

MathFinance Training

Credit Risk Modelling: Basel II/III, IFRS 9, Stress Testing

Who should attend?

This course is designed for anyone who wishes to learn about rating systems and scorecards and using their output for Basel II/III, IFRS 9, and Stress Testing in a consistent manner:

- ▲ Risk Management
- ▲ Credit Risk Management
- ▲ Credit Risk Modelling
- ▲ Credit Analysis
- ▲ Internal Audit
- ▲ External Audit
- ▲ ICAAP
- ▲ Banking Regulation
- ▲ Risk Analysis and Control
- ▲ Data Monitoring & Analysis
- ▲ Treasury

Why this course?

In this training, a credit modelling framework is developed that allows a bank to estimate the credit risk parameters for Basel II/III, IFRS 9, and stress testing in one framework ensuring consistency across parameter estimation and risk management. The framework is flexible enough that it can be utilized for different portfolios, i.e. it is not necessary to develop entirely different approaches for corporate and retail portfolios. Only different loan-level data and macroeconomic data for risk estimation is used while the core mathematical framework is portfolio-independent. In addition, since macroeconomic factors are key drivers of the credit modelling, it is relatively easy to get an intuition for the models and to communicate model results to internal and external stakeholders.

Learning Objectives:

- ▲ Gain an understanding of statistical credit risk models and strategies to tackle the most common problems observed in practice (missing values, non-monotonous risk factors, multi-collinearity, identification of interactions)
- ▲ Interpret quantitative and graphical validation measures correctly and understand their limitations
- ▲ Understand the meaning of point-in-time, through-the-cycle, and downturn risk parameters and how to build a framework based on macroeconomic models and scenarios that can deliver all three of them
- ▲ Ensure your models fulfil the requirements of regulators and auditors

Your instructor



Dr Bernd Engelmann is a senior credit risk professional with two decades of risk management experience as a trainer and consultant. His subject matter expertise spans the development of rating systems and scorecards, the estimation of credit risk parameters (PD, LGD, EAD), the implementation and parameterization of credit portfolio models, and loan pricing systems based on RAROC.

During the last five years, he has carried out credit risk management projects for clients in Germany, UK, US, The Netherlands, Belgium, and Malaysia and diverse topics: scorecards for SMEs, IFRS 9 models for residential mortgages, stress test models for residential mortgage portfolios, ECAP model for concentration risk measurement and loan pricing for commercial real estate, loan pricing framework for corporate loans, and a balance sheet projection / stress testing tool.

Dr Engelmann has published many journal articles and book chapters, including The Basel II Risk Parameters: Estimation, Validation and Stress Testing book which he co-edited and is highly regarded in the industry. He holds a Master's degree in mathematics and a Ph.D. in finance from the University of Vienna.

Pricing

Regular: EUR 1500 p.p.*
Group discount (2 or more): 20% off at EUR 1200 p.p.*
* 19% VAT will be added

<http://www.mathfinance.com>

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DAY 1

Regulatory Developments of the Past 15 Years

- IFRS 9
- Basel II / Basel III
- Loan Loss Provisions under Basel II / III
- Stress Testing

Ratings, Credit Scores and Loan-Level Estimation of Default Probabilities

- External versus internal ratings
- Point-in-time vs through-the-cycle vs downturn risk parameters
- Statistical rating systems: Statistical foundation
- Quality measures of rating systems and their correct interpretation
- Practical problems and strategies for their solution
 - Missing values
 - Non-monotonous risk factors
 - Avoiding collinearity between risk factors
 - Identifying interactions between risk factors
 - Deciding about the final model: AIC, BIC, cross-validation, incremental model analysis, and more
- Key differences between corporate and retail rating systems

Other Credit Risk Parameters: EAD and LGD

Case Study: Development of Loan-level Risk Models for Residential Mortgages

- Illustration of the concepts using real data
- Development of a PD model step-by-step
- Development of a LGD model

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DAY 2

Macroeconomic Models for Credit Indices

Loan-level models alone are in general insufficient to fulfil all regulatory purposes. For IFRS 9 a multi-year modelling framework is needed which is usually not accomplished on loan-level. In addition, loan-level data is often available for a rather short time horizon below one economic cycle. Therefore, the modelling has to be enriched by another building block, macroeconomic models of credit indices.

- Time series models for credit indices like portfolio losses or portfolio default rates
- Linking macroeconomic factors (GDP growth, house price indices, etc.) with credit indices
- Performing scenario analysis and stress tests on credit-index-level

Combining Loan-level and Credit-index-level Models

- A brief review of the Basel II credit risk model
- Techniques for estimating central tendency and asset correlation in the Basel II credit risk model
- Combining loan-level and credit-index-level models to compute point-in-time, through-the-cycle, and downturn credit risk parameters
- Case Study: Estimating central tendency and asset correlation for a time series of delinquency rates for residential mortgages

Application of the Modelling Framework

- Calculation of IFRS 9 loan loss provisions
- Capital calculation under Basel II / III
- Stress testing bank capital and loan loss provisions

Mini-Workshop in Excel: Calculating Loan Loss Provision, Regulatory Capital and the Impact of Stress Tests for a Residential Mortgage Portfolio

- Estimating loan-level models
- Estimating credit-index-level models
- Putting both models together
- Calculation of credit risk parameters for Basel II / III and IFRS 9
- Performing a stress test for the loan portfolio