

December 12, 2017

Bank Capital Plans and Stress Tests

Federal Reserve Proposes a New Stress Testing Policy Statement, Several Enhancements to Supervisory Stress Test Model Disclosure and Amendments to its Stress Testing Scenario Design Framework

On December 7, 2017, the Federal Reserve issued three proposals intended to increase the transparency, counter-cyclicality, and risk coverage of its stress testing program, including for the stress tests applied to U.S. bank holding companies with total consolidated assets of \$50 billion or more and U.S. intermediate holding companies of foreign banking organizations (collectively, “covered companies”) in connection with CCAR¹ and DFAST.² Specifically, the Federal Reserve:

- Provided notice that it plans to incorporate increased wholesale funding costs into the adverse and severely adverse scenarios and proposed amendments³ to its Policy Statement on the Scenario Design Framework for Stress Testing⁴ (the “Design Framework Policy Statement”) that would:
 - provide specific guidance regarding when the rise in the unemployment rate in the severely adverse scenario would be lower than the typical increase; and
 - include a quantitative, counter-cyclical guide for the path of house prices in the severely adverse scenario;
- Proposed a Stress Testing Policy Statement⁵ that would describe the Federal Reserve’s principles, policies, and procedures guiding the development, implementation and validation of models used in supervisory stress tests; and
- Proposed three enhancements⁶ to the supervisory stress test model disclosures, addressing disclosure of:
 - enhanced descriptions of supervisory models;
 - modeled loss rates on loans grouped by important risk characteristics and summary statistics associated with the loans in each group; and
 - portfolios of hypothetical loans and the estimated loss rates associated with the loans in each portfolio.

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Each of these proposals is discussed in greater detail below. Comments are due January 22, 2018.

- ***Amendments to the Design Framework Policy Statement.*** The Design Framework Policy Statement outlines the characteristics of the supervisory stress test scenarios and explains the considerations and procedures that underlie the formulation of these scenarios. The Federal Reserve's proposed substantive amendments⁷ are primarily intended to improve the transparency, counter-cyclicality, and risk coverage of its stress testing scenario design framework. In September 2016, then-Governor Tarullo previewed two of these changes—those relating to making the change in the unemployment rate less severe during economic downturns and to implementing a quantitative, counter-cyclical guide to changes in house prices—in a speech relating to possible revisions to CCAR and DFAST.⁸ In that speech, Governor Tarullo also discussed other potential changes to scenario design that the Federal Reserve would consider,⁹ including the introduction of funding shocks, which are addressed in the proposal. It remains to be seen whether the Federal Reserve will propose to incorporate into its scenario design the other potential items Governor Tarullo discussed: liquidity shocks and fire sale dynamics and the default of a common counterparty.
- ***Specific, albeit narrow, additional guidance relating to the rise in unemployment levels in the severely adverse scenario.*** The Federal Reserve currently sets the peak unemployment rate in the severely adverse scenario as the greater of a three to five percentage point increase from the beginning of the scenario, or ten percent. The amended Design Framework Policy Statement would specify that the Federal Reserve expects to incorporate into the severely adverse scenario an unemployment rate increase of less than four percentage points when the unemployment rate at the start of the scenario is elevated but the economy is recovering and has already realized—or is in the process of realizing—losses resulting from a previously elevated unemployment rate. This is consistent with the general policy (which will remain in the amended version of the policy statement) stating that the severely adverse scenario will typically involve an increase of about four percentage points, with higher increases in periods of high systemic risks, and lower increases in periods of low systemic risk.
- ***Quantitative guidance for the nominal house price index in the severely adverse scenario.*** The amended Design Framework Policy Statement would establish quantitative guidance for the change in house prices, which the Federal Reserve characterizes as a key scenario variable. The severely adverse scenario would include both a minimum decline in house prices and a minimum level of severity that the decline must reach. To control for the upward trend in house prices over time, the guide would use the ratio of the nominal house price index to nominal per capita disposable income (“HPI-DPI ratio”). The Federal Reserve proposes that the minimum house price fall ratio would generally be at least 25 percent of the starting HPI-DPI ratio (consistent with the average decline in housing recessions), and that the minimum level of severity would be the HPI-DPI ratio trough observed in the Great Recession. The Federal Reserve believes that this will be a more systematic approach to specifying house price paths and will limit pro-cyclicalities while broadly preserving the decline in the nominal house price index featured in recent stress testing cycles.
- ***Including short-term wholesale funding costs in the adverse and severely adverse scenarios.*** The proposal states that the Federal Reserve is considering explicitly including in the adverse and severely adverse scenarios factors intended to capture the cost of funds, particularly wholesale funds, to banking organizations. The Federal Reserve believes that banking organizations' dependence on certain types of runnable liabilities is a key risk dimension that supervisory stress tests have not previously addressed directly. The Federal Reserve notes that it expects the inclusion of funding stress to increase the stringency of the stress tests, with the extent of the increased stringency depending on how the stress is implemented (for example, which liabilities are stressed) and the duration and magnitude of the stress. The Federal Reserve notes that it does not expect to incorporate wholesale funding costs into stress tests before 2019. In addition, because the Federal Reserve intends to include wholesale funding costs in the

