SIMFOTIX
Connect and Grow

CERTIFICATE IN

# CREDIT RISK ANALYSIS & MODELLING

**IMPORTANT**
Participants are required to bring their laptops

**Course Director**

## EDWARD BODMER

MBA (Econometrics), University of Chicago
Author of "Corporate and Project Finance Modelling" by Wiley
Corporate Trainer, Euromoney & Amsterdam Institute of Finance (AIF)

**4th - 5th September 2016** | The Address Hotel Dubai Marina

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# CREDIT RISK ANALYSIS & MODELLING

## Course Overview

**This course covers the credit risk, market risk and liquidity risk using judgmental risk assessments, cash flow projections and mathematical techniques. The course begins with an overview of alternative credit models, credit analysis concepts and credit scoring. The course then moves to cash flow Modelling and incorporation of covenants, cash flow traps and other credit enhancements in the models. The third part of the course covers use of option price models and Monte Carlo simulation in analysis of market risk analysis.**

## Course Outline

### Part 1: Credit Analysis Overview

- **Review of the theory and practice of credit analysis**
- Credit Analysis Terms
- Traditional versus Mathematical Credit Analysis
- The Five C's in Credit Analysis
- Definition of Probability of Default and Loss Given Default
- Overview of Key Credit Ratios
- Development and Use of Credit Matrix with Mitigation and Weightings
- Credit Ratings and Classification
- General Overview of Objectives of Basel II and Basel II

- **Four General Categories of Financial Ratios to Measure Credit Risk**
- Debt to EBITDA and Time to Repay Debt
- Debt to Capital and Value of Firm versus Value of Debt
- Interest Coverage/Debt Service Coverage and Cash Flow Buffer
- Quick Ratios and Other Measures of Liquidity Risk
- Why Different Ratios should be used in Different Industries
- Case Study of Credit Ratios for LBO

- **Credit Scoring and Credit Ratings**
- Credit Ratings as a Measure of Probability of Default
- Credit Matrix and Credit Migration
- General Classification of Credit According to Ability to Meet Downturns
- Use of Financial Ratios and Business Risk Classifications to Score Credits
- Statistical Approach to Credit Scoring and Problems
- Attempts to Directly Measure Probability of Default
- Case Study of Statistical Analysis for Housing Loans

- **Overview of Mathematical Models for Credit Analysis**
- Debt Defined as Sold Put Option
- Merton Model and KMV Model Discussion
- Case Exercise on Building the Merton Model
- Use of Option Pricing Models for Credit Scoring
- Structure of Subordinated Debt in Option Pricing Models
- Practical Use of Option Pricing Models in Measuring Subordinated Debt
- Valuation of Senior and Subordinated Debt Using Option Pricing Models
- Problems with Measuring Parameters and Limits of Mathematical Models

### Part 2: Financial Modelling and Credit Analysis

- **Credit Analysis and Corporate Cash Flow Models**
- Types of Credits where Cash Flow Modelling is Useful
- Objectives of Financial Models in Measuring Credit Quality
- Measuring Re-financing Risk with Corpo rate Models
- Measuring Default Risk with LBO and Project Finance Models
- Incorporation of Monte Carlo Simulation in Models
- Cash Flow Analysis, Liquidity Analysis in Models

- **A-Z Model Exercise**
- Discussion of Model Structure
- Workings Exercise
- Debt Structure Exercise
- Financial Statement Exercise

- **Case Study – Corporate Financial Model, LBO Model and Project Finance Model for Credit Risk Analysis**
- Analysis of Historical Financial Statements
- Establishment of Value Drivers
- Break Even Analysis for Credit
- Scenario Analysis for Credit
- Pro-forma Balance Sheet and Sources and Uses in LBO
- Modelling the Structure of Alternative Debt Issues
- Valuation of Senior and Subordinated Debt

- **Analysis of Covenants and Cash Flow Sweeps**
- Advantages and disadvantages of covenants


- Cash Trap covenants and cash flow sweeps
- Good time covenants and cash flow sweeps
- Valuation of covenants

## Part 3: Analysis Of Market Risk

- **General Discussion of Market Risk**
- General Definition of Market Risk and Implications for Financial Institutions
- Market Risk in Basel II and Basel III
- Market Risk and Interest Rates
- Market Risk and Exchange Rates
- Market Risk and Equities

- **Time series Analysis of Prices and Economic Data in Models to Measure Credit Risk**
- Economic theory behind alternative time series models
- Definition and application of volatility
- Brownian motion time series in Interest Rates, Exchange Rates and Equity Prices
- Mean Reversion in Time Series for Equities, Yield Curves and Exchange Rates

