

Title: Quantitative Validation: An Overview and Framework for PD Backtesting and Benchmarking'

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Abstract

The aim of credit risk models is to identify and quantify future outcomes of a set of risk measurements. In other words, the model's purpose is to provide as good an approximation as possible of what constitutes the true underlying risk relationship between a set of inputs and a target variable. These parameters are used for regulatory capital calculations to determine the capital needed that serves a buffer to protect depositors in adverse economic conditions. In order to manage model risk, financial institutions need to set up validation processes so as to monitor the quality of the models on an ongoing basis. Validation is important to inform all stakeholders (e.g. board of directors, senior management, regulators, investors, borrowers, ...) and as such allow them to make better decisions.

Validation can be considered from both a quantitative and qualitative point of view. Backtesting and benchmarking are key quantitative validation tools. In backtesting, the predicted risk measurements (PD, LGD, CCF) will be contrasted with observed measurements using a workbench of available test statistics to evaluate the calibration, discrimination and stability of the model. A timely detection of reduced performance is crucial since it directly impacts profitability and risk management strategies. The aim of benchmarking is to compare internal risk measurements with external risk measurements so to allow to better gauge the quality of the internal rating system. This paper will focus on the quantitative PD validation process within a Basel II context.

We will set forth a traffic light indicator approach that employs all relevant statistical tests to quantitatively validate the used PD model, and document this complete approach with a real-life case-study.