adverse scenario before the severely adverse scenario, the Federal Reserve does not expect to stress funding costs in the severely adverse scenario until at least 2020.

- **Proposed Stress Testing Policy Statement.** By publishing a document describing the principles, policies, and procedures that guide the development, implementation and validation of the supervisory stress test models, the Federal Reserve seeks to improve transparency surrounding its model development process. The Stress Testing Policy Statement consists of (i) seven principles of supervisory stress testing that describe the Federal Reserve's design of supervisory stress tests and approach to supervisory modelling, (ii) ten supervisory stress test model policies and procedures to guide the development, implementation and use of models that are consistent with the seven principles, and (iii) three principles and policies of supervisory model validation intended to promote the credibility of the supervisory stress tests.
- **Seven Principles of Supervisory Stress Testing**
 - **Independence.** To the fullest extent possible, the Federal Reserve's models are developed internally, independently, and separately from the models used by covered companies; however, the proposed policy discusses certain limited situations in which the Federal Reserve uses estimates from covered companies or third-party data or models. The Federal Reserve explains that the use of its own supervisory models is intended to promote consistency, comparability and public confidence in the banking system by enabling "the Federal Reserve to provide the public and the covered companies with credible, independent assessments of each firm's capital adequacy under stress."¹⁰ The question of whether the Federal Reserve's or covered companies' models should be used in supervisory stress tests has been an area of industry focus, and, notably, the Federal Reserve specifically asks—as the first question in the proposal—whether there "[a]re additional advantages or disadvantages to [the Federal Reserve's] independent framework, relative to a framework that relies on models or estimates provided by covered companies."¹¹
 - **Forward-looking testing.** The supervisory tests are designed to be forward-looking; thus, the Federal Reserve believes the models used in its stress tests should generally avoid relying solely on extrapolation of past trends in order to make projections, and should instead be able to incorporate events or outcomes that have not occurred. In a few instances, the proposal notes the Federal Reserve's objective of reflecting elements, and modelling outcomes, "outside the realm of historical experience."
 - **Consistency and Comparability.** The Federal Reserve uses the same set of models and assumptions to produce the loss projections for all covered companies. The discussion of this principle notes that a standard set of scenarios, assumptions, and models promotes equitable treatment of covered companies and comparability of results, as differences among results are due to differences in the data used in the stress tests (such as portfolio risk characteristics) rather than firm-specific assumptions.
 - **Simplicity.** Given a range of modelling approaches that are equally conceptually sound, the Federal Reserve will select the least complex modelling approach.
 - **Robustness and Stability.** Changes in model projections over time should primarily result from shifts in underlying risk factors, scenarios and model enhancements, rather than transitory factors.
 - **Conservatism.** Given a reasonable set of assumptions or approaches, with all else equal, the Federal Reserve will opt to use those that result in larger losses or lower revenue.
 - **Focus on the Ability to Evaluate the Impact of Severe Economic Stress.** The Federal Reserve places particular emphasis on the ability of its models to project outcomes in stressed economic environments and to capture risks to capital that arise specifically in times of economic stress rather than in typical economic environments. The Federal Reserve cites as an example the counterparty default scenario component, in

which losses resulting from the default of the largest counterparty are reflected in projections for a subset of covered companies with substantial trading or processing and custodial volumes.

