# Derivatives Modelling

## EUROMONEY'S UPCOMING COURSES

Fax Hotline (+852) 2866 7340

For a brochure on any of the following courses please tick boxes and fax to Euromoney Customer Service. Please tick (✔)

REGISTRATION FORM (Please do not remove this label)

**YES!** Please **register** the following delegate(s) for

**Both Modules -Fee US$ 4,500**

☐ 22-26 May 2000, Hong Kong

**Modelling for Equity & Currency Derivatives (Module 1) - Fee US$2,200**

☐ 22-23 May 2000, Hong Kong (HT2141)

**Modelling for Interest Rate Derivatives (Module 2) - Fee US$ 3,300**

☐ 24-26 May 2000, Hong Kong (HT2142)

PLEASE USE BLOCK PRINT

1st Delegate: (Mr./Mrs./Ms)................................................

Position: ................................................

Tel: ................................................ Fax: ................................................

Email: ................................................

2nd Delegate: (Mr./Mrs./Ms)................................................

Position: ................................................

Tel: ................................................ Fax: ................................................

Email: ................................................

(please underline family name)

Approving Manager................................................

Position................................................

Secretary for Enquiry................................................ Extn ........................

Training Manager................................................

Organisation................................................

Address................................................

City................................................Country................................................

Phone................................................ Fax................................................

E-mail................................................

Code: HT2141/42 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

### Applied Corporate Finance
☐ 22-25 February 2000, Sydney
☐ 2-5 May 2000, Hong Kong

### Syndicated Loans
☐ 23-25 February 2000, Hong Kong

### Internal Audit for Derivatives & Capital Markets Instruments
☐ 6-9 March 2000, Singapore

### Pricing & Trading of Derivatives and Risk Management using VAR
☐ 20-24 March 2000, Sydney

### Advanced Project Finance and Financial Modelling for Project Finance
☐ 29-31 March 2000, Singapore

### Financial Controllers Workshop
☐ 22-25 March 2000, Hong Kong
☐ 19-22 September 2000, Singapore

### Financial Techniques for Business Restructuring
☐ 27-30 March 2000, Singapore
☐ 25-28 September 2000, Hong Kong

### Financial Modelling in Excel
☐ 11-14 April 2000, Hong Kong
☐ 10-13 October 2000, Singapore

### Leasing: The Creative Financing Alternative
☐ 17-19 April 2000, Singapore

### Credit Derivatives
☐ 26-28 April 2000, Sydney
☐ 26-28 June 2000, Hong Kong

☐ **YES! PLEASE FAX ME EUROMONEY'S 2000 TRAINING CALENDAR**

## 4 EASY WAYS TO REGISTER

**FAX**
**Hong Kong**
**(+852) 2866 7340**

**MAIL**
**Hong Kong**
Suite 503, Dina House
Ruttonjee Centre,11 Duddell Street
Central, Hong Kong

**PHONE**
**Hong Kong**
**(+852) 2520 1481**

**e-mail**
**enquiry@euromoneyasia.com**

**Registration Fee:**
Register for both modules for the discounted price of **US$4,500** per person and save US$1000
**US$2,200** for module one: Modelling for Equity & Currency Derivatives
**US$3,300** for module two: Modelling for Interest Rate Derivatives
Fee includes tuition, lunch, refreshments and teaching materials. Hotel accommodation is not included in the course fee, but special rates have been arranged for delegates. (See below)

**Early Bird:**
Register and pay for the course before 17 April 2000 and benefit from a 5% discount
**Team Discount:**
When three or more colleagues from one institution attend the same course date, there is a 5% discount available on the second and additional bookings.

