

## Model Monitoring: Independence, Speed and Accuracy

Monitoring is an important element of managing credit risk as it allows users, management, regulators and other stakeholders to be confident in relying on the model and its ratings to manage risk. Moody's Analytics Model Monitoring Service offers a combination of technical and advisory services that allows clients hosting their Internal Rating Models in RiskAnalyst® or RiskOrigins® to automatically produce robust industry-standard statistics to measure the calibration and discriminatory power of their rating models. Our Service will enable you to:

- » Assess the performance of your rating models, internally or externally built, using your data and industry-standard tests
- » Implement the Basel definition of default so as to maximize its relevance to your organization,
- » Create a default database, or validate any existing default databases to ensure that they are suitable for use.

### MODEL MONITORING SERVICE

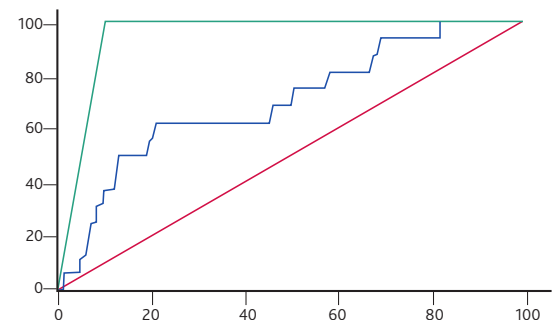
This service includes incorporates sophisticated methodology used by the Moody's Analytics Modelling group to select the data from the appropriate date to be associated with a particular default event. The Service reads the model structure, factor data, and grade/Probability of Default (PD) mapping information from the RiskAnalyst/RiskOrigins model file to generate a structured PDF file. A report is generated which contains the model effectiveness statistics. An override report is included, enabling determination of the frequency and direction of overrides by year and grade.

The report includes robust industry-standard statistics to assess model effectiveness, the results of which results have been validated by the Moody's Analytics Modelling group. These are:

- » Cumulative Accuracy Profile graph and Accuracy Ratio
- » Kolmogorov-Smirnoff (K-S) Test
- » Divergence (t-test)
- » Binomial Test at configurable confidence levels

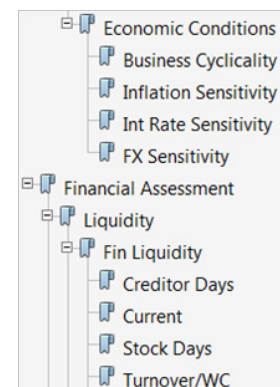
The Service promises independent execution at your end as once the default database is configured, the client will be trained to rerun the analysis as often as required, with no further involvement from Moody's. The Service promises speed, as generating a report for each model takes no more than a few seconds. Reports for all installed models can be generated in one operation. Since the mapping of customer data and model structure into the analytical package and selection of appropriate archive event based on default date is automatic, the use of this tool results in greater accuracy.

**A Cumulative Accuracy Profile produced by the Model Monitoring Service**



*Any signs of deterioration of accuracy provides early warning signs if more manual intervention is needed.*

**The hierarchy of the model is automatically reflected in the structure of the report**



## EXPERT GUIDANCE

During an on-site workshop our consultants assess the quality of your ratings data and of the current procedures in use within the institution. They will also assess the quality of your default data, taking into account the Basel definition of default as well as the special requirements of the institution and portfolio. The workshop results in a report outlining Moody's recommendations concerning the suitability of ratings data for use in model monitoring. This service includes ten additional days of consultancy during which Moody's will assist with the implementation of these recommendations.

## Model Monitoring Service:

### IMPLEMENTATION OF REGULATORY DEFINITIONS

Our consultants will help you implement and effectively put into practice the complex Basel definition of default so as to maximize its relevance to your organization.

### CREATION & VALIDATION OF A DEFAULT DATABASE

To enable validation and monitoring of models, we assist with the creation of a rigorously defined default database, and validate any existing default databases for suitability of use with the monitoring service.

### MODEL MONITORING APPLICATION

A tool incorporating sophisticated data selection techniques will read the data from the default database in conjunction with the RiskAnalyst/RiskOrigins archive database, to automatically produce rigorously tested industry-standard analytics concerning the effectiveness of installed rating models.

### RELATED PRODUCTS AND SERVICES

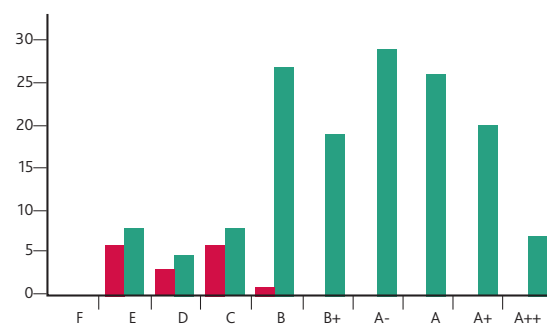
#### » Modelling Advisory Services:

- Building Rating Models for existing or new portfolio segments
- Validation, Optimisation, Calibration of Rating Models
- Benchmarking, providing assistance in case there is not enough default data to monitor or validate models
- Process and Governance Review on credit processes, including model governance and monitoring framework

#### » Technical Services:

- PD / Loss Given Default (LGD) Model Implementation in RiskAnalyst/RiskOrigins
- Technical and advisory assistance with the creation of a database suitable for validating Internal Rating Models.

The Service produces a graph showing the breakdown of defaults and non-default by grade



## About Moody's Analytics

Moody's Analytics, a unit of Moody's Corporation, helps capital markets and credit risk management professionals worldwide respond to an evolving marketplace with confidence. The company offers unique tools and best practices for measuring and managing risk through expertise and experience in credit analysis, economic research and financial risk management. By offering leading-edge software and advisory services, as well as the proprietary credit research produced by Moody's Investors Service, Moody's Analytics integrates and customizes its offerings to address specific business challenges.

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