Value-at-Risk

Market Risk Governance Analytics & Implementation

This cutting-edge training programme will provide you with invaluable practical information on:

- VaR risk capital & regulatory developments
- Key issues in risk governance, risk management and risk audits
- Historical simulation methodologies and issues
- VaRCoVaR methods and issues, expected tail-loss (conditional VaR)
- Monte Carlo simulation analytics and issues
- Importance of multi-factor term-structure models
- Auditing a risk management hedging system of a derivatives book
- Worked examples of actual implementation

Training Faculty:
Dr T.S. Ho (Independent Consultant)

London Dates
2-4 March 2011
5-7 September 2011

To register:
Tel: +44 (0)20 7017 7190 Fax: +44 (0)20 7017 7802
Email: enquiries@iirltd.co.uk Web: www.iff-training.com
The failure of numerous financial institutions and the spectacular losses in the financial markets in recent year, have had a profound and extremely significant impact on the thinking and innovations in risk management. In addition, the proliferation of new derivatives products has raised concern, both in the management of financial institutions and in the regulatory authorities assessing and monitoring the risk. The recent credit crisis provides a contextual reminder for the urgent need to understand and evaluate the potential of the tools employed to monitor the inherent risks involved. The chief lesson to be learned from these losses concerns risk limits.

**Course Objectives**

This intensive course outlines and illustrates a framework for measuring Value-at-Risk (VaR) and demonstrates how it could be used to generate the types of measures that align with current regulatory recommendations. This is done in the context of equity, fixed income and interest rate derivative products.

The nature of the risk measurement problem will be explained. During the course you will examine:

- A flow diagram of the risk measurement system (input and output of the system will be defined)
- The modelling of the term structure of interest rates
- Detailed examples of how the system can be implemented
- Finally, how the risk measurement system can be adapted to measure the size of credit exposure of any financial institution discussed.

**Small Class Sizes**

The number of participants is strictly limited to ensure that the course will be tailored to suit your precise needs. Our commitment to small class sizes means that the spaces on this course are allocated on a first come, first served basis. Therefore we strongly advise you to enrol early to be sure of securing your place — simply call our Hotline on +44 (0)20 7017 7190.

**Big Discounts for Multiple Bookings**

Make big savings when sending multiple delegates to this event. Many of our clients send 2 or 3 delegates to each course and benefit from significant cost reductions.

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**Value-at-Risk Market Risk Governance Analysis**

Course Instructor: T.S. Ho

Dr. T.S. Ho is the Managing and Technical Director of an educational consultancy firm based in the UK, and professorial advisor of global derivatives risk analytics and chief scientific officer at leading financial institutions. His academic positions include visiting scholar and professor of finance, and professorial research fellow at various universities.

A recipient of the "highly commended prize" in the Pilkington Teaching Awards and "best teacher" award, he has worked with numerous leading investment banks and has implemented risk management systems for derivative products for major financial institutions worldwide.

He holds a doctorate in Mathematical and Empirical Finance and has published papers on the valuation and hedging of complex derivatives, market risk, and credit risk in leading academic journals, books and conference proceedings. He has received a number of research and educational grants for innovation in finance teaching and research. He was awarded the ANBAR citation for "international recognition of outstanding contribution to the literature and body of knowledge".

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**IN-COMPANY TRAINING SOLUTIONS**

**SAVE MONEY – IMPROVE PERFORMANCE – REDUCE RISK**

IFF understands that in the current climate getting a good return on investment is critical for all our clients. You want the best quality training, for a competitive price and you want your training partner to be a risk-free option: IFF in-company courses guarantee all three.

If you have four or more people to train, our in-company courses can be delivered for you anywhere in the world and are to be the perfect solution for you.

Many organisations have realised that IFF in-company courses offer so much more than conventional courses. Here’s why:

- We focus on providing our clients with training solutions that are specifically designed for them in order to help them address their key business challenges
- IFF programmes are designed by practitioners for practitioners. We focus on equipping our clients with the practical skills and knowledge they need to succeed
- Our international faculty of trainers are some of the world’s leading experts in their chosen field. We only use the best minds in the business
- We’ve been supporting our clients for over 20 years; you can be sure that, as such, our track record makes us the lowest risk training partner you could find
- By focusing on the business issues behind the training need, we can ensure that the content and focus are targeted 100% on the needs of the business
- In the current climate you need someone who can deliver on their promises – we guarantee that we will!
- We can utilise your own data and systems within the training to make it even more applicable and will ensure your employees benefit from a real-world focus
- Whatever your need, whether it’s a one-day workshop, a graduate training programme or a ten-day boot camp, we will deliver exactly what you need
- Quality is critical to our success. Our reputation has been built over 20 years by delivering programmes of the highest standard. We will never compromise on our desire to ensure that our courses surpass the expectations of our clients, not meet them.

