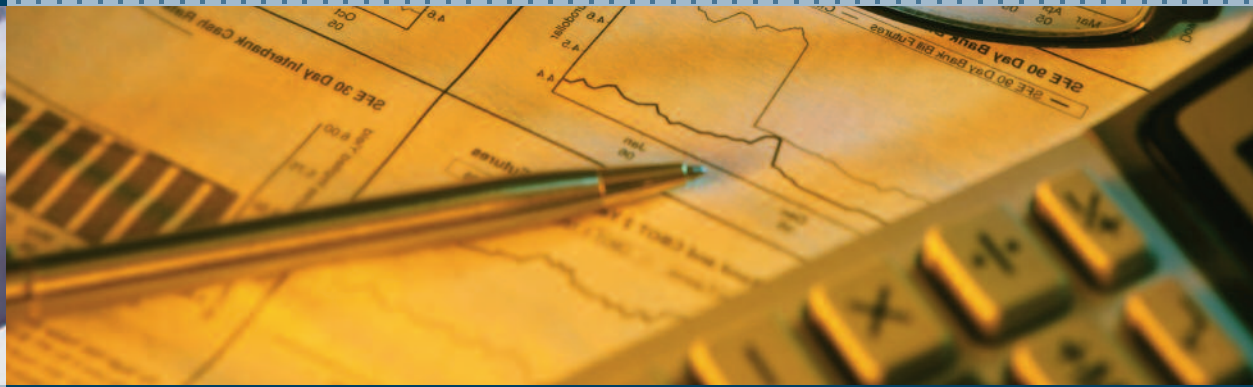




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Stress Testing: A Bayesian-Net Approach

A ONE-AND-A-HALF-DAY COURSE LED BY
DR. RICCARDO REBONATO

MUNICH

Monday & Tuesday

3 & 4 October, 2011

09:00 - 17:00 DAY ONE

09:00 - 13:00 DAY TWO

This course presents a novel approach to Stress Testing, which combines statistical information and expert knowledge. The integration of the two components is achieved by means of **Bayesian Nets technology**. The transparency of this method makes it the opposite of a black-box approach, lending itself to challenge, interrogation and investigation by senior non-technical users (e.g. board members, non-executive directors, heads of trading, etc.)



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KEY OBJECTIVES AND LEARNING OUTCOMES

- Understand the underlying concepts and techniques (causation vs. association, simple elements probability for Boolean variables, identification of outliers, event correlation, etc.)
- Link these concepts and techniques with the requirements of stress testing in financial institutions and with the recent regulatory demands
- Gain an understanding of Bayesian Nets and how this technology can be used for stress testing
- Learn how to identify and specify scenarios and events, particularly how to combine a top-down with a bottom-up approach, and how these scenarios can be mapped onto Bayesian Nets
- Learn how to integrate the output of Bayesian-Net technology with traditional statistical analysis
- Gain an understanding of a number of techniques to facilitate the construction of Bayesian Nets (Maximum Entropy, Causal Independence, merging of nets, etc.)
- Learn how sensitivity analysis can be carried out
- Overcome cognitive biases and pitfalls (e.g. causal vs. diagnostic elicitation)
- Study detailed and fully worked-out case studies
- Understand the governance issues needed for practical implementation in an institution (regulated or otherwise)

WHAT YOU WILL LEARN

In sum, this course enables the delegate to understand the rationale for and the mechanics of a new way of looking at stress testing. At the end of the course the delegate is expected to have mastered the concepts behind the approach, to have understood its strengths and limitations, and to be able to apply it in practice to real-life situations. The approach is thinking-heavy and CPU-time light. Once the ideas are understood, the delegate will therefore be able to apply the technique with a minimum of IT system overhead.

WHO SHOULD ATTEND

- A very wide range of professionals and regulators interested in stress testing, from front-office risk managers to senior risk officers, from central bank economists to quants
- Regulators and central bankers involved in microprudential regulation or in broader financial stability issues

COURSE OUTLINE

Day One 09:00 - 17:00

Morning

- Motivation and explanation of the approach
- Comparison with alternative approaches (eg, EVT, Copulae)
- Theoretical background
- First examples and case studies

Afternoon

- Applications 1: Constructing Bayesian Nets
- Applications 2: Filling in the Conditional Probability Tables
- Governance issues (eg, links to risk appetite, dealing with subjectivity) and sanity checks
- Case studies

COURSE OUTLINE

Day Two 09:00 - 13:00

Morning

- Advanced Tools (eg, Maximum Entropy, Sensitivity Analysis, Causal independence, Resampling)
- Related applications (eg, combining normal and excited market conditions, portfolio allocation under stress)
- Case studies

“Rebonato’s refreshingly original [approach] is the most significant advance in financial risk management in many years. It is rigorous yet thoroughly practical, proposing an operation Bayesian framework that complements purely statistical approaches with the causal/economic structure needed for coherent stress testing.”

*-Francis X. Diebold, Paul F. and Warren S. Miller Professor of Economics, Co-Director, Wharton Financial Institution Center, Professor of Finance and Statistics, University of Pennsylvania [From the review of the book *Coherent Stress Testing*]*





DR. RICCARDO REBONATO is global head of Market Risk and Global Head of the Quantitative Research Team at Royal Bank of Scotland. He sits on the Investment Committee of RBS Asset Management. He is a Visiting Lecturer at Oxford University (Mathematical Finance) and Adjunct Professor at Imperial College (Tanaka Business School). Dr. Rebonato sits on the Board of Directors of the International Swaps and Derivatives Association.

He is a member of the Advisory Board for the European Network AMAMEF (Advanced Mathematical Methods in Finance). He is an Editor for the *International Journal of Theoretical and Applied Finance*, for *Applied Mathematical Finance*, for the *Journal of Risk* and for the *Journal of Risk Management in Financial Institutions*. Rebonato holds a Doctorate in Nuclear Engineering and a PhD in Condensed Matter Physics/Science of Materials (Stony Brook University, NY). He has been a Visiting Fellow at the Research Nuclear Reactor ILL (Grenoble, France) and Visiting Scientist at Brookhaven National Laboratory (Long Island, NY). He was a Research Fellow in Physics at Corpus Christi College, Oxford, UK. He is the author of the books: *The Plight of the Fortune-Tellers* (2007), Princeton University Press; *The Perfect Hedger and the Fox* (2004), John Wiley; *Modern Pricing of Interest-Rate Derivatives* (2002), Princeton University Press; *Interest-Rate Option Models* (1996, 1998), John Wiley; *Volatility and Correlation in Option Pricing* (1999), John Wiley.



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STRESS TESTING: A BAYESIAN NET APPROACH

3 & 4 OCTOBER, 2011

DAY ONE 09:00 - 17:00

DAY TWO 09:00 - 13:00

COURSE FEE: US \$1,300.00

Register by September 2, 2011 and receive \$100 off the course fee.

Additional discounts are available for Sustaining Members of PRMIA. For more information contact training@prmia.org or +1-612-605-3849.

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LOCATION:
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80333 Munich

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A certificate of attendance will be provided

