

# An extendable, integrated, and dynamic approach to forecasting and stress-testing credit risk

An integrated and extendable approach for stress-testing loan portfolios is presented, which includes both a loan production component and a credit risk component. In this approach, we simulate a completed portfolio using realistic loan parameters and distributional assumptions. Thereafter, we generate the uncertain cash flow history (or receipts) of these loans within a multistate framework. A simulation-based approach is ideal for stress-testing since it allows for evaluating a range of conditions. From these completed loans, we compute various portfolio-level credit risk metrics, e.g., default and loss rates. Stress scenarios are introduced by varying the loan parameters accordingly, thereby resulting in a range of portfolios. A classical approach does not typically integrate loan production, nor does it embed the correlation structure amongst risk metrics. We therefore integrate the forecasting of risk metrics with receipt-generation itself. Given data, the loan parameters within our extendable approach can be dynamically modelled as functions of input variables using any technique. Overall, our approach can render predictions that are more dynamic and realistic, which can enhance stress-testing practices within any bank.