Moody's Analytics Consulting Services

Modeling Credit Risk in Low-Default Portfolios

The IRB framework in Basel II is intended to apply to all asset classes, but when default data for a given portfolio is limited or non-existent, traditional rating models based on historic losses will be unreliable in their ability to discriminate between defaulted and non-defaulted obligors. In addition, back testing outcomes against model estimates may not provide sufficient evidence to support the accuracy of the rating system.

To handle these challenges, Moody's Analytics Consulting Services has developed an alternative to statistical validation that enhances the assessments and discriminatory power of your credit models. Our model verification methodology combines expert judgment with a set of analytical, statistical and optimization techniques to assess and improve model performance when there is insufficient or no default data.
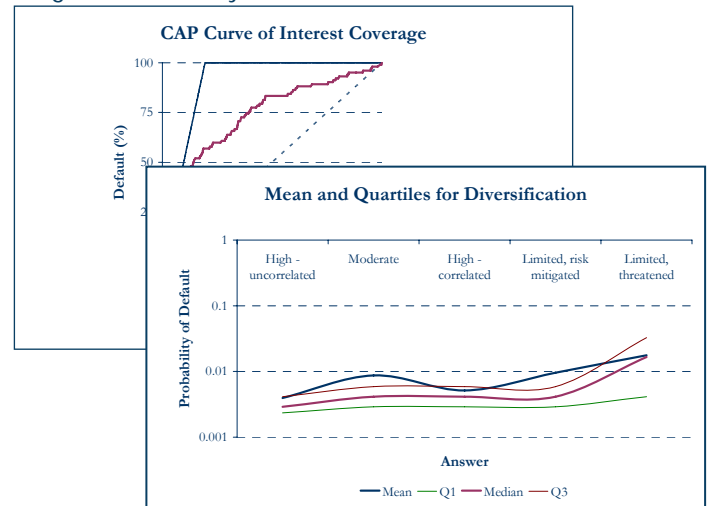
Our Approach

The model verification process centers on testing the intuition of credit professionals and assessing a model's performance on a limited data set using an internal objective benchmark for the rank ordering of risk and "pseudo-defaults."
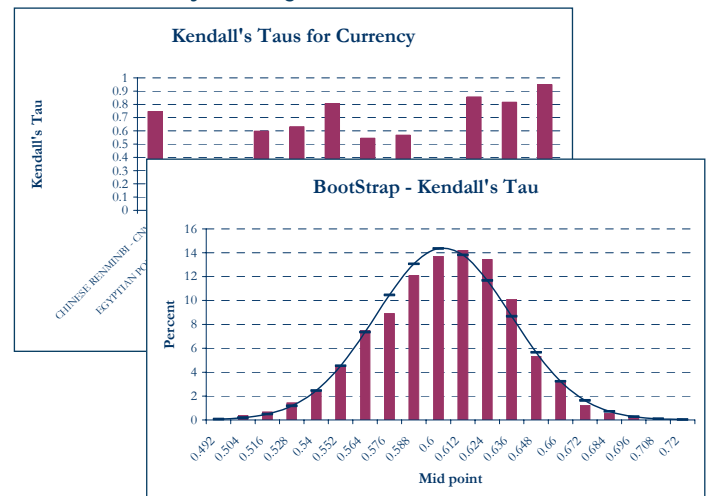
Our approach brings together Moody's proprietary data and research and leverages our experts' knowledge of best practices in building and testing credit risk models, built through their experience as practitioners, regulators, analysts, and consulting partners to the world's largest and most sophisticated financial insitutions. It provides:

Single-Factor Analysis

CAP Curve of Interest Coverage

Mean and Quartiles for Diversification

Model Reliability Testing

Kendall's Taus for Currency

BootStrap - Kendall's Tau

- A verified and optimized model providing transparent and objective risk assessment consistent with expert judgment
- Analysis that leverages the intuition of credit professionals to ensure model applicability to your portfolio of assets
- Enhanced risk metrics and model discriminatory power between obligors
- A starting point for systematic data collection to ease the transition to an empirically-derived and validated model

Moody's Analytics

Credit Risk Modeling of Low Default Portfolios Using Verification Techniques

Model Design

Design and customize an expert credit rating model
Our consultants provide expertise on rating model design and feedback on the benefits and drawbacks of various approaches based on first-hand experience and a century of experience from Moody's analysts. Our collaborative process ensures that we understand your objectives, history, and portfolio.

Single-Factor Analysis

Evaluate the effectiveness of each model factor
We test individual model factors to identify biases, concentrations, or skewing; pinpoint components that contribute little or no information to the model; test effectiveness in ranking against a benchmark; identify redundancies; highlight counterintuitive relationships with PDs; and measure the ability to discriminate between good and bad obligors.

Weight Optimization

Identify weights that optimize model performance
We use a bespoke Genetic Algorithm to identify the weight scenario that ensures optimized model performance. Our approach incorporates best practices and your credit risk knowledge in the optimization process, integrating empirical modeling with expert judgment.

Mapping Optimization

Map model scores to rating grades and probabilities of default
We determine the central tendency of default through triangulation of internal data, Moody's historical databases, and rating agency reports. Combining model data and central tendency research, we create an optimized mapping from model score to a master scale and set appropriate cut-offs to minimize differences with your expert judgement-based ratings.

Model Reliability Testing

Ensure consistency and applicability of the model
Our analysts employ bootstrapping to leverage available data in an effort to reduce dependency on the original sample dataset and define confidence intervals to assess the consistency of the model. In addition, we conduct subset testing to minimize the risk of over-fitting by assessing the applicability of the model against subsets of the original sample.

Our Commitment

Unparalleled Expertise and Thought Leadership
Professionals with practical experience as former analysts, practitioners, and regulators – backed by over 30 years of credit risk data and a century of experience in risk assessment – provide independent evaluations and insights that reflect a true understanding of your business, wherever you are in the world

Proven Methodologies and Data
Leading edge tools, robust and validated models, transparent frameworks, and the industry's most comprehensive proprietary credit risk data set drive immediate results

Comprehensive Solutions
A multidisciplinary and integrated view of risk management across the value chain creates solutions customized to your needs, from data architecture through advanced portfolio optimization, to support more effective decision-making

Contact Us

To learn more about how Moody's Analytics Consulting Services can help you meet your credit risk challenge, please contact one of our specialists or email consulting@moodys.com.

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