- **Ten Supervisory Stress Test Model Policies**
 - **Soundness in Model Design.** During development, the Federal Reserve subjects models to extensive review of model theory, logic and general conceptual soundness, examines and evaluates modelling assumptions, and tests the accuracy and stability of models. After development, the Federal Reserve generally applies the same framework for ongoing monitoring of supervisory models.
 - **Disclosure of Information Related to the Supervisory Stress Test.** In general, the Federal Reserve does not disclose firm-specific results or other information related to the supervisory stress tests to covered companies if that information is not also publicly disclosed. The Federal Reserve explains that public disclosure relating to its models is intended to help the public understand and interpret the results of the supervisory stress test and to allow the public to evaluate the quality of the Federal Reserve's capital adequacy assessments.
 - **Phasing in of Highly Material Model Changes.** In order to mitigate sudden and unexpected changes to the supervisory stress test results, the Federal Reserve generally phases highly material model changes into the supervisory stress tests over two years.
 - **Limiting Reliance on Past Outcomes.** The Federal Reserve limits its reliance on historical outcomes to predict future outcomes by using industry-level models, restricting the use of firm-specific fixed effects (e.g., stress testing variables that affect a specific firm), and minimizing use of dummy variables indicating a loan vintage or a specific year.
 - **Treatment of Global Market Shock and Largest Counterparty Default Components.** The Federal Reserve's current stress testing framework incorporates two exogenous "add on" components that impose instantaneous losses at the beginning of the stressed scenarios. As exogenous "add ons," these components are independent of the macroeconomic and financial market environment in the stressed scenarios. These components are the global market shock (which applies to covered companies with significant trading exposures) and the counterparty default scenario component (which applies to covered companies with substantial trading or processing and custodial operations). The Federal Reserve explains that it includes these exogenous "add on" components because the related stress factors can materially affect the subject covered companies' risks but those risk factors may not be directly correlated to the general macroeconomic or financial assumptions in the applicable stressed scenario.
 - **Incorporation of Business Plan Changes.** In the supervisory stress test projections, the Federal Reserve incorporates material changes in the business plans of covered companies, including mergers, acquisitions, and divestitures, over the projection horizon because these changes represent a risk to the capital of covered companies.
 - **Credit Supply Maintenance.** The supervisory stress tests incorporate the assumption that aggregate credit supply does not contract during the stress period in order to enable the Federal Reserve to evaluate the ability of firms to withstand economic stress while continuing to meet the credit demands of households and businesses.

The Federal Reserve notes that it assumes that firms' balance sheets will be of "constant or increasing" and, later, "fixed or growing" magnitude.¹² In the past, the Federal Reserve's models have generally projected increases in balance sheets and risk-weighted assets, including in the severely adverse scenario.¹³ In his September 2016 speech, Governor Tarullo noted that the Federal Reserve was considering instead applying a simple assumption that balance sheets and RWAs remain constant in the severely adverse scenario.¹⁴ The title of this policy—"Credit Supply Maintenance"—and the references to "constant" and "fixed" balance sheets appear designed to

accommodate the revised balance sheet and RWA assumption described by Governor Tarullo.