**Payment:**
Crossed cheque payable to **Euromoney Training.** *Registration is confirmed only upon receipt of payment.*

**Cancellation and Transfer Policy:**
Payments will be converted towards Euromoney credit notes that can be applied for any Euromoney Training course in Asia for up to one full year. A credit note for the full amount will be issued for cancellations received up to 21 days before this event. Cancellations must be made in writing (letter or fax) and reach this office before the 21 days deadline. A 25% charge will be deducted from the credit note for cancellations received less than 21 days before this event. Of course a replacement is always welcome. A credit note will not be issued in case of no attendance without cancellation

**Course Venue and Accommodation Information:**
**Hong Kong Course: The Sheraton Hong Kong Hotel & Towers,** 20 Nathan Road, Kowloon, Hong Kong
Tel: 2732 6972 Fax: 2368 1999 Email: res_hongkong@sheraton.com Contact person: Ms Jaly Lai
Special corporate rates have been negotiated for course delegates. Please make your accommodation bookings direct with the hotel. To take advantage of the special rates for delegates, please indicate that you are attending **Euromoney's Derivatives Modelling course.**

**Incorrect Mailing Address?**
Please accept our apologies for mail that is incorrectly addressed. Please send or fax us a copy of the label and we will update our records accordingly. We occasionally allow reputable companies to mail details of products that may be of interest to you. Please tick this box if you do not wish to be informed of these offers. ☐

EUROMONEY TRAINING

*Focused Financial Training for Professionals by Professionals*

# Derivatives Modelling

*Using the latest modelling techniques to effectively price and trade complex financial derivative instruments*

**Hong Kong**

22-26 May 2000, The Sheraton Hong Kong Hotel & Towers

- Use and apply state-of-the-art modelling techniques to accurately value equity, currency and interest rate derivatives
- Benefit from computer simulations and real-life case studies involving derivative instruments
- Use models to effectively formulate risk management and hedging strategies for derivatives
- Master bond mathematics and yield curve calculations
- Use models to understand the methodologies and determinants behind options pricing

***SEPARATELY BOOKABLE MODULES***

**Module 1: Equity and Currency Derivatives**
- 22-23 May 2000

**Module 2: Interest Rate Derivatives**
- 24-26 May 2000

**Worldwide Centres of Excellence: Hong Kong • Singapore • London • New York**

**EUROMONEY HOTLINES: Tel: (+852) 2520 1481 Fax: (+852) 2866 7340**

**Email: enquiry@euromoneyasia.com**

## Course Objectives

Developments in financial derivatives continue to be some of the most innovative and exciting in today's financial markets. New and novel uses for derivatives are being constantly developed, as are highly inventive methods of structuring derivative instruments. However, in order to take full advantage of the enormous opportunities presented by the use of derivatives, practitioners and users require the latest and most accurate information about the instrument before vital decisions can be made. As a result, the need for effective derivative modelling techniques has never been so important.

Euromoney Training's intensive **Derivatives Modelling** course will provide delegates with extensive exposure to the latest techniques for the pricing and trading of major equity and fixed income instruments in the financial markets. The state-of-the-art models used for valuing these derivative instruments will be explained and illustrated through case studies and computer simulations of real financial products. Also covered will be the hedging and risk management of derivative instruments, along with strategies for controlling the many facets of market and rate risks. The course will focus on both the international perspective and regional characteristics of the capital markets.

## Course Content

The course covers:

- Pricing methodologies of options
- Determinants of option pricing
- Volatility smile and implied tree
- Quanto options: quanto-prewashing techniques
- Pricing of path-dependent options
- Characteristics of interest rate instruments
- Bond mathematics
- Spot rate models and forward rate models
- Yield curve calibration
- Pricing of bonds, bond options and other interest rate instruments
- Structure of European, US and Asian bond markets
- Bond portfolio management

## Teaching Methods

The course strikes a fine balance between lecture sessions, worked examples and exercises and case studies through computer simulations. One distinctive feature of the programme is the interactive hands-on **computer simulations** of real case studies of various classes of derivative products. Throughout the course, participants will price and hedge various equity and fixed income instruments on spreadsheets. They will then be given information about changing market conditions and will be required to identify the options open to them and make a decision on their trading strategy. Heavy reliance is therefore made upon computer simulations throughout the course.

