



Latest Developments: Interest Rate Modelling & Hybrids Products

London 19th – 23rd March 2007

Register to ANY combination of the five days in the workshop

ANY TWO days and receive £200 discount

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ALL FIVE days and receive £600 discount

Topics:

Day 1: The Practicalities of Libor Market Models

- **Derivation of the Indirectly Stochastic Drift**
- **Futures Convexity Corrections in the Libor Market Model**
- **Standard and Skewed Libor Market Model Dynamics**
- **Parametrisation of Correlation and Volatility Backbone**
- **Analytical Calibration to Coterminal Swaptions**
- **Non-Parametric Volatility Specification**
- **Cross-Currency Libor Market Modeling**
- **Calibration of FX Volatilities in a Cross-Currency Libor Market Model**

Presenter:

Peter Jaeckel: Global Head of Credit, Hybrid, Inflation and Commodity Derivative Analytics, ABN Amro

Day 2: Interest Rate Hybrids: FX / Commodities

- **FX Hybrids Modelling**
- **Modelling the Long-Dated FX Smile**
- **Stochastic Skew Models for FX Derivatives and Applications**
- **Implementation of 3 Factor Lattice Models**
- **Impact of Jumps on Correlation Modelling**
- **Multi-Asset Jump Diffusion**
- **Commodity Hybrids Trading**
- **Correlation Trading in Commodities: The Burgeoning Interbank Market**

Presenters:

Claudio Albanese: Bloomberg LP, New York & Imperial College London

Messaoud Chibane: Senior Quantitative Analyst, Bank of America

James Groves: Barclays Capital, Head of Commodities Hybrids Trading

Chris Hunter: Hybrids Trader, BNP Paribas

Day 3: Interest Rate Modelling

- **Modeling the Volatility Surface**
- **Conventional Models**
- **Model Misspecification and Hedging Robustness**
- **Determine Closed-Form Expressions for the Total Replication Error**
- **Monte-Carlo Pricing of Bermudan Options**
- **Correction of Super-Optimal and Sub-Optimal Exercise**

Presenters:

Philippe Balland: Managing Director in the Fixed Income Division, Merrill Lynch

Christian Fries: Head of Model Development, Rates and Hybrids, DZ Bank

Stefano Galluccio: Co-head of exotic and hybrid derivatives trading, BNP Paribas

Pat Hagan: Brevan Howard

Day 4: New Advances in Market Models for Interest Rates

- **Pricing the smile: a LIBOR model with uncertain parameters**
- **Derivation of analytical formulas for caps and swaptions**
- **Model's implications: forward volatilities and implied swaptions smile**
- **A specific case allowing for an exact calibration to ATM volatilities**
- **Introducing the CMS convexity adjustments**
- **A joint calibration to swaptions and CMS swap spreads**

Presenters:

Fabio Mercurio: Head of Financial Models, Banca IMI

Massimo Morini: Financial Consultant

Day 5: Interest Rate Hybrids: Credit / Equity / Inflation

- **Model Misspecification**
- **Pricing and Hedging Hybrid Derivatives**
- **New Classes of Models for Equity / Interest Rates / Credit Hybrids**
- **Local Lévy Models to Capture Forward Skews**
- **Pricings of Equity / Interest Rates Hybrids**
- **Local Volatility and Stochastic Volatility Models with Stochastic Interest Rates**
- **Pricing Inflation / Interest Rate Hybrids**
- **Valuing inflation - IR spread products**

Presenters:

Alexander Giese: Co-Head of Quant Research Equities, Commodities and Portfolio Strategies, HVB

Helyette Geman: Prof. Mathematical Finance Birkbeck, University of London and ESSEC Business School

Jeroen Kerkhof : Vice President, Morgan Stanley

Youssef Randjiou: Head of Hybrid Derivatives Research, Citigroup

Day 1: The Practicalities of Libor Market Models: Peter Jaeckel, ABN Amro

9:00 – 10:30

- **Standard and skewed Libor market model dynamics**
- **Derivation of the indirectly stochastic drift**
- **Leaving the canon**
- **Futures convexity corrections in the Libor market model**
- **Speed is everything - the predictor-corrector scheme**

10:30 – 10:45 Break

10:45 – 12:30

- **Parametrisation of correlation and volatility backbone**
- **Factor reduction - pros and cons**
- **Speed is everything - the drift term**
- **Analytical calibration to coterminal swaptions**

12:30 – 13:30 Lunch

13:30 – 17:30

- **Non-parametric volatility specification**
- **Global calibration to the full swaption matrix**
- **Bermudan Monte Carlo**
- **Cross-currency Libor market modeling**
- **Calibration of FX volatilities in a cross-currency Libor market model**

15:30 – 15:45 Break

Day 2: Interest Rate Hybrids: FX / Commodities

09:00 – 10:30 / FX Hybrids Modelling:

1 hour 30 minutes / Messaoud Chibane, Bank of America

Examples of Typical Products

- Power Reverse Dual Currency knock outs and cancellables
- FX inverse floaters
- FX Tarns
- Quantoed structures

History of FX Model for Long Dated Structures

- Cross-Currency Libor Market Models
- Modelling the long-dated FX smile

10:30 – 10:45 Break

10:45 – 12:45 / Stochastic Skew Models for FX Derivatives and
2 hours / Applications:

