

The Accuracy of Alternative Supervisory Methodologies for the Stress Testing of Credit Risk

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Abstract

Banking supervisors have grappled with the problem of determining the optimal level of loss absorbing capital resources that institutions should hold to support their risk taking activities. Following the recent financial crisis traditional approaches such as regulatory capital ratios have been supplanted to supervisory *stress testing* as a primary tool for managing systemic risks. Financial institutions are mandated to perform stress testing to forecast performance over hypothetical multi-year stress scenarios, in the process developing models to support these forecasts. In parallel supervisors conduct their own stress tests and develop supporting models, to set financial institutions' minimum regulatory capital requirements in multiple jurisdictions, yet nothing is revealed to the public regarding the accuracy of such models. In this study we investigate a modeling framework that we believe to be very close to that employed by the regulators, which projects various financial statement line items for an aggregated "average" bank. We use various time periods, including the 2008 financial crisis, to assess the accuracy of alternative stress test modeling approaches, in particular simple single equation as compared to more complex multiple equation approaches, and in the latter case whether accounting for the correlation between line items has an influence on model results on both an in- and- out-of-sample basis. Our results show potentially inaccuracies in stress test model forecasts, even for models that fit the data exceptionally well in-sample, especially where more complex multi-equation models similar to those used by the Federal Reserve are mis-specified and underperform simple models in explanatory power, due to incorrectly accounting for the dependency structure. Our results highlight the public policy need for reconsidering the existent regulations that fail to place limits on the use of regulatory stress tests, and the need for supervisory models to be subject to model validation and governance standards.

Keywords: Stress Testing, CCAR, DFAST, Credit Risk, Financial Crisis, Model Risk, Vector Autoregression, Markov Switching Model, Scenario Generation

JEL Classification: C31, C53, E27, E47, E58, G01, G17, C54, G21, G28, G38.

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