- **Measurement of Market Risk and VAR**
- Direct Measurement of Market Risk and Calculation of VAR
- Case Exercise on Computing VAR using Excel
- Incorporation of Correlations in Measurement of VAR
- Simulation Exercise with Excel to Measure Market Risk from Exchange Rates
- Incorporation of Correlation in Market Risk Analysis
- Simulation of VAR from Different Interest Rates with Excel
- Problems with VAR and use of Statistical Analysis in Measuring Risk

- **Measurement of Risk from Swaps Using Market Risk**
- Credit Risk in Interest Rate Swaps and Exchange Rate Swaps
- Credit Exposure when In the Money and Out of the Money
- Creation of Excel Model to Measure Counterparty Risk of Interest Rate Swap
- Model to Measure the PG and LGD of Exchange Rate Swap
- Theoretical Pricing of Counterparty Risk in Swaps

## Part 4: Analysis Of Liquiity Risk

- **General Discussion of Liquidity Risk**
- General Definition of Liquidity Risk and Implications for Financial Institutions
- Liquidity Risk Discussion in Basel II and Basel III
- Reason of Introducing Liquidity Risk
- Implications of Liquidity Risk
- Alternative Ways to Measure Liquidity Risk

- **Mechanics of Measuring Liquidity Risk**
- Metrics Used to Measure Liquidity Risk
- Effects of Liquidity Risk in Product Pricing
- Changes in Liquidity Risk Pricing since the Financial Crisis

- **Case Study of Liquidity Risk**
- Introduction to Case Study
- Measuring Liquidity Risk Before Problems Arose
- Cost of Liquidity Risk
- Mitigation Measures for Liquidity Risk

## Who Should Attend?

- Bank credit officers
- Investment bankers
- Management consultants
- Bond credit analysts
- Fixed income/credit traders
- Fixed income/credit sales people
- Fund managers
- Treasurers
- Compliance officers
- Financial decision makers in corporations

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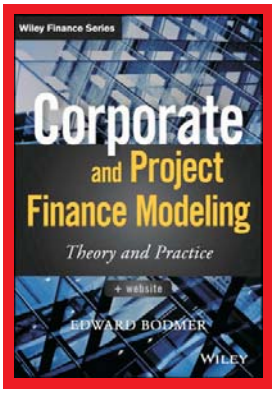


Edward Bodmer provides financial and economic consulting services to a variety of clients and teaches professional development courses in an assortment of Modelling topics. He is passionate about teaching in Africa, South America, Asia and Europe and many of the unique Modelling techniques he has developed came from discussion with participants in his courses. He has recently completed a text book titled Corporate and Project Finance Modelling, Theory and Practice published by Wiley Finance. The book introduces unique Modelling techniques that address many complex issues that are not typically used by even the most experienced modelers.

Professor Bodmer has prepared models and analyses for the Asian Development Bank, has evaluated energy purchasing decisions for many corporations and has provided advice on corporate strategy. Professor Bodmer has taught customized courses for MIT's Sloan Business School, Shell Oil, Society General, General Electric, HSBC, Citibank, CIMB, Lindlakers, HSBC, Saudi Aramco and many other energy and industrial clients.

As part of his consulting activities, Professor Bodmer has created a wide variety of models for energy companies, investment banks, commercial banks and government agencies. Recent assignments include analysis of project financing of renewable energy projects in the U.S.; analysis of infrastructure for the Karachi Port Trust; credit analysis of a toll road; and consideration of a framework to finance merchant power plants. Professor Bodmer has constructed a unique framework for electricity price forecasting and valuation using production cost Modelling techniques combined with option price theory and Monte Carlo simulation.

Professor Bodmer was formerly Vice President at the First National Bank of Chicago where he directed analysis of energy loans and also created financial Modelling techniques used in advisory projects. He received an MBA specializing in econometrics (with honors) from the University of Chicago and a BSc in Finance from the University of Illinois (with highest university honors). He has authored many articles and is in the process of completing a textbook on valuation and Modelling. He currently resides in Chicago, USA.

# REGISTRATION DETAILS

**Regular Fee:** USD. **1100** per participant

**25% Discount on 2 Participants from the same organization**

**40% Discount on 4 Participants from the same organization**

Includes courseware, Simfotix Certificate, lunch, refreshments and business networking

**Simfotix Cancellation Policy:** For cancellations made in the 7 working days to the workshop, no refunds will be given. cancellations must be confirmed by email. Subtitutions may be made at any time.

For registration(s), send us your
**Name. Designation, Organization, Mobile, Email** and **Postal Address**
to **register@simfotixgroup.com**

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