IFF is chosen in-company training provider for some of the world’s leading financial institutions, so rest assured you’ll be in good company.

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- Emirates Bank
- ING
- WestLB
- Abu Dhabi Investment Company
- Calyon
- OTPP
- ABP Investments
- Citibank
- EBRD
- Brunei Investment Agency
- ECB

We’ll meet with you anywhere around the globe

Only by understanding our clients’ business issues can we hope to add substantial value. That’s why we work with our clients face to face all over the world. Our team of consultants will meet you anywhere around the globe and are always present in the UK, Europe, Asia Pacific, Scandinavia, North America and the Middle East. If you would like one of our consultants to meet with you to talk about your needs in more detail or if you would simply like more information as to how you’ll benefit from our in-company programmes, please contact Jeff Hearn (General Manager) on +44 (0) 20 7017 7190 or email: jhearn@iirltd.co.uk

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Your Comprehensive Course Programme

**VaR: Overview, Risk Capital & Regulatory Developments**
- Motivation - Risk profile of derivatives portfolio
- Risk governance measurement - Common conceptual framework
- Basel II: Three pillars & revisions to Basel II
- Solvency II - Scenario analysis & stress testing
- Banking regulators & back testing - Tier capital

**VaR Methodologies**
- Historical simulation (empirical, non-parametric)
- Variance-Covariance Matrix (parametric)
- Monte Carlo simulation
- Lattice-Tree approach

**Historical Simulation (VaR/S)**
- Principle assumptions
- Calibrating the empirical model – Accuracy, extensions (weights)
- Reevaluation issues in portfolio (one-day vs ten-day VaR)
- Incorporating volatility updating - EWMA, GARCH (1,1)
- Bootstrap method
- Extreme Value Theory (EVT) - Estimating tails, power law
- Expected Tail Loss (ETL) - Fitting Johnson SU distribution

**VaR-Measuring Market Risk: Variance-Covariance Analysis**
- Equity portfolio, treasury portfolio, derivatives portfolio
- Market risk
- Variance-Covariance matrices
- VaR of equity portfolio
- Effect of correlation on overall risk
- Do VaRs add? Conditional VaR
- VaR of fixed income sector
- VaR of derivatives (options)
- Quadratic model: Delta, Gamma measures
- Cornish-Fisher expansion
- Non-normal assumptions

**VaR-Monte Carlo Simulation: Cash Market Portfolio**
- Underlying principles
- Modelling equity price process
- Box-Muller transformation
- Polar rejection method

**Computer Workshop 5**
- Monte Carlo simulation - Value-at-Risk equity reports
- Box-Muller transformation
- Polar rejection method

**VaR-Monte Carlo Simulation: Options Portfolio**
- Applied to options portfolio
- Why returns are less than expected
- Risk-neutral (Martingale) insights
- VaR/S versus VaR/P results

**Computer Workshop 6**
- Monte Carlo simulation applied to options portfolio
- Appropriate use of Black-Scholes/Merton option pricing model

**VaR-Monte Carlo Simulation: Correlated Assets Portfolio**
- Multiple assets portfolios
- Modelling correlated stock price processes
- Independent price processes
- Perfectly correlated price processes
- Imperfectly correlated price processes
- Cholesky decomposition

**Computer Workshop 7**
- Monte Carlo simulation applied to multiple assets portfolios
- Modelling correlation
- Cholesky decomposition

**Global Description of Risk: VaR**
- A framework for implementation
- Key features of VaR system modules
  - Review of recent regulatory developments
  - Interest rate risk framework
  - Market and credit risk
  - BIS Basel system of risk management
  - Measuring interest rate risk
  - Shortcomings of duration approaches

**A Sophisticated Approach to Measuring Interest Rate Risk**
- Accounting for movements in (stochastic) yield curves
  - Level (inflation)
  - Steepness (monetary policy)
  - Curvature (mean reversion)
  - Simulation analysis
  - Modelling of a wide range of yield curve behaviour

**A Two-Factor Approach for Interest Rate Derivatives Flowchart of Risk Management System:**
- Stochastic yield curve builder
- Derivative contracts converter
- Valuation module: gridding (mapping) option pricing models
- Risk analyser (PVBP analysis)

**Step-by-Step Worked Example - Actual Implementation in a Leading Bank:**
- Principal Component Analysis (PCA) for extracting two factors
- Estimating volatility and correlation between factors
- Estimating mean reversion coefficient
- Generation of stochastic term structures of interest rates
- State-by-state interest rate scenarios analysis
- Valuing books of cash flows/derivatives over holding period
- Valuing interest rate options and swaptions

