

# EQUITY DERIVATIVES AND STRUCTURED EQUITY PRODUCTS

## ADVANCED TECHNIQUES FOR PRICING, HEDGING AND TRADING

### Course highlights:

- Compare and evaluate the leading models and select the most appropriate models for the type of product you are pricing
- Learn how to avoid common pitfalls in stochastic volatility modelling
- Analyse the concept of equity based CPPI products
- Examine correlation in structured equity products
- Examine optimal techniques to consistently price and hedge exotic options & options on variance and volatility

### Course tutors:

- Claudio Albanese  
**INDEPENDENT CONSULTANT**
- Kevin Chang  
**CREDIT SUISSE**
- Matthias Fengler  
**SAL.OPPENHEIM**
- Christopher Jordinson  
**DEUTSCHE BANK**
- Peter van Kleef  
**LAKEVIEW ARBITRAGE**
- Steve Kou  
**COLUMBIA UNIVERSITY**
- Marcello Minenna  
**CONSOB**
- David Samuel  
**RBOS**
- Michael Sotiropoulos  
**BANC OF AMERICA**

### Who should attend?

This intensive two-day course has been designed for those involved in pricing, hedging and trading equity derivatives and structured equity products. Practitioners with the following job titles will find this course especially valuable:

- |                                         |                                                         |                                                       |
|-----------------------------------------|---------------------------------------------------------|-------------------------------------------------------|
| ■ Heads of Equity Derivatives Research  | ■ Heads of Equity Derivative Trading and Senior Traders | ■ Heads of Model Validation                           |
| ■ Quantitative Analysts and Researchers | ■ Financial Engineers                                   | ■ Heads of Equity Derivatives and Structured Products |
| ■ Risk Managers and Analysts            | ■ Portfolio Managers                                    |                                                       |



**T R A I N I N G**

**EQUITY DERIVATIVES AND  
STRUCTURED EQUITY PRODUCTS**

**NEW YORK  
LONDON**

**17 & 18 September 2007  
26 & 27 September 2007**

**ABOUT THE COURSE**

This course equips attendees with a comprehensive understanding of developments in advanced techniques for pricing, hedging and trading equity derivatives and structured equity products.

This course makes extensive use of real live examples and case studies from senior level industry practitioners, and the informal style will enable group discussions and extensive information-sharing opportunities.

The course is intended to be very interactive to allow participants to explore their own ideas. Active participation is encouraged.

**KEY LEARNING POINTS**

- Price general exotic options and options on variance
- Analyse correlations in structured equity products
- Assess positive & negative feedback loops
- Avoid mispricings

**FOR FURTHER INFORMATION**

**CALL** the registration hotline on **+44 (0) 870 240 8859/ + (212) 925 6990**

**EMAIL** [sophie.eke@incisivemedia.com](mailto:sophie.eke@incisivemedia.com) or [conf@incisivemedia.com](mailto:conf@incisivemedia.com)

**BOOK** online via [www.incisive-events.com/equityderivatives](http://www.incisive-events.com/equityderivatives)

**NEW YORK 17 & 18 September 2007**

## Day one – Monday 17 September 2007

**09.00** Registration and coffee

### 09.30 FUNDAMENTALS OF MODELLING, PRICING AND HEDGING EQUITY DERIVATIVES

- The leading types of models
- Characteristics
- Strengths and weaknesses
- Model calibration

**Michael Sotiropoulos**

Principal, BANK OF AMERICA

**10.30** Morning break

### 11.00 PRICING EQUITY FIXED INCOME HYBRIDS

- The need for modeling interest rates within an equity product
- Popular interest rate models in the equity derivatives world
- Common EQ-FI product structures
- CPPI as an alternative to options

**Michael Sotiropoulos**

Principal, BANK OF AMERICA

**12.00** Lunch

### 13.15 HEDGING EQUITY DERIVATIVES WITH VOLATILITY AND CREDIT CONTRACTS

- Considerations when using volatility
- Considerations when using credit
- Performance of individual and combined hedges
- Optimization of hedge performance and minimization of hedge cost

**Peter van Kleef**

CEO & Founder, LAKEVIEW ARBITRAGE

**14.45** Afternoon break

### 15.15 VOLATILITY ARBITRAGE VS VOLATILITY INVESTING

- Market microstructure issues
- The role of correlation
- Model dependency and possible improvements
- Differences in opportunity sets and payoffs

