Key Risk Indicators

Identifying, Measuring & Modeling KRI’s from a Business Unit & Enterprise-wide Perspectives

13th – 16th December 2009, Abu Dhabi, UAE

MEET YOUR TRAINER

Dr. John W. Dalle Molle

is an independent financial market consultant specializing in quantitative credit, market and operational risk management, analytics and modeling. He has been involved in model validation consulting projects over the past few years with major Singaporean and Malaysian banks. He has presented executive educational and professional training programs in Africa, the Americas, Asia-Pacific Region, South Asia, the Middle East, and various European countries. His clients include several large financial institutions and central banks. In the past, he has also taught at a number of renowned universities in Asia, Europe, and the Americas. Dr. Dalle Molle has also made several professional presentations around the world in conferences and exhibitions such as the Credit Risk & Receivables Management Conference in Dubai, the Futures & Options World (FOW) in Singapore, the Quantitative Methods in Finance (QMF) Conference in Sydney, and EURORISK in Paris. He is also very much involved in publications and writing various workings papers and contributions in various highly respected journals and is working on publishing several books on Risk Measurement Management. Dr. Dalle Molle has an interdisciplinary PhD in Management Science/Information Systems with a focus on financial econometrics, a Masters of Arts in Mathematics, and a Masters of Science in Petroleum Engineering, all from the University of Texas at Austin, and a Bachelor of Science in Chemical Engineering from University of Iowa.

SUGGESTED PRE-REQUISITES

Prerequisites include introductory-level courses in statistics and probability; a basic understanding of operations at financial institutions; knowledge of financial markets and standard financial products; and introduction to standard risk measurement models are prerequisites. Basic proficiency with EXCEL is also suggested.

DAY CONTENT SUMMARIES

Day One – Risk Dimensions, Key Risk Indicators/Factors, and Categorizing General Risk Types

Day Two – Comparing Credit, Market & Operational Risks, Risk Measurement Process, and Qualitative and Quantitative Risk Measurement Techniques

Day Three – Common Risk Measurement Models, Qualitative Risk Scoring, Limitations of VaR Risk Measurement Forecasting Methods, Risk Mapping Process and Risk Response Strategies

Day Four – Business Process Mapping, Workflow Analysis, Scenario Analysis, Stress Testing, Model Risk and Backtesting, an Enterprise-wide Risk Measurement Perspective, and a Project Amalgamating the Program Content Together into Risk Measurement Approach

COURSE DESCRIPTION & OBJECTIVE

The objective of this program is to present, illustrate, and implement a systematic risk measurement framework employing various qualitative and quantitative risk assessment methods in order to generate risk exposures and potential loss estimates and at the business unit and enterprise-wide levels. The issues inherent to meeting such risk measurement objective is evidenced by the following quotes from financial managers, risk managers, and financial econometrics, which also place the objective into an appropriate perspective given that the global markets of late 2009 are in the process of recovering for the US sub prime lending excesses of the early 2000s, the leveraged shadow banking securitization crisis of the mid-2000s, and the subsequent credit crunch of late 2008.

“Models are to be used, but not to be believed.”

“All models are wrong, but some are useful.”

“It takes maturity to know what (risk) models are to be used, but never believed,”

“… all the dangers of accepting (risk) models without carefully questioning them.”

And finally a quote that summarizes the perspectives in the first four quotes:

“… a man drowned crossing a stream with an average depth of six inches.”

If the implications of these comments do not seem straight forward, and especially if the logic of last comment seems unclear; this program is designed to address and facilitate applying the implications of these comments in a risk measurement and modeling context. (For the last comment, think of areas where there are flash floods or regions where there are monsoons and dry seasons)

WHO SHOULD ATTEND

Asset/Liability Managers • Back- and Middle-Office Personnel • Bank Branch and Facilities Operations Managers • Central Bankers and Researchers at Central Banks • Chief Risk Officers and Enterprise Risk Managers and Analysts • Credit, Market and Operational Risk Managers and Analysts • Credit Rating Mangers and Analysts • Equity Portfolio Analysts and Managers • External and Internal Auditors • Fixed Income Analysts and Managers • Financial Officers and Nonfinancial Institutions • Hedge Fund Analyst and Managers • IT and Project Analysts and Managers • Market Regulators and Bank Supervisors • Pensions Fund Managers • Portfolio and Fund Analysts and Managers • Quantitative Risk Analysts • Treasury and Capital Markets Analysts and Managers

TRAINING APPROACH

Lectures focused on applied risk-based assessment of key risk indicators, risk measurement models, workflow analysis operations at financial institutions, and risk exposure forecasts for both the business units and the firm on an enterprise-wide basis using an extensive set of simulation modeling exercises, with a number of cases and discussions, and a programming ending project, which puts the content of the program into practice.