**Stochastic Two-Factor Model**
- Inputs - Current yield curve
- Interest rate factors - Short rate and long rate
- Inputs - Volatilities, correlations, mean reversion
- Worked example using real term structure
- VaR toolkit: - Current yield curve builder mathematics
  - Money market
  - Swap market
  - Futures market
  - Linear stripping
  - Geometric interpolation
- Generation of interest rate scenarios
- State-by-state interest rate scenarios analysis

**Value-at-Risk Reports: Swap, Cash, Bond Book**
- Worked example using real swap book
- VaR toolkit: Swap principal method valuation mathematics
- VaR toolkit: Gridding and bucketing mathematics

**Value-at-Risk Reports: Interest Rate Options**
- Worked example using real interest rate cap book
- VaR toolkit: Black (1976) valuation mathematics

**Value-at-Risk, PVBP and Risk Management**
- VaR and risk management hedging

**Credit Risk Losses and Credit VaR:**
- Estimating credit losses: default probability, recovery rates
- M-KMV Vasicek and Merton structural models
- CreditMetrics: correlation and time horizon

**Computer Workshop 1**
- Understanding total risk (volatility) measures

**Computer Workshop 2**
- Historical simulation - Value-at-Risk reports

**Computer Workshop 3**
- Variance-Covariance (Riskmetrics) computations

**Computer Workshop 4**
- Variance-Covariance VaR reports for equity, fixed-income and derivatives trading portfolios

**Computer Workshop 5**
- Monte Carlo simulation - Value-at-Risk equity reports
- Box-Muller transformation
- Polar rejection method

**Computer Workshop 6**
- Monte Carlo simulation applied to options portfolio
- Appropriate use of Black-Scholes/Merton option pricing model

**Computer Workshop 7**
- Monte Carlo simulation applied to multiple assets portfolios
- Modelling correlation
- Cholesky decomposition

**Computer Workshop 8**
- Building one-factor stochastic yield curve model
- Effects and implications for VaR analysis and reports

**Computer Workshop 9**
- Building two-factor stochastic yield curve model
- Effects and implications for VaR analysis and reports

**Computer Workshop 10**
- Value-at-Risk for portfolios of linear risk cash flow instruments: cash, bonds and swaps

**Computer Workshop 11**
- Value-at-Risk for portfolios of non-linear risk cash flow instruments: interest rate options (caps and floors)

**Computer Workshop 12**
- Structural models of credit VaR
- CreditMetrics VaR

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I would like to register on the training course: **Value-at-Risk**

(Visited to be confirmed)

**COURSE**
- 2-4 March 2011 (Ref: LF3457)
- 5-7 September 2011 (Ref: LF3506)

**YOUR DETAILS**

(PLEASE COMPLETE IN CAPITAL LETTERS)

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- Mr/Mrs/Ms
- Job Title
- Dept

**Full Attendee Name**
- Mr/Mrs/Ms
- Job Title
- Dept

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**Address**

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Postcode

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*Email

**VAT Registration Number**

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- Job Title
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How much does it cost? Including DOCUMENTATION, LUNCH AND REFRESHMENTS, your investment for attending this intensive course is £2,299 + VAT = £2,701.33

The VAT rate is subject to change and may differ from the advertised rate. The amount you are charged will be determined when your invoice is raised. (Your VAT no. is 365 4626 36).

Please include payment in favour of International Faculty of Finance with your application. All registrations are acknowledged by return with a VAT receipt.

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The following charges will apply for written notice received:

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- 15–30 days before the course: 50%
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- Job Title
- Dept

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**Booking Contact**
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**Billing Address** (if different from above)

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**Places cannot be guaranteed until full payment has been received.**

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Please tick

- [ ] Cheque
- [ ] Credit Card

- [ ] Bank Transfer – full details of bank transfer options will be given with your invoice on registration.

- [ ] Enclosed is my cheque for £ (incl. VAT) in favour of International Faculty of Finance.

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**Name of Cardholder**

**Card No**

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International Faculty of Finance, 6th Floor, 29 Bressenden Place, London SW1E 5DR
Value-at-risk is a statistical measure of the riskiness of financial entities or portfolios of assets. It is defined as the maximum dollar amount expected to be lost over a given time horizon, at a pre-defined confidence level.

Advanced Liquidity Risk Management. This virtual course will take you through the risks and solutions available to treasury functions with regard to advanced liquidity and capital management. 29 Jun 2020 - 23 Jun 2020. Advanced Liquidity Risk Management. View all events.

1.4 Value-at-Risk. Suppose an investment fund indicates that, based on the composition of its portfolio and on current market conditions, there is a 90% probability it will either make a profit or otherwise not lose more than USD 2.3MM over the next trading day. This is an example of a value-at-risk (VaR) measurement.

Value-at-risk is one example of a category of risk metrics that we might call probabilistic metrics of market risk (PMMRs).