## Participants

This course is directed to market practitioners with limited exposure to equity and fixed income derivatives who want to acquire a thorough understanding of various aspects of trading and pricing derivatives. It is suitable for individuals in financial institutions who are involved in derivatives in their recent job functions. It is also suitable for those whose jobs are related to the trading and marketing of equity and interest rate instruments to gain acquaintance with the new generation of financial derivative products.

## Course Level / Assumed Knowledge

A good working knowledge of derivatives, capital markets and basic financial mathematics is assumed. Delegates should also be familiar with Microsoft Excel.

## Documentation & Course Texts

All delegates will receive comprehensive course documentation as well as a copy of Dr Kwok's textbook, *"Mathematical models of financial derivatives"*, for use during and after the course, enabling them to return to their organisations with an extensive and valuable source of information for future reference.

## MODULE ONE: EQUITY AND CURRENCY OPTIONS

### Day One

**Options: Hedging or Speculation?**

- Protection puts: hedging/speculation
- Speculation: directional bets or long gamma
- Power of leverage: fever of warrants
- Strategies for hedging and speculation

**Pricing Principle: Risk Neutral Valuation**

- Stories with one-period trees
- Factors affecting options pricing
- Replication and risk neutral valuation
- Continuous time version: Black-Scholes theory
- Volatilities and its estimation

**Alternative Pricing Methodologies: the Power of Trees**

- Life on trees: binomial and trinomial lattices
- Option price sensitivities: the Greeks
- Dynamic programming for decision making
- Monte-Carlo simulations
- Pricing multi-factor options

***Case Study & Computer Simulation:***

- Black-Scholes and binomial tree models for Hang Seng Index options

### Day Two

**Equity Linked Forex Options (Quantos)**

- Quantos in variety: going against the exchange rate risk
- Pricing and hedging: a matter of correlation
- Quanto-prewashing techniques
- Forex index notes and dual currency bonds
- Breaking the barrier of a market: equity swaps

**Pricing with Smile**

- Model imperfections: volatility smile
- Implied versus historical volatility
- Liquid for illiquid/Vanilla for exotics
- Intake of the smile: building implied trees

**Practical Path Dependent Options**

- Warrants and American options
- Barrier options: exotic no longer
- Option-embedded convertible bonds
- Asian options for cash flow in foreign currencies

***Case Studies & Computer Simulations:***

- Pacific Century Cyberworks (1186) warrants: value and Greeks
- Valuing the convertible bond of China Travel

## MODULE TWO: INTEREST RATE DERIVATIVES

### Day One

**Review of Interest Rate Instruments**

- Straight-rate instruments:
  - Straight bonds: Treasury, corporate or high yields
  - Short term borrowing/lending: Repos, reverse Repos and FRAs
  - Floating rate notes (FRNs)
  - Interest rate futures: T-Bond, T-Note and Eurodollar futures
  - Interest rate swaps and currency swaps
- **Convex-rate instruments**
  - T-Bond options
  - T-Bond and Eurodollar futures options
  - LIBOR instruments: caps, floor and swaptions
  - Betting on the yield spreads: spread options

- Structured notes
  - Callable bonds
  - Reverse/inverse FRNs
  - Capped/collared FRNs
  - Dual currency bonds
  - Currency indexed notes
- Convertible bonds, CMOs and CBOs

**Basics of Bond Mathematics**
- Day count convention and compounding frequency
- Price-yield relationship
- Measures of sensitivity: PVBP/DV01, McCauley duration and convexity

**Case Studies & Computer Simulations:**
- Notes of Credit Local de France
- Straight bond pricing methodology
- Calculating PVBP, DV01, duration and convexity
- Valuing T-bond futures

## Day Two

**Term Structure Models**
- Term rates, forward rates and futures implied rates
- Variety of yields: zero, forward, par, LIBOR, swap, CMT and CMS
- Bootstrapping method for Treasury yield curves
- From yield curves to forward rate curves