“It takes maturity to know what [risk] models are to be used, but never believe”
**DAY 1: Risk Dimensions, Key Risk Indicators and Factors, and Categorizing General Risk Types**

**Section 1.1 - Dimensions of Risk**
- Defining Events, Exposures, Risk, Losses, and Loss Distributions
- Defining Key Risk Indicators/Factors, Risk Triggers and Thresholds; and Risk factor processes
- Basic Decomposition for the Risk of a General Risk Factor - Probability or Likelihood of Occurrence of the Risk Event
- Severity of the Impact of the Risk Event
- Duration or Exposure Time of the Risk Event
- Defining Risk Benchmarks and Aggregate Risk Indices
- Susceptibility to Changes or External Influences
- Degree of Interdependency with other Risk Factors or Risk Events
- Risk-Adjusted Risk Indicators

**Section 1.2 - Fundamental Risk Factor Categories**
- Risk Directionality
- Risk Likelihood
- Quantitative Risk
- Risk Impact
- Risk Duration
- Risk Periodicity
- Risk Indexing

**Section 2 - Overview of Risk Measurement and Risk Indicator/Factor Modeling**
- Describing Data, Time Series and Measurement Scales
- Dimensions to the Risk Management Process
- Recognition and Measurement of Risks
- Risk Measurement Component of Risk Management
- Limitations to Traditional Risk Measurement Approaches
- Empirical Aspects of Risk Measurement Modeling
- Dependencies between key risk indicators/factors
- Static and Dynamic through the Cycle Risk Measurement Techniques

**Section 3.1 - Comparisons of General Risk Types and Inherent Risk Indicators**
- Known Risks versus Unknown Risks
- Predictable and Unpredictable Outcomes
- Acceptable Risk versus Unacceptable Risk
- Pure Risk versus Speculative Risk
- True Risk versus Expected Risk
- Active Risk versus Passive Risk
- Absolute Risk versus Relative Risk

**Section 3.2 - Market Price Risk and Key Risk Indicators**
- Defining Market Price Risk
- Categories of Market Risk and Key Risk Indicators
- Factors Influencing Market Price Risk
- Decomposing Financial Market Risk
- Measuring Market Risk Exposures

**Section 3.3 - Credit Risk Indicators/Factors**
- Defining Credit Price Risk
- Categories of Credit Risk Exposures and Key Risk Indicators
- Current and Potential Credit Exposures
- Measuring Credit Exposures

**Section 3.4 - Operational Risk Indicators/Factors**
- Defining Operational Risk
- Causes Leading to Operational Risk Losses
- Operational Risk Drivers
- Defining Key Operational Risk Indicators
- Operational Loss Event/Effect Categorization
- Decomposing Operational Failure Risks
- Operational Risk Drivers for Back-, Middle-, and Front-Office Functions

**CASE STUDY: Banana Skins - Risk Management Slip Ups**

**Excel Exercise: Simulating Common Risk Factor Process and Loss Distributions**

**Excel Exercise: Historical Simulation, Monte Carlo and Variance/Covariance VaR Forecasts**

**Excel Exercise: Simulating a Portfolio Credit VaR Forecast**

**Excel Exercise: Simulating a Portfolio Operational VaR Forecast**
Day 2: Comparing Credit, Market & Operational Risks; Risk Measurement Process, and Qualitative and Quantitative Risk Measurement Techniques

Section 3.5 - Comparing Credit, Market & Operational Risks
- Loss Definitions & Assumptions for Market, Credit and Operational Risks
- Identification, Measurement & Management of Credit, Market & Operational Risks
- Impact of Operational Risk on Market and Credit Risks
- Data Availability for Credit, Market and Operational Risk Modeling

CASE STUDY: Operational Risks and Compounding Effects on Other Risks

Section 4.1 – The Risk Measurement Processes
- Overview of the Risk Measurement Process - Risk Identification, Recognition, Retention, Assessment, Measurement, Monitoring and Review
- Comments on Risk Identification, Assessment, and Measurement
- Risk Identification Checklist
- Risk Identification for New Risks
- Risk Retention Decision
- Developing, Updating and Reviewing Risk Registers
- Overview of Risk Assessment Process
- Qualitative Assessment & Evaluation Categories for Identified Risks
- Fundamentals of Qualitative Risk Assessment
  - Risk Event Likelihood of Occurrence Assessment
  - Risk Event Impact Assessment
  - Risk Exposure Duration Assessment
  - Assessment of the Dependencies between Key Risk Indicators/Factors
- Use of Simple Ordinal Stratification Grading Methods, i.e. High-Low-Medium Rating Scales with Risk Maps
- Risk Assessment Scoring Matrix – Using Least Risky to Most Risky Scales
- Two and Three-Dimensional Risk Profile Maps
- Risk Review – Reassessing Identified Risks, Unknown Risks and Derecognizing Risks