- ***Firm-Specific Overlays and Additional Firm-Provided Data.*** The Federal Reserve does not make firm-specific overlays to model results used in supervisory stress tests and does not use additional input data submitted by one or more covered companies unless it collects comparable data from all the covered companies that have material exposure in a given area. The purpose of this policy is to avoid using data only from covered companies that have an incentive to provide it (for example, because the data would support lower projected losses or higher projected revenues).
- ***Treatment of Missing or Erroneous Data.*** Because missing or deficient data can preclude the use of supervisory models or create uncertainty in the results of the models, if covered companies do not provide required information or provide erroneous information, the Federal Reserve either assigns conservative values to the missing or erroneous data or, if appropriate, assigns conservative assumptions to the impacted segment or portfolio (e.g., a low percentile rate for revenues or a high percentile rate for losses based on the data from other covered companies).
- ***Treatment of Immaterial Portfolio Data.*** The Federal Reserve distinguishes between material and immaterial portfolios in its handling of missing and erroneous data. Where covered companies do not provide information about immaterial loans or portfolios, the Federal Reserve assigns a loss rate representing the median among covered companies for which a loss rate is calculated.
- ***Three Principles and Policies of Supervisory Model Validation***
 - ***Structural Independence.*** To preserve the objectivity of model oversight, the management and staff of the Federal Reserve's internal model validation program are structurally independent from the model development team; specifically, validators do not report to developers, and vice versa.
 - ***Technical Competence of Validation Staff.*** The model validation program employs technically expert staff with knowledge across model types. Reviews for every supervisory model follow the same set of review guidelines and take place on an ongoing basis. The model validation program covers three main areas of validation: (1) conceptual soundness; (2) ongoing monitoring; and (3) outcomes analysis.
 - ***Stature of Validation Function.*** The validation function has the influence and stature within the Federal Reserve to ensure that any issues and deficiencies are appropriately addressed in a timely and substantive manner. The model validation program communicates its findings and recommendations to all internal stakeholders, and the Federal Reserve's Director of Supervision and Regulation approves all models used in supervisory stress tests in advance of each exercise and takes into account model validators' recommendations. An advisory council of academic experts also contributes to the stature of the Federal Reserve's validation program by providing an external point of view on modifications to supervisory models and on validation program governance.
- ***Enhanced Model Disclosure.*** In its effort to "further enhance the public's understanding of the supervisory test models without undermining the effectiveness of the stress test as a supervisory tool," the Federal Reserve proposes three enhancements to its disclosure regarding the models used in DFAST and CCAR: (1) enhanced descriptions of supervisory models, including key variables; (2) modeled loss rates on loans grouped by important risk characteristics and summary statistics associated with the loans in each group; and (3) portfolios of hypothetical loans and the estimated loss rates associated with the loans in each portfolio. The Federal Reserve also provided illustrative examples of the three types of enhanced disclosures. In his September 2016 speech, then-Governor Tarullo noted that the Federal Reserve was considering the feasibility of the third enhancement.¹⁵

- **Enhanced Description of Models.** The Federal Reserve would enhance the descriptions of the supervisory stress test models that it currently provides in the annual disclosure of DFAST methodology and results in two ways. First, it would provide more detailed information about the structure of the models, including by providing certain important equations that characterize aspects of certain models. Second, it would provide a list of the key loan characteristics and macroeconomic variables that influence the results of a given model.

Although the proposal does not expressly address the scope of models for which the Federal Reserve would provide enhanced descriptions, it appears that the Federal Reserve may, at least initially, provide enhanced disclosure only for loan-related models. While the first element of the proposed enhanced descriptions (information about the structure of the models) is described in general terms, the second element expressly mentions providing key *loan* characteristics, which would not apply to non-loan-related models, such as the models for projecting operational risk losses, pre-provision net revenues or losses on trading and private equity positions. In addition, the second and third enhancements (modeled loss rates on pools of loans, and portfolios of hypothetical loans and associated loan rates) specifically relate only to loans.

Given the number and significance of supervisory models that are not loan-related, the impact of the Federal Reserve's transparency initiative may be limited if the enhanced disclosure is provided only for loan-related models.

