Interest Rate Modelling for the New Era

London: 15th & 16th April 2010

This workshop provides TWO booking options

Register to ANY ONE day of the workshop

Register to BOTH days of the workshop and receive £200 discount
Topics:

Day 1: Interest Rate Modelling for the New Era

• Curve stripping, bucket deltas, and managing IR risks
• Smiles, local volatility models, and equivalent volatilities
• Using the SABR model to manage volatility smiles, hedging stability
• Ref rates & basis spreads
• Leverage, cost of funds, and the credit crisis
• Three elements to modern pricing: model, calibration, and evaluation
• Choosing a model and the five main interest rate risks
• HJM models – strengths, weaknesses, usage
• Calibration strategies and the selection of calibration instruments
• Connection between calibration instruments and vega risks
• Predicted vs. actual vol matrices for different calibrations
• Mis-hedging, mis-pricing, and the need for risk migrators

Presenter:

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

Day 2: Interest Rate Modelling: Back to Basics

• Interest rate theory: past, present, and future
• Calibration of the interest rate term structure
• Term-structure density approach
• Revisiting CMS Spread Options (Cap, Floor, Digital, Range Accrual)
• Fast computation of CMS Range accrual
• Real time calibration of SABR model
• Post-Credit Crunch Multiple-Curve Framework
• Foreign-Currency Analogy, No Arbitrage and Quanto Adjustment
• No Arbitrage and Counterparty Risk

Presenters:

Eric Benhamou: CEO, Pricing Partners
Dr Dorje C Brody: Reader in Mathematical Finance, Imperial College London
Professor Lane P Hughston: Professor of Mathematical Finance, Imperial College London
Jochen Theis: Director, Markit
Day 1: Interest Rate Modelling for the New Era: Pat Hagan

09:00 – 10:30 / Managing Smile Risks

- Basics: discount factors, FRAs, swaps, and other delta products
- Curve stripping, bucket deltas, and managing IR risks
- Martingales & the fundamental theorem
- Vanilla options (caps, floors, and swaptions) & martinga
- Vol matrices, bucket vegas, and managing vol risks
- Smiles, local volatility models, and equivalent volatilities
- Mishedging, and the development of the stochastic vol model
- Using the SABR model to manage volatility smiles, hedging stability
- Levy based models for managing volatility surfaces

10:30 – 10:45 Break

10:45 – 12:30 / Intermission: Market Technicals

- Money vs. scrip
- Holiday calendars, business day rules, and schedule generation
- Day count fractions
- Ref rates & basis spreads
- Leverage, cost of funds, and the credit crisis

Managing Exotic Risks

- Three elements to modern pricing: model, calibration, and evaluation
- Choosing a model and the five main interest rate risks
- HJM models – strengths, weaknesses, usage
- BGM/LMM models – strengths, weaknesses, usage
- Short rate models – strengths, weaknesses, usage
- Markovian models – strengths, weaknesses, usage
- Summary

12:30 – 13:30 Lunch

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

- LGM model
- Callable swaps ( Bermudans)
- Calibration strategies and the selection of calibration instruments
- Connection between calibration instruments and vega risks
- Explicit calibrations for Bermudan
- Predicted vs. actual vol matrices for different calibrations
- Dependence of Bermudan price on choice of calibration instruments
- Dependence of hedges on calibration choices

- Conclusions

15:15 – 15:30 Break
Mis-hedging, mis-pricing, and the need for risk migrators
Price sharpening via adjusters
Example: Correcting a Bermudan calibrated to ATM swaptions
Example: Correcting a Bermudan calibrated to caplets

Pricing/hedging callable range notes & accrual swaps

Definition of the deal
1. Interest rate theory: past, present, and future

- Overview of interest rate theory
- Dynamic models for the short rate
- The Heath-Jarrow-Morton framework
- Pricing kernel methodology
- Dynamical models for risky assets
- The dynamics of discount bonds
- The volatility structure approach: pros and cons
- Pricing formulae for discount-bonds
- Asymptotic conditions on long-dated discount bonds

2. Calibration of the interest rate term structure

- Conditional variance representation for the pricing kernel
- Parametrisation and calibration of interest rate dynamics
- The role of the Wiener chaos expansion in interest-rate term-structure calibration
- Bond option pricing in Wiener-chaos models

3. Term-structure density approach

- Dynamics of the term-structure density
- Construction of admissible term-structure models
- New Levy-based interest-rate models
- Brownian, Gamma, and Variance-Gamma models
- Bond-option pricing in rational Levy models

11:00 – 11:15 Break

11:15 – 12:45 / Revisiting CMS Spread Options (Cap, Floor, Digital, Range Accrual):
/ Eric Benhamou, Pricing Partners

- Product description
- CMS Replication
- Presentation of the various approaches: Normal, Bi Lognormal, Bi-SABR with copula, Bi Heston with copula, and Hagan adjuster method
- Comparisons and price differences
- Fast computation of CMS Range accrual
- Real time calibration of SABR model
- Impact of the copula assumption
- Impact of multi curve construction

12:45 – 13:45 Lunch
13:45 – 15:15 / Bases between Rates and Implications on Curve Construction and Pricing: / Jochen Theis, Markit

Bullets to follow

15:15 – 15:30 Break

15:30 – 17:00 / Multiple Curves, One Price: New Approaches for Pricing & Hedging Interest Rate Derivatives / Decoupling Forwarding and Discounting Yield Curves: / Marco Bianchetti, Intesa SanPaolo Bank

Market Context and Practices:
• Pre-Credit Crunch Single-Curve Framework
• Post-Credit Crunch Multiple-Curve Framework
• No Arbitrage and Forward Basis

Foreign-Currency Analogy, No Arbitrage and Quanto Adjustment:
• Single Currency Spot and Forward Exchange Rates
• Quanto Adjustment
• Pricing & Hedging FRAs, Swaps, Caps/Floors/Swaptions

No Arbitrage and Counterparty Risk

Other Approaches:
• Multi-Curve Market Model Approach
• Axiomatic Approach
• Counterparty Risk Approach
Workshop Fee:

- Any One day: £1099 + UK VAT
- Both days: £1998 + UK VAT (Including £200 Discount)
- 30% discount Academic delegates

To register please fax the completed booking form to:

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Flight details:
All delegates flying into London on the morning of the event are reminded that they should arrive 30 minutes before the workshop starts for registration. The hotels West End location is approximately 1 hour from all 3 main London airports, Heathrow, Gatwick and City. Returning flights should equally allow for the events finishing time.

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