CASE STUDY: Risk Measurement Reports

Section 4.2 - Qualitative Risk Indicator Measurement Techniques
- Various qualitative risk measurement techniques will be overviewed in this section, including the following, in addition to possibly other techniques (as listed below in alphabetical order): 1 – Brainstorming and Expert Intuition; 2 - Calculus of Preferences, which includes multi-attribute utility theory (MAUT), multi-criteria decision making (MCDM); 3 - Delphi technique; 4 - Failure Modes and Effects Criticality Analysis (FMECA); 5 - Fault Tree Analysis; 6 - Risk Management Road Maps Interviews with Involved Persons; 7 - Risk Attribute Analysis; 8 - Risk Ranking, Weighted Risk Scores/Rating Scales, and Risk Scorecards; 9 - Risk Matrix Chart; 10 - Risk Management Road Maps; 11 - SWOT Analysis; and 12 - Structure Trees

Section 4.3 - Quantitative Risk Indicator Measurement Techniques
- Various quantitative risk measurement techniques will be overviewed in this section, including the following, in addition to possibly other techniques (as listed below in alphabetical order): 1 – Balanced Scorecards and Process Dashboards; 2 – Cause and Effect Analysis; 3 – Decision, Event, and Probability Trees; 4 – Expected Utility Theory and Decision Theory; 5 – Traditional Financial Ratio Analysis without using probabilities; 6 – Markov Chain Decision Models; 7 – Monte Carlo Simulation; 8 – Probability-Impact Grid Analysis; 9 – Risk Mapping, Factor Analysis and Principal Components; 10 - Probabilistic Risk Measurement Models such as Value-at-Risk (VaR); 11 - Scenario Analysis; and 12 – Sensitivity Analysis

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Section 5.1 - Historical Perspective of Risk Measurement Model using Risk Indicators/Factors
• Overview of Measuring Risk and Return
• Limitations of the Standard Deviation as a Risk Factor Measure
• Overview of Risk Measurement Methods
  1. Simple Risk Indicators or Notional Indicator Approach
  2. Risk Indicator/Factor Sensitivity Approach
  3. Transaction Value-at-Risk (VaR)
  4. Portfolio-Level Value-at-Risk (VaR)
  5. Conditional Value-at-Risk or Tail Value-at-Risk (TVaR)
  6. Marginal Risk Contributions, Component Value-at-Risk (CVaR) & Retained Risk Ratio
  7. Cashflow-at-Risk (CfRaR)
  8. Earnings-at-Risk (EaR)
  9. Capital-at-Risk (CaR)
  10. Credit Value-at-Risk (CVaR), including Default Value-at-Risk (DVaR) and Credit Spread Value-at-Risk (CSVaR)
  11. Operational Value-at-Risk (OPVaR)
• Summary of Risk/Performance Measures
• Management of Key Risk Indicators/Factors Measurement Process

Section 5.2 - Basic Risk Measurement Models
• Decomposition of the Risk of a Position and/or Portfolio into Component Risk Factors
• Fundamental Aspects of an Objective Risk Model
• Basic Risk Measurement Models
  - Collective Risk Measurement Model
  - Individual Risk Measurement Model
• Single and Multi-Factor Risk Measurement Models
• Techniques for Reduction of Portfolio Risk

Section 5.3 - Qualitative Risk Scoring and Risk Quality Scorecards
• Risk Evaluation Using Quantitative Scoring Techniques
• Choosing Characteristics and Key Indicators for Credit Scoring Methods
• Risk Scoring Assessments and the Construction of Risk Scorecards

Section 5.4 – Reviewing the Practical Record and Lesson Learned from Standard VaR Risk Measurement Models
• Different Dimensions to Practice of VaR Forecasting
• Critiquing First Generation VaR Models
• Comments on the Limitations of First Generation VaR Models
• Drawbacks to Value-at-Risk Calculation
• Limits to the Use of Value-at-Risk Forecasts
• Lessons Learned from the VaR

