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

London: 24th – 26th November 2008

This workshop provides THREE booking options

Register to ANY ONE day TWO days or all THREE days of the workshop

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Topics:

**Day 1: Interest Rate Modelling: Pricing, Hedging & Calibration Techniques**

- Managing Smile Risk
- The SABR model, vanna, volga and managing smile risk
- Levy based models
- Managing Exotic Interest Rate Products
- Calibration/pricing/hedging cycle
- Models for exotics
- Practical Pricing of Exotics
- Auto-calibration/global calibration
- Extension to other callable exotics
- Pricing Callable Range Notes
- Adjusters and risk migration
- Callable range notes

Presenter:

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

**Day 2: Interest Rate Modelling**

- Mathematical Theory of Interest Rate Term Structure Dynamics and Calibration
- Markov Functional models (including multi-currency, multi-factor and forward smile)
- 1-factor Markov Functional Models: the Hunt-Kennedy-Pelsser calibration method
- Markov Functional models and forward smile
- CMS & CMS spread options
- Pricing & modelling of correlation copula models Markovian projection
- Swaptions arbitrage
- Least Squares Importance Sampling for Libor Market Models

Presenters:

Dorje C. Brody: Royal Society University Research Fellow, Imperial College London
Luca Capriotti: Vice President, Global Modelling and Analytics Group, Credit Suisse
Lane P. Hughston: Professor of Financial Mathematics, King’s College London
Simon Johnson: Co-head of Credit and Interest Rate Financial Engineering, Commerzbank
Julien Turc: Head of Quantitative Strategy, Société Générale
Topics:

Day 3: Interest Rate Exotic & FX Hybrid Products

- Cross Currency Models
- History of FX model for long dated structures
- Long Dated FX Hybrids
- PRDC and FX Tarn payoffs
- Exotic Interest Rate Pricing with Trees
- Gaussian Model and Extensions
- Wavelet Option Pricing
- General Pricing using the Green functions

Presenters:

Messaoud Chibane: Senior Quantitative Analyst, Bank of America
Antonio Cosma: Assistant Professor, Université du Luxembourg
Dherminder Kainth: QuARC, Royal Bank of Scotland
Michael Roehl: Head of Fixed Income Quantitative Research, Lloyds TSB
09:00 – 10:30 / Stochastic Volatility in Interest Rate Models

- Swap market basics and delta trading
- Vanilla interest rate options and managing vega risk
- Theory of Dupire and local vol models
- The SABR model, vanna, volga and managing smile risk
- Levy based models

10:30 – 10:45 Break

10:45 – 12:30 / Managing Exotic Interest rate Products

- Key interest rate risks
- Calibration/pricing/hedging cycle
- Models for exotics
  - HJM models
  - BGM models
  - Short rate models
  - Markovian models
- Summary

12:30 – 13:30 Lunch

13:30 – 15:15 / Practical Pricing of Exotics

- Auto-calibration/global calibration
- LGM model
- Calibration strategy and choice of calibration instruments
- Example: calibration and pricing Bermudan swaption
- Price, risks, hedging and the calibration instruments
- Extension to other callable exotics

Callable Inverse Floaters, Superfloaters, Range Notes and Captions

15:15 – 15:30 Break
• Adjusters and risk migration
  - The need for risk migration
  - Adjusters
  - Adjusted price

• Callable range notes
  - Deal definition
  - LGM model (reprise)
  - Convexity adjustment and payoff replication
  - Pricing with adjusters
  - Swaption and caplet risks
Day 2: Interest Rate Modelling

09:00 – 11:00 / Mathematical Theory of Interest Rate Term
/ Structure Dynamics and Calibration:
/ Dorje C. Brody, Imperial College London &
/ Lane P Hughston, King’s 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
- Parametrisation and calibration of interest rate dynamics
- The role of Wiener chaos expansion in term-structure calibration
- First and second chaos models
- Interest rate options

11:00 – 11:15 Break

11:15 – 12:45 / Least Squares Importance Sampling for Libor
/ Market Models:
/ Luca Capriotti, Credit Suisse

- Monte Carlo simulations. Basics
- Importance Sampling and Stratified Sampling
- Least Square Importance Sampling (LSIS) & Effective Stratification
- Simulating Libor Market Models
- Examples & Numerical Results

12:45 – 13:45 Lunch

13:45 – 15:15 / Markov Functional models (including Multi-
/ Currency, Multi-Factor and Forward Smile):
/ Simon Johnson, Commerzbank

- Introduction to Markov Functional Models
- 1-factor Markov Functional Models: the Hunt-Kennedy-Pelsser calibration method
- Markov Functional models and forward smile
- Cross-currency Markov Functional models and preserving the driftless condition
- Multi-factor Markov Functional models and generalising the driving process

15:15 – 15:30 Break

15:30 – 17:00 / CMS & CMS Spread Options:
/ Julien Turc, Société Générale

- Relative value
- Pricing & modelling of correlation copula models Markovian projection
- Swaptions arbitrage
- Wedges
Day 3: Interest Rate Exotic & FX Hybrid Products

09:00 – 10:30 / Cross Currency Models: / Messaoud Chibane, Bank of America

Examples of typical products
• Two economy Libor Market Model
• Two economy Hull and White with FX skew

History of FX model for long dated structures
• Cross-Currency Libor Market Models
• Modelling the long-dated FX smile

10:30 – 11:00 Break

11:00 – 12:30 / Long Dated FX Hybrids: / Dherminder Kainth, Royal Bank of Scotland

• PRDC and FX Tarn payoffs
• The Heston model for stochastic volatility & efficient simulation of the Heston sde.
• FX barriers, stochastic skew and multifactor Heston. Calibrating the stochastic skew.
• Longdated FX models; Extending multifactor Heston model for pricing long dated FX options
• Some results

12:30 – 13:30 Lunch

13:30 – 15:00 / Exotic Interest Rate Pricing with Trees: / Michael Roehl, Lloyds TSB

Gaussian Model and Extensions
• Parameters and Interpretation
• Skew Modelling
• Instantaneous vs. Terminal correlation
• Approximate Solutions for Calibration

Pricing Exotics
• Local vs Global Calibration
• Examples: Bermudans, Inverse Floaters and Range Accruals
• Path Dependency in Trees
• How to do it: Binning
• Smoothing and Examples

15:00 – 15:15 Break
General Pricing using the Green functions

• The Green function as pricing operator
• Projection of the Green operator on a wavelet basis

Implementation:

• Black and Scholes case
• Heston case

Application to the pricing of bermudan options
Workshop Fee:

☐ Any One day: £999 + UK VAT

☐ Any Two days: £1798 + UK VAT
  (Including £200 Discount)

☐ All Three days: £2697 + UK VAT
  (Including £300 Discount)

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