**Spot Rate Models**
- Vasicek model and Cox-Ingersoll-Ross model: capturing yield curve dynamics
- Bond pricing formulas
- Term structure of volatilities
- Fitting the term structures: Black-Derman-Toy model and Hull-White model
- Building a binomial tree for the Hull-White model
- Pricing American T-bond options using a calibrated tree

***Case Studies & Computer Simulations:***
- Bootstrapping for the HIBOR yield curve
- Valuing American bond options using the Hull-White model
- Credit Local de France swaption

## Day Three

**Forward Rate Models**
- Heath-Jarrow-Morton model: all in one
- Ho-Lee model: simplicity is beauty
- Forward measure and Black's model
- Implied volatility: measurement of price rationality
- Hedging with the Black model
- Pros and cons of spot versus forward models

**Bond Portfolio Management**
- Structure of bond markets
- International bond markets
  - Eurobond markets
  - US Treasury and corporate debt markets
  - Asian bond markets
  - Other sovereign debts: Brady bonds and Eastern European bonds
- Credit ratings and prices
  - Credit scales and risk premiums
  - Investment grade versus non-investment grade bonds
- Sharpe ratio for portfolio return measurement
- Passive risk management
  - Dedicated portfolio/duration immunisation/horizon matching/indexed portfolios
- Active risk management
  - Yield curve trading/arbitrage/bond switch/yield enhancement

***Case Studies & Computer Simulations:***
- Black model for T-Bond futures options
- Black model for LIBOR caps and swaptions
- Credit, price and YTM of the Brazilian C-bond

**Course Conclusion & Summary**

*Please note: All delegates should bring along a financial calculator - the Hewlett Packard HP-B series are recommended.*

## Course Directors

**Dr. Yue Kuen Kwok,** is a senior lecturer, Department of Mathematics, Hong Kong University of Science and Technology, Hong Kong. Yue Kuen Kwok was awarded his PhD degree in Applied Mathematics from Brown University. His research interests concentrate on pricing and risk management of equity and fixed income derivatives. Dr. Kwok has published research articles in major research journals in financial engineering and presented invited lectures at various international finance conferences. In addition, he is the author of a widely adopted textbook on mathematical models of financial derivatives and a popular book on the Hong Kong derivative markets. He has provided extensive consulting services to financial houses on various aspects of derivative trading.

**Dr. Lixin Wu,** is a lecturer, Department of Mathematics, Hong Kong University of Science and Technology, Hong Kong. Lixin Wu received his PhD degree in Applied Mathematics from UCLA. His current research interests are quantitative modelling of equity and fixed income derivatives. He has published numerous articles on financial engineering in major journals. Between 1998 and 1999, Dr. Wu was a consultant to Morgan Stanley Dean Witter (New York) on credit risk modelling of the Brady debt markets. In addition, he has acted as a consultant to local firms on exotic derivative modelling. Dr. Wu is an experienced trader of equity options.

Both instructors are columnists in the Hong Kong Economic Journal, and write on financial derivatives trading.

## Euromoney Training

**Euromoney Training** is a division of Euromoney Institutional Investor Publications plc., one of the world's leading financial publishing and information groups. Euromoney Institutional Investor publishes over 60 magazine titles worldwide including *Euromoney, Asiamoney, Institutional Investor, ICM, Global Investor, Corporate Finance, Euroweek* and *Project & Trade Finance.*

In addition to specialist magazines, Euromoney Institutional Investor Publications plc. provides the international business community with a wide range of financial, legal and general business information in the form of books and directories, training courses, conferences, databases, videos and CD-ROMs.

**Registration is at 8.30am on the first day. The course begins at 9.00am and concludes at 5.00pm daily.**

Euromoney Training Certificate

### The Euromoney Certificate

Delegates who successfully complete this course will receive the prestigious **Euromoney Training Certificate**, a statement of excellence recognised worldwide.