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Research Paper

Stress testing and model validation: application of the Bayesian approach to a credit risk portfolio

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ABSTRACT

Following the recent global financial crisis, regulators have recognized the importance of stress testing, in part due to the impact of model risk, and have implemented supervisory requirements in both the revised Basel framework and the Comprehensive Capital Analysis and Review (CCAR) program. We contribute to the literature by developing a Bayesian-based credit risk stress-testing methodology, which can be implemented by small-to-medium-sized banks, as well as presenting empirical results using data from the recent CCAR implementations. Through the application of a Bayesian model, we can formally incorporate exogenous scenarios and also quantify the uncertainty in model output that results from stochastic model inputs. We contribute to the model validation literature by comparing the proportional model risk buffer measure of the severely adverse cumulative nine-quarter loss estimate – a common way to estimate, being a measure of statistical uncertainty generated by

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