

Basel II Pillar 2



Insightful Financial Solutions

+ Basel II Pillar 2 Risk Modelling

Pillar 2 introduces a new Supervisory Review Process that requires banks to have their own internal processes to assess their capital needs and for the supervisors to evaluate a bank's overall risk profile, to ensure that they hold adequate capital.

The core requirement is for Economic Capital Modelling supported and verified by Stress Tests and this makes Pillar 2 challenging in respect of technology and statistical techniques.

+ The challenges banks face

There is a wide variety of complex statistical methods for Economic Capital models and Stress Testing. As technology costs come down and advances in quantitative risk management continue to be made the expectations of the regulators are going up.

Statistical techniques need to be deployed holistically across the bank and reports, graphs and modelling results need to be available as appropriate to different audiences, ranging from analysts to senior managers.

The business implications for banks include:

- To maintain competitiveness solutions need to be chosen that are capable of executing state-of-the-art models
- It must be possible to expose and explain the workings of models that are implemented
- Statistical understanding and modelling capabilities are required across a wider range of functional areas
- Large amounts of data will need to be stored and managed utilising data models appropriate for Pillar 2
- Ease of use and readily accessible graphics are essential for non-technical users

+ Meeting the challenge – Examples of Basel II Pillar 2 Risk Modelling

Insightful implements dynamic latent factor models for Credit Risk and Interest Rate Risk for major banking clients.

CREDIT RISK

Typically the bank's internal data is utilised together with data from ratings agencies and macroeconomic time series data for modelling.

Methods employed include:

- Multi-state Markov switching models for ratings migration probabilities
- Panel data GLMM models for correlated defaults with macroeconomic risk factors
- Dynamic structural equation rating models

with latent variables in continuous time

- Unified rating transition and forecasting models
- Forecasting economic capital requirements from internal as well as external (agency) data

INTEREST RATE RISK

Typically the bank's internal data is utilised together with interest rate time series at different maturities.

Methods employed include:

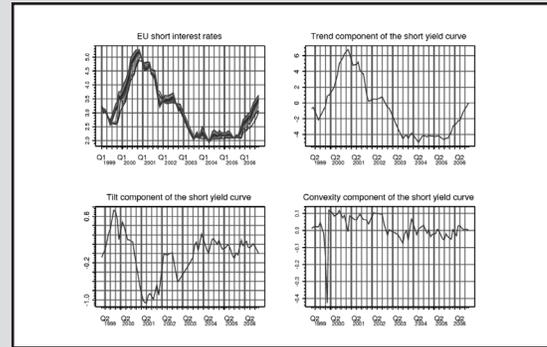
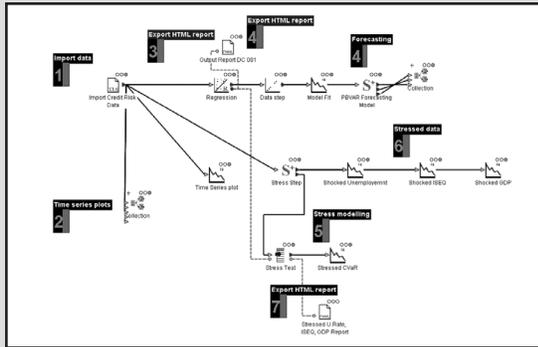
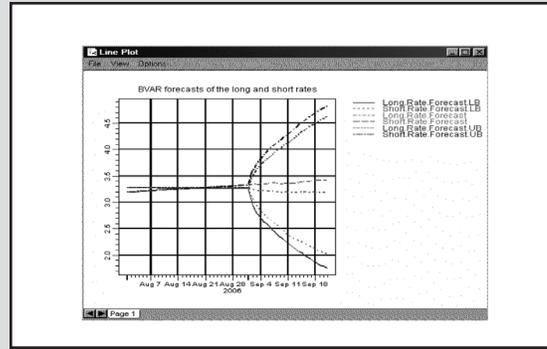
- Multivariate Vasicek and Cox Ingersoll-Ross state-space models for long-run short and long maturities

- Bayesian VAR forecasting models for short-run interest rate shocks prediction
- Dynamic structural equation models for term structure
- Non-linear seemingly unrelated regression models
- Forecasting movements in term structure
- Direction of temporal effects (Granger causality) in term structure
- Effects of macro factors on term structure
- Non-parallel shifts in term structure
- Monte Carlo simulations
- Scenario generators using Cox Ingersoll-Ross statistical simulator

Insightful's S-PLUS Enterprise Platform server solutions provide the analytic capability to create and deploy the advanced models required by Basel II Pillar 2. A full solution requires enterprise scale data management capability, and the sourcing of external data. Insightful will work with clients chosen suppliers in these areas, however, our preferred partner solutions are SAP Bank Analyzer for data management, and Reuters Pricing and Reference Data for external data.



Figure 2. Out-of-the-box-Graphics



+ The benefits of Insightful's Basel II Pillar 2 solutions are:

- + The ability to create leading edge models and deploy them across the bank
- + Transparent methods that can be readily presented and explained to regulators
- + Powerful graphics to enable non-technical users to understand models and their outputs
- + The power to calculate your Economic Capital requirement accurately and consistently

+ For more information please visit www.insightful.com or email info@insightful.com



About Insightful Corporation:

Insightful Corporation, the makers of S-PLUS®, Insightful Miner™ and the Dynamic Reporting Suite, understands that the keys to successful and timely data analysis are flexibility in modeling, ease in applying those models, the reliability of your results and the effective validation and communication of those results. Our stand out graphics, open architecture, rigorous statistical solutions and expert professional services are a few of the reasons 35 of the 50 largest financial services firms, and 8 of the world's top 10 banking companies, turn to Insightful for their predictive analytics solutions. Insightful enables you to deliver The Knowledge to Act™ to the right person on demand.

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