Section 5.5 - Case Study: Comparing Value-at-Risk and Capital-at-Risk

Section 6 - Risk Mapping Process, Multifactor Risk Models, and Risk Indicators/Factors
• Risk Indicators/Factors and Risk Decomposition
• Risk Mapping, Marginal Risk and Risk Sensitivities
• Assessing Potential Changes in Risk Factors
• Reasons for Using Risk Mapping
• Risk Mapping using Multifactor Risk Models
• The Selection of Risk Factors for a Risk Mapping Model
• Portfolio and Position Risk Factor Sensitivities to Changes in Risk Factors
• Limitations of Risk Mapping

Section 7 - Risk Response Strategies – What is Next after the Risks have been Assessed?
• Developing Risk Response Strategies and/or Risk Management Strategies
• Basic Risk Management Strategies: The Main Risk Response Techniques
  - Risk Avoidance
  - Risk Transference
  - Risk Diversification
  - Risk Acceptance
  - Miscellaneous Risk Response Strategies

Section 8 - Risk Profile Map with Risk Responses

Section 8 - Workflow Process Mapping for Business Unit from an Operations Perspective

• Why Map the Workflows of a Business Unit
• Tools of the Process Map - Cross-Functional Workflows, Key Risk Factor Relationship Maps, and Flowchart Development
• Steps to Analysis a the Workflow for a Business Process
• Workflow Analysis for the Functions and Services provided by Business Units
• Business Workflow Process Management from a Enterprise-wide Perspective
• Business Workflow Process Mapping Pitfalls and Business Unit Process Reviews

Section 9 - Enterprise Risk Management

• Enterprise Risk Management Functions – Main Aspects
• Reasons for Moving to, and Transformation to ERM
• Comparing Traditional and Enterprise Risk Management Functions
• Information and Communication in a Firmwide Context
• Fundamental ERM Measurement Techniques
• Benefits and Limitations of Enterprise-wide Risk Management

Section 10 - Scenario Analysis and Stress Testing of Risk Measurement Models for Abnormal to Extreme Market Conditions

• Why Use Scenario Analysis – An Overview of Scenario Analysis
• Approaches to Scenario Analysis
• Overview of Stress Testing Techniques
• Reasons for Running a Stress Testing
• Scenarios: The Tools of Stress Testing
• Stress Testing Categories and Examples

Section 11.1 - Model Risk, Measurement and Modeling

• Overview of Model Risk
• Factors Leading to Model Risk
• Model Risk Checklist - Sources and Types of Model Risk
• Recent Examples of the Effects of Model Risk
• Techniques for Mitigating Model Risk
• Stages to the Model Risk Management Process

Section 11.2 - Backtesting and Risk Measurement Error

• Overview of Backtesting Procedures
• Different Profit and Loss Measures for VaR Calculations and Backtesting
• Issues to Consider when Backtesting
• Comparing Risk Measurement Models using Backtesting

Putting it All Together – Using Workflow Analysis, Business Process Mapping, Risk Mapping, Multifactor Models and Identified and Recognized Key Risk Indicators to Generate a Forecast of the Likely Estimates of the Expected and Unexpected Monetary Losses might be for a Business Unit over a Future time Horizon.

This section is an exercise/study/project to be undertaken by each of the delegates, with assistance from the presenter where everything that has been discussed over the duration of the program are put into practice by assessing a simplified version of the business unit (or one of the business units) that they work in. After identifying the business unit to investigate; each delegate will implement the key risk indicators/factors assessment and measurement process, risk mapping, workflow analysis, etc. that has been discussed in the program for a given business unit of their choice. Then after all delegates have completed their project, as a group these assessment of the risk and risk factors for the different business units investigates by the delegates, will be cast or aggregate their results from a enterprise risk management perspective. Also risk response strategies will be suggested for the business unit as it stands alone and if it is viewed as element of the organization, as it is viewed as a portfolio.

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Sales Contract

Please complete this form and fax back to
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or email to: kenneth.fredrick@fleminggulf.com

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WHOM WILL YOU MEET?

- Asset/Liability Managers
- Back- and Middle-Office Personnel
- Bank Branch and Facilities Operations Managers
- Central Bankers and Researchers at Central Banks
- Chief Risk Officers and Enterprise Risk Managers and Analysts
- Credit, Market and Operational Risk Managers and Analysts
- Credit Rating Mangers and Analysts
- Equity Portfolio Analysts and Managers
- External and Internal Auditors
- Fixed Income Analysts and Managers
- Financial Officers and Nonfinancial Institutions
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Fee includes:
- Documentation Pack
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- Lunches and refreshments

Hotel Accommodation:
Overnight accommodation is not included in the registration fee. A reduced rate will be available at the Conference Hotel. Booking form will be sent out right after the venue will be confirmed, but not later than one month prior to the event.

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