**Peter van Kleef**

CEO & Founder, LAKEVIEW ARBITRAGE

**16.45** End of day one

## IN-HOUSE TRAINING

**Would you like to know more about e-learning and tailored in-house training for this subject?**

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## Day two – Tuesday 18 September 2007

**08.30** Registration and coffee

### 09.00 PRICING AND HEDGING IN DISCRETE TIME

- Replication portfolio approach
- Martingale measure approach
- Binomial model
- Excel implementation

**Marcello Minenna**

Head of Quantitative Analysis Unit, CONSOB

**10.30** Morning break

### 11.00 EMPIRICAL MOTIVATION OF JUMP DIFFUSION MODELS

- Analytical Solutions for Path-Dependent Options
- American, Barrier, and Lookback Options
- Numerical Inversion of Laplace Transforms
- Application to Credit Derivatives with Jump Risk

**Steve Kou**

Assistant Professor, Dept. of IEOR, COLUMBIA UNIVERSITY

**12.30** Lunch

### 13.30 IMPACT OF HEDGING STRUCTURED PRODUCTS ON UNDERLYING MARKET

- Finite liquidity of hedge instruments / risk warehousing
- Positive/negative feedback loops
- Risk management issues
- Mis-pricings
- Behaviour outside the "normal" derivatives modelling regime

**David Samuel**

Head of Equity Derivatives, RBOS

**15.00** Afternoon break

### 15.30 GREEKS DERIVATION BEYOND BLACK-SCHOLES-MERTON

- Fourier analysis and change of measure
- DFT and FFT approaches
- Numerical algorithms
- Implementation on a spreadsheet

**Marcello Minenna**

Head of Quantitative Analysis Unit, CONSOB

**17.00** End of course

**Day one – Wednesday 26 September 2007**

**08.30** Registration and coffee

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**09.00 FUNDAMENTALS OF MODELLING, PRICING AND HEDGING EQUITY DERIVATIVES**

- The leading types of models
- Characteristics
- Strength and weaknesses
- Model calibration

**Speaker to be confirmed**

**10.30** Morning break

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**11.00 DIVIDEND TREATMENTS AND VOLATILITY**

- Overview of dividends behaviour
- Extending Black-Scholes to handle discrete dividends
- Dividend treatments and their relations to volatility
- No-arbitrage conditions
- Advanced equity models

**Christopher Jordinson**

VP, Deputy Head Quantitative Products  
Analytics, DEUTSCHE BANK

**12.30** Lunch

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**13.30 PRICING AND HEDGING VOLATILITY DERIVATIVES**

- Variance and gamma swaps
- Corridor and conditional swaps
- Options on Variance
- Variance Knockout Options
- Using the theory of Abelian processes
- GPU acceleration
- Vega convexity and credit risk

**Claudio Albanese**

Independent Consultant

**15.00** Afternoon break

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**15.30 EMPIRICAL HEDGING ANALYSIS OF THE LOCAL VOLATILITY MODEL FOR BARRIER OPTIONS**

- Static hedging versus dynamic hedging
- Model choice: review of the local volatility critique from the literature
- Smile dynamics for equities: how to compute delta?
- Which sensitivities are relevant?
- Results of an empirical hedge simulation

**Matthias Fengler**

Senior Quantitative Analyst, SAL.OPPENHEIM

**17.00** End of day one

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**Day two – Thursday 27 September 2007**

**08.30** Registration and coffee

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**09.00 PRICING AND HEDGING IN DISCRETE TIME**

- Replication portfolio approach
- Martingale measure approach
- Binomial model
- Excel implementation

**Marcello Minenna**

Head of Quantitative Analysis Unit, CONSOB

**10.30** Morning break

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**11.00 HEDGING EQUITY DERIVATIVES WITH VOLATILITY AND CREDIT CONTRACTS**

- Considerations when using volatility
- Considerations when using credit
- Performance of individual and combined hedges
- Optimization of hedge performance and minimization of hedge cost

**Peter van Kleeft**

CEO & Founder, LAKEVIEW ARBITRAGE

**12.30** Lunch

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**13.30 IMPACT OF HEDGING STRUCTURED PRODUCTS ON UNDERLYING MARKET**

- Positive/negative feedback loops
- Mis-pricings
- Risk management issues
- Behaviour outside the "normal" derivatives modelling regime

