5 Day Intensive Credit Risk Modeling Seminar

Intrinsic Value – Independent Business Appraisers specializes in providing economic consulting services in the areas of valuation, risk management, actuarial science and financial engineering for regulatory and statutory, financial reporting, tax, capital raising, transaction, litigation purposes and for the purpose of developing, implementing and validating models in the areas of risk management and actuarial science.

Our 5-day seminar is an introduction to modern credit risk methodology as well as training for putting credit risk models to work. We hope that the two purposes go together well. From our own experience, analytical methods are best understood by implementing them.

The credit risk discipline broadly falls into two separate camps: risk measurement and pricing. Our 5-day seminar belongs to the risk measurement camp. Modules on default probability estimation and credit portfolio risk dominate modules on pricing and credit derivatives. Our coverage of risk measurement issues is also somewhat selective. We thought it better to be selective than to include more topics with less detail, hoping that the presented material serves as a good preparation for tackling other problems not covered in our 5-day seminar.

We have chosen Excel as our primary tool because it is a universal and very flexible tool that offers elegant solutions to many problems.

Our 5-day seminar includes 5 lectures of 8 hours in the morning hours and it costs $2,995 per person. The number of participants in the seminar is limited to 10 participants.

The main seminar instructor is Mr. Roi Polanitzer, the author of 500 papers on the topics of valuation, Value-at-Risk and financial risk management, options and other derivatives, financial engineering, structured products, stochastic processes, and Monte Carlo simulations. He had majored in finance, and nowadays he is a consultant to many firms in Israel, and he is known domestically for his expertise in valuation and risk management.

PREREQUISITIE

- Being familiar with Excel (e.g. knowing how to use a simple function in Excel).
- Being familiar with concepts from elementary statistics (e.g. probability distributions) and financial economics (e.g. discounting, options).

MODULE 1: Estimating Credit Scores with Logit

- Linking scores, default probabilities and observed default behavior
- Estimating logit coefficients in Excel
- Computing statistics after model estimation
- Interpreting regression statistics and prediction and scenario analysis
- Treating outliers in input variables and choosing the functional relationship between the score and explanatory variables

MODULE 2: Structural Approach to Default Prediction and Valuation

- Default and valuation in a structural model
- Implementing the Merton model with a one-year horizon
- Implementing the Merton model with a T-year horizon
- Credit spreads

MODULE 3: Transition Matrices

- Cohort approach and multi-period transitions
- Hazard rate approach
- Obtaining a generator matrix from a given transition matrix
- Confidence intervals with the Binomial distribution
- Bootstrapped confidence intervals for the hazard approach

MODULE 4: Prediction of Default and Transition Rates

- Candidate variables for prediction
- Predicting investment-grade default rates with linear regression
- Predicting investment-grade default rates with Poisson regression
- Backtesting the prediction models
- Predicting and adjusting transition matrices
- Representing transition matrices with a single parameter
- Shifting the transition matrix and Backtesting the transition forecasts

MODULE 5: Modeling and Estimating Default Correlations with the Asset Value Approach

- Default correlation, joint default probabilities & asset value approach
- Calibrating the asset value approach to default experience: the method of moments
- Estimating asset correlation with maximum likelihood
- Exploring the reliability of estimators with a Monte Carlo study

MODULE 6: Measuring Credit Portfolio Risk with the Asset Value Approach

- A default mode model implemented in the spreadsheet
- VBA implementation of a default-mode model
- Importance sampling
- Quasi Monte Carlo
- Assessing simulation error
- Exploiting portfolio structure in the VBA program
- Extensions

MODULE 7: Validation of Rating Systems

- Cumulative accuracy profile and accuracy ratios
- Receiver operating characteristic (ROC)
- Bootstrapping confidence intervals for the accuracy ratio
- Interpreting CAPs and ROCs
- Brier Score
- Testing the calibration of rating-specific default probabilities
- Validation strategies

MODULE 8: Validation of Credit Portfolio Models

- Testing distributions with the Berkowitz test
- Example implementation of the Berkowitz test
- Representing the loss distribution
- Simulating the critical chi-squared value
- Testing modeling details: Berkowitz on subportfolios
- Assessing power, Scope and limits of the test

MODULE 9: Risk-Neutral Default Probabilities and Credit Default Swaps

- Describing the term structure of default: PDs cumulative, marginal, and seen from today
- From bond prices to risk-neutral default probabilities
- Concepts and formulae,
- Implementation and Pricing a CDS
- Refining the PD estimation

MODULE 10: Risk Analysis of Structured Credit: CDOs and First-to-Default Swaps

- Estimating CDO risk with Monte Carlo simulation
- The large homogeneous portfolio (LHP) approximation
- Systematic risk of CDO tranches
- Default times for first-to-default swaps

MODULE 11: Basel II and Internal Ratings

- Calculating capital requirements in the Internal Ratings-Based (IRB) approach
- Assessing a given grading structure
- Towards an optimal grading structure

EXPERTISE

Mr. Roi Polanitzer is the CEO of the **Israel Association of Valuators and Financial Actuaries (IAVFA).** He has consulted for many accounting firms, audit firms, financial advisory firms, and publicly traded companies in Israel on valuation, Value-at-Risk and financial risk management, options and other derivatives, financial engineering, stochastic processes, Monte Carlo simulations, and has written numerous papers on those topics. He is the owner of **Intrinsic Value – Independent Business Appraisers**, and is responsible for the consulting and training services. He was formerly the Head of the Valuation Department of the Accounting Firm Raveh, Ravid & Co, CPA, and a Risk Manager and the Head of the Fair Value Department of the Actuarial Advisory Firm of Dr. Boaz Yam. Mr. Polanitzer was a Risk Manager and Chief Modelist of an investment committee at the Ben-Gurion University of the Negev. He has an MBA in business administration and a BA in economics. He is a Financial Risk Manager (FRM) – Certified by the Global Association of Risk Professionals, Credit Risk Actuary (CRA) – Certified by the Israel Association of Valuators and Financial Actuaries, and Certified Risk Manager (CRM) – Chartered by the Israeli Association of Risk Managers.

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