/ Claudio Albanese, Bloomberg LP, New York &
/ Imperial College London

- Stochastic drift models for FX derivatives
- Implied skew dynamics
- Implementation of 3 factor lattice models
- Barrier options
- Volatility swaps
- Knockout options on realized variance
- FX-linked range accruals
- FX options on emerging currencies and sovereign CDS

12:45 – 13:45 Lunch

13:45 – 15:15 / Impact of Jumps on Correlation Modelling:

1 hour 30 minutes / Chris Hunter, BNP Paribas

Introduction

- Dependence
- Copula
- Implied Correlation
- Local Correlation

Multi-Asset Jump Diffusion

- Definition
- Calibration
- Pricing

Jump Correlation Model

- Definition
- Calibration
- Pricing

Summary

15:15 – 15:30 Break

15:30 – 17:00 / Commodity Hybrids Trading:

1 hour 30 minutes / James Groves, Barclays Capital

- Commodities as an asset class
- Characteristics of trading commodities
- Examples of modelling challenges: high vol, seasonality, low liquidity, rotation risk
- Implications for risk management: case study: forward start call options
- Correlation trading in commodities: the burgeoning interbank market
- Case study: FX-Commodity hybrids
- Case study: IR-Commodity hybrids

Day 3: Interest Rate Modelling

09:00 – 10:30 / Stochastic Volatility in Interest Rate Models:
1 hour 30 minutes / Philippe Balland, Merrill Lynch

Bullet points to be confirmed

10:30 – 10:45 Break

10:45 – 12:30 / Modeling the volatility surface:
1 hour 45 minutes / Pat Hagan, Brevan Howard

- Conventional models
- Observed realized and implied vols
- Contemporary models

12:30 – 13:30 Lunch

13:30 – 15:15 / Model Misspecification and Hedging Robustness:
1 hour 45 minutes / Theory and Impact on Risk Management:
/ Stefano Galluccio, BNP Paribas

- Model misspecification in models driven by general mixed processes in presence of stochastic volatility
- Determine closed-form expressions for the total replication error
- Examples of important cases

15:15 – 15:30 Break

15:30 – 17:00 / Monte-Carlo Pricing of Bermudan Options:
1 hour 30 minutes / Correction of Super-Optimal and Sub-Optimal
/ Exercise:
/ Christian Fries, DZ Bank

Review

- Bermudan option pricing in Monte Carlo Simulations
- The backward algorithm
- Exercise boundary estimation: Binning, regression and other methods
- The parallelization problem

Correction of Super-Optimal and Sub-Optimal Exercise

- Super optimal exercise: the foresight bias:
- Suboptimal exercise
- Analytic formulas for super- and sub-optimal exercise errors

Implementation

- Object oriented design and sample implementation
- Exercises

Day 4: New Advances in Market Models for Interest Rates: Fabio Mercurio, Banca IMI & Massimo Morini, Financial Consultant

9:00 – 10:30

- **Pricing the smile: a LIBOR model with uncertain parameters**
- **Derivation of analytical formulas for caps and swaptions**

10:30 – 10:45 Break

10:45 – 12:30

- **Model's implications: forward volatilities and implied swaptions smile**
- **Examples of calibration**

12:30 – 13:30 Lunch

- **A specific case allowing for an exact calibration to ATM volatilities**
- **Examples of calibration**

13:30 – 17:30

- **The swaption smile quoted by market**
- **Calibration with the SABR functional form**
- **Introducing the CMS convexity adjustments**
- **A joint calibration to swaptions and CMS swap spreads**

15:30 – 15:45 Break

Day 5: : Interest Rate Hybrids: Credit / Equity / Inflation

09:00 – 10:30 / The Hybrid Derivatives Challenge:

1 hour 30 minutes / Youssef Randjiou, Citigroup

- Hybrid derivatives
- Need for Hybrid products
- Hybrid products and solutions
- Issues with Hybrid derivatives
- Model misspecification
- Need for consistency across asset classes
- Pricing and hedging hybrid derivatives
- Know your limits

10:30 – 10:45 Break

10:45 – 12:30 / New Classes of Models for Equity / Interest Rates

1 hour 45 minutes / Credit Hybrids:

/ Helyette Geman, Birkbeck, University of London
/ and ESSEC Business School

- Acceptable Numéraires and Invariance principles
- Creating Stochastic Volatility through Stochastic Time Changes: the CGMY example
- Local Volatility Models: from Gyongyi's theorem to Dupire's equation
- Local Lévy Models to capture forward skews
- From Local Volatility to Stochastic Volatility Models for Equity Derivatives: the case of Stochastic Interest Rates
- Using CEV processes for equity/credit hybrids

12:30 – 13:30 Lunch

13:30 – 15:00 / Pricings of Equity / Interest Rates Hybrids:

1 hour 30 minutes / Alexander Giese, HypoVereinsbank

- Local Volatility and Stochastic Volatility Models with Stochastic Interest Rates
- Case Study: Pricing of Auto Callable Structures
- Case Study: Pricing of Equity / Interest Rates Coupon Structures

15:00 – 15:15 Break

15:15 – 16:45 / Pricing Inflation / Interest Rate Hybrids:

1 hour 30 minutes / Jeroen Kerkhof, Morgan Stanley

- Inflation essentials
- Valuing inflation volatility products
- Valuing inflation - IR spread products
- Valuing indexed IR products

Workshop Fees:

- Any One day: £999 + UK VAT
- Any Two days: £1798 + UK VAT
(Including £200 Discount)
- Any Three days: £2697 + UK VAT
(Including £300 Discount)
- Any Four days: £3596 + UK VAT
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