**David Samuel**

Head of Equity Derivatives, RBOS

**15.00** Afternoon break

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**15.30 GREEKS DERIVATION BEYOND BLACK-SCHOLES-MERTON**

- Fourier analysis and change of measure
- DFT and FFT approaches
- Numerical algorithms
- Implementation on a spreadsheet

**Marcello Minenna**

Head of Quantitative Analysis Unit, CONSOB

**17.00** End of course

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## SPEAKER BIOGRAPHIES

**Claudio Albanese (London)**

Claudio Albanese's academic career includes a PhD from ETH Zurich and faculty positions at NYU, Princeton, Toronto and Imperial College, achieving the rank of Full Professor of Mathematical Finance. Claudio's research focuses on pricing theory for long-dated structured products and has worked across most asset classes.

**Matthias Fengler (London)**

Matthias Fengler is a senior quantitative analyst at Sal. Oppenheim, Frankfurt. He earned his PhD in Quantitative Finance from the Humboldt-Universität zu Berlin and is author of the book *Semiparametric Modeling of Implied Volatility* recently published in the Lecture Notes in Finance, Springer-Verlag.

**Christopher Jordinson (London)**

Christopher gained a Ph.D. in astrophysics from the University of Cambridge, after which he worked on interest rate and hybrid derivatives analytics at NumeriX Software Ltd. He joined Deutsche Bank in January 2004, where he is Deputy Head of the Quantitative Products Analytics group, the team responsible for pricing equity and equity-hybrid derivatives. He has worked on hybrid modelling, local volatility and dividend modelling. In 2006 he co-authored the group's latest book "Equity Hybrid Derivatives".

**Steve Kou (New York)**

Steve Kou is Associate Professor at Columbia University, where he teaches Financial Engineering.

He is well-known internationally for his research on jump diffusion models, pricing of discrete exotic options, credit risk modeling, and risk measures. Some of his results have been widely used in Wall Street, and have been incorporated into standard MBA textbooks, such as the textbook by John Hull.

**Marcello Minnena (London & New York)**

Marcello Minnena is the Head of the Quantitative Analysis Unit at CONSOB (the Italian Securities and Exchange Commission). In charge of what Risk magazine addressed as the "quant enforcement", he analyses and develops quantitative models for surveillance and supports the enforcement units in their activities.

Marcello has taught mathematical models for finance in several Italian and foreign universities and is presently teaching financial mathematics at the universities of Milano Bicocca and Bocconi. He received his Phd in applied mathematics for social sciences from the State University of Brescia and his MA in mathematics in finance from Columbia University.

**David Samuelson (London & New York)**

David is currently Head of Equity Derivatives at the Global Banking & Markets division of The Royal Bank of Scotland, prior to this he held positions as Head of Equity Derivatives Exotics at Chase Manhattan Bank and as a quantitative analyst and equity derivatives trader at Lehman Brothers. David's research interests include modelling market microstructure and the application of Bayesian inference and Machine Learning techniques to high frequency market data. David has a PhD in Theoretical Astrophysics and lectures for the MSc in Mathematical Finance at the University of Oxford.

**Michael Sotiropoulos (New York)**

Michael Sotiropoulos is with the Bank of America Equity Derivatives Quantitative Group. His main focus is in the implementation and assessment of exotic equity and hybrid option pricing models. Prior to his current position, Michael worked as an Assistant Director with the Financial Analysis and Structured Trading department at Bear Stearns. He holds a Ph.D. in Theoretical High Energy Physics from the State University of New York at Stony Brook and a GARP Financial Risk Manager certification.

**Peter van Kleef (London & New York)**

Prior to his role at Lakeview, Peter managed significant hedge fund type investment portfolios and quantitative trading departments for among others Cooper Neff, Salomon Brothers, HypoVereinsbank and Credit Lyonnais. He has over ten years of experience in the development and running of sophisticated automated trading operations. He holds a MBA degree from the Owen Graduate School at Vanderbilt University, Nashville, USA. He is a frequent speaker on complex arbitrage strategies with a focus on volatility arbitrage and high frequency algorithmic trading. He is also a well known consultant to the investment community with regards to trading, risk management, operational and strategic issues.

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- Option Strategies EM1902 ■ Trading Volatility EM1665 ■

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For specific questions, for user access, content etc, contact

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