricing kernel methodologies
- Dynamics of discount bonds, HJM equations
- The volatility structure approach: pros and cons
- Conditional variance representation for the pricing kernel
- Parameterisation and calibration of interest rate dynamics
- Use of chaos expansions in term-structure calibration
- New interest rate models with stochastic volatility
- Pricing interest rate derivatives
- Applications to foreign exchange and FX derivatives
- Macroeconomic models

15:00 – 15:15 Break

15:15 – 17:15 / Adjusters, Internal Adjusters, and Pricing Callable / Exotics: Pat Hagan, JP Morgan

- **Need for risk migrators**
- **External adjusters**
- **Rationale for internal adjustors**
- **Example: Callable range notes**
- **Extension to other callable exotic**

Day 3: Interest Rate Modelling & Interest Rate Exotic & Hybrid Products

09:00 – 11:00 / Interest Rate Exotics and GPU Computing:
/ Claudio Albanese, Independent Consultant
/
/

- Stochastic monetary policy models
- Operator methods and GPU coprocessors
- Implementing backward induction
- Optimization algorithms for calibration
- Calibration against swaptions, exotic baskets and correlation data
- Benchmarking against market models and methods with adjustors
- System design on multi-GPU equipment
- Bermudans and callable CMS spread options
- Monte Carlo methods and variance reduction schemes
- Modeling correlations and multicurrency exotics

11:00 – 11:15 Break

11:15 – 12:45 / Valuing and Trading Interest Rate Derivatives in a
/ Short Rate Model with Stochastic Volatility:
/ Julien Turc, Société Générale

- A model with Heston volatility
- Solving the model and pricing options
- How the model simulates changes in the curve and in the volatility surface
- Estimating the model
- Historical and relative value analysis

12:45 – 13:45 Lunch

13:45 – 15:15 / Stochastic Interest Rates for Local Volatility
/ Hybrids Models: Eric Benhamou, Pricing Partners

- Bias for local volatility model with stochastic Interest rates
- Reduced form for hull and white type models
- Impact on local volatility
- Numerical results and fast calibration

15:15 – 15:30 Break

**15:30 – 17:00 / Pricing Long-Dated Derivatives with Stochastic
/ Interest Rates and Stochastic Volatility:
/ Roger Lord, Rabobank International**

- **Examples of long-dated structures**
- **Incorporating stochastic interest rates in stochastic volatility models**
- **The Schöbel-Zhu-Hull-White (SZHW) model**
- **The SZHW Fx model**
- **Efficient simulation within the Schöbel-Zhu and SZHW models**

Workshop Fee:

- Any One day: £1099 + UK VAT
- Any Two days: £1998 + UK VAT
(Including £200 Discount)
- All Three days: £2997 + UK VAT
(Including £300 Discount)
- Early Bird Discount: 15% Before 31st December 2008
- Early Bird Discount: 10% Before 31st January 2009

30% discount Academic delegates

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The discount is available on any day permutation, and can be combined across delegates within the same company (only at the time of booking and not retrospectively).

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