- **Modeled Loss Rates on Pools of Loans.** In order to enable the public to directly see how the supervisory models treat specific assets under stress, the Federal Reserve proposes to provide the model-estimated loss rates for groups of loans with distinct characteristics. For a particular group of loans, the disclosure would include the average, 25th percentile and 75th percentile loss rates. Disclosures of average and ranges of loss rates are intended to highlight that loans within the same group can have different loss rates due differences in characteristics unrelated to the grouping. The Federal Reserve also proposes to provide summary statistics associated with the loans in each group.
- **Portfolios of Hypothetical Loans and Associated Loss Rates.** The Federal Reserve also proposes to disclose portfolios of hypothetical loans designed to mimic the characteristics of the actual loans reported by covered companies and the estimated loss rates that the supervisory models calculate for each portfolio. The proposal suggests that the Federal Reserve could provide different hypothetical loan portfolios designed to capture the characteristics associated with different types of loans, for instance, higher- or lower-than-average risk loans. Although every variable factored into the supervisory models would not be disclosed, the information about hypothetical loan portfolios would be designed so that the public could independently estimate loss rates for the portfolios.
- **Timing of Provision of Enhanced Disclosure.** The Federal Reserve would publish the enhanced disclosure in the first quarter of each year, prior to the April 5 due date for covered companies' CCAR and DFAST submissions. The disclosure would be based on data and scenarios from the prior year, but would reflect any updates to the supervisory models.

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ENDNOTES

- 1 “CCAR” refers to the Federal Reserve’s Comprehensive Capital Analysis and Review of capital plans filed annually by covered companies under the Federal Reserve’s capital plan rule, Section 225.8 of Regulation Y, and supervisory and company-run stress tests under its Dodd-Frank Act Stress Test (“DFAST”) rules, Subparts E and F of Regulation YY, 12 C.F.R. Part 252.
- 2 *See Federal Reserve Board requests comment on package of proposals that would increase the transparency of its stress testing program* (Dec. 7, 2017), available at <https://www.federalreserve.gov/newsevents/pressreleases/bcreg20171207a.htm>.
- 3 Amendments to Policy Statement on the Scenario Design Framework for Stress Testing (Dec. 8, 2017), available at <https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20171207a2.pdf>.
- 4 12 C.F.R. 252 App. A.
- 5 Stress Testing Policy Statement (Dec. 8, 2017), available at <https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20171207a3.pdf> (hereinafter “Stress Testing Policy Proposal”).
- 6 Enhanced Disclosure of the Models Used in the Federal Reserve’s Supervisory Stress Test (Dec. 8, 2017), available at <https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20171207a1.pdf>.
- 7 The proposed changes also include amendments updating the policy to reflect developments since its initial publication in 2013, which mostly relate to the implementation of the intermediate holding company requirement for foreign banking organizations and changes to the timing of the CCAR and DFAST cycles.
- 8 Governor Daniel K. Tarullo, Speech: Next Steps in the Evolution of Stress Testing at 17 (Sep. 26, 2016), available at <https://www.federalreserve.gov/newsevents/speech/files/tarullo20160926a.pdf> (hereinafter “Tarullo Speech”). For a detailed discussion of this speech, please see our Memorandum to Clients entitled Banking Organization Capital Plans and Stress Tests: Federal Reserve Governor Tarullo Previews Proposal for Multiple Revisions to Capital Plans and Stress Tests That Will Increase Effective Capital Requirements for G-SIBs and May Reduce Effective Capital Requirements for Other CCAR Banking Organizations (Sep. 26, 2016), available at <https://sullcrom.com/banking-organization-capital-plans-and-stress-tests>.
- 9 Tarullo speech at 18-20.
- 10 Stress Testing Policy Proposal at 10.
- 11 Stress Testing Policy Proposal at 10.
- 12 Stress Testing Policy Proposal at 21.
- 13 See, e.g., Dodd-Frank Act Stress Test 2017: Supervisory Stress Test Methodology and Results at 73 (June 2017), available at <https://www.federalreserve.gov/publications/files/2017-dfast-methodology-results-20170622.pdf> (stating “Industry loan and asset growth rates are projected over the planning horizon using the macroeconomic variables prescribed in the supervisory scenario. The growth rates embed the assumption that the industry will continue to lend using standards that are consistent with long-run behavior. This tends to raise the projected growth of lending by removing the effects of BHC tightening that often occur in stressful periods.”).
- 14 Tarullo Speech at 16.
- 15 Tarullo Speech at 22.

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