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Amendments to Policy Statement on the Scenario Design Framework for Stress Testing

AGENCY: Board of Governors of the Federal Reserve System (Board).

ACTION: Final rule.

SUMMARY: The Board is adopting amendments to its policy statement on the scenario design framework for stress testing. As revised, the policy statement clarifies that the Board may adopt a change in the unemployment rate in the severely adverse scenario of less than 4 percentage points under certain economic conditions and institutes a guide that limits procyclicality in the stress test for the change in the house price index in the severely adverse scenario.

DATES: *Effective:* April 1, 2019.

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SUPPLEMENTARY INFORMATION:

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I. Background

The Board conducts supervisory stress tests of covered companies and requires those companies to conduct company-run stress tests pursuant to the Dodd-Frank Wall Street Reform Act (Dodd-Frank Act) and the Board's stress test rules.[1] Section 165(i)(1) of the Dodd-Frank Act requires the Board to conduct its evaluation of covered companies' post-stress capital under different sets of economic conditions (each set, a scenario). The Board's stress test rules provide that the Board will notify covered companies, by no later than February 15 of each year, of the scenarios that the Board will apply to conduct its annual supervisory stress test and that covered companies must use to conduct their company-run stress tests.[2]

To conduct the supervisory stress tests, the Board develops three scenarios—a baseline, adverse, and severely adverse scenario—and projects a firm's balance sheet, risk-weighted assets, net income, and resulting post-stress capital levels and regulatory capital ratios under each scenario. Similarly, a firm subject to company-run stress tests under the Board's rules uses the same adverse and severely adverse scenarios that apply in the supervisory stress test to conduct a company-run stress test. The scenarios also serve as an input into a covered company's capital plan under the Board's capital plan rule,[3] and the Federal Reserve uses these scenarios to evaluate each firm's capital plan in the supervisory post-stress capital assessment.

On November 29, 2013, the Board adopted a final policy statement on the scenario design framework for stress testing (policy statement).[4] The policy statement outlined the characteristics of the stress test scenarios and explained the considerations and procedures that underlie the formulation of these scenarios. The policy statement describes the baseline, adverse, and severely adverse scenarios, the Board's approach for developing these three macroeconomic scenarios, and the approach for developing any additional components of the stress test scenarios.

As described in the policy statement, the severely adverse scenario is designed to reflect conditions that have characterized post-war U.S. recessions (the recession approach). Historically, recessions typically feature increases in the unemployment rate and contractions in aggregate incomes and economic activity. In light of the typical co-movement of measures of economic activity during economic downturns, such as the unemployment rate and gross domestic product, the Board first specifies a path for the unemployment rate and then develops paths for other measures of activity broadly consistent with the course of the unemployment rate in developing the severely adverse scenario. The policy statement also

[1] 12 CFR part 252, subparts E and F. Covered companies are defined as bank holding companies with average total consolidated assets of $50 billion or more, U.S. intermediate holding companies of foreign banking organizations, and any nonbank financial company supervised by the Board. On July 6, 2018, the Board issued a public statement regarding the impact of the Economic Growth, Regulatory Relief, and Consumer Protection Act (EGRRCPA) (Pub L. No. 115–174, 132 Stat. 1296 (2018)). In this document, the Board stated, consistent with EGRRCPA, that it will not take action to require bank holding companies with total consolidated assets greater than or equal to $50 billion but less than $100 billion to comply with the Board's capital plan rule (12 CFR 225.8) or the Board's supervisory stress test and company-run stress test rules (12 CFR part 252, subparts E and F). *https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20180706b1.pdf.*

[2] 12 CFR 252.44(b); 12 CFR 252.54(b)(1).

[3] 12 CFR 225.8.

[4] 78 FR 71435 (Nov. 29, 2013); see 12 CFR part 252, appendix A.

provides that economic variables included in the scenarios may change over time, or that the Board may augment the recession approach with salient risks.

II. Description of Policy Statement on the Scenario Design Framework for Stress Testing

On December 15, 2017, the Board invited comment on a proposal to revise several aspects of the policy statement. First, the proposal would have modified the current guide in the policy statement for the peak unemployment rate in the severely adverse scenario to include a description of the circumstances in which an increase in the unemployment rate at the lower end of the 3 to 5 percentage point range suggested by the guide would be warranted. Second, the proposal would have added to the policy statement an explicit guide for house prices in the severely adverse scenario based on the ratio of house prices to per capita disposable personal income (HPI-DPI ratio). Third, the proposal would have provided notice that the Board may include variables or additional components in the adverse and severely adverse scenarios to capture the costs of wholesale funds to banking organizations. Finally, the proposal would have amended the policy statement to update references and remove obsolete text.

III. Summary of Comments and Revisions to the Policy Statement on the Scenario Design Framework for Stress Testing

The Board received twelve comment letters in response to the proposal. Commenters included public interest groups, academics, individual banking organizations, and trade and industry groups. Commenters generally expressed support for the proposal, and provided alternative views on certain aspects of the proposed rule, including the inclusion of a stress to wholesale funding in the scenarios.

A. Unemployment Rate in the Severely Adverse Scenario

The Board's approach to the scenario design process is designed to limit procyclicality in the supervisory stress test through scenario design. The policy statement provides that the Board anticipates the unemployment rate in the severely adverse scenario would increase by between 3 and 5 percentage points from its initial level. If a 3 to 5 percentage point increase in the unemployment rate does not raise the level of the unemployment rate to at least 10 percent, the path of the unemployment rate in most cases will be specified so as to raise the unemployment rate to at least 10 percent. The policy statement also notes that the typical increase in the unemployment rate in the severely adverse scenario will be about 4 percentage points.

The proposal would have revised the policy statement to include more specific guidance for the change in the unemployment rate when the stress test is conducted during a period in which the unemployment rate is already elevated. In particular, the proposal would have clarified that the Board may adopt an increase in the unemployment rate of less than 4 percentage points when the unemployment rate at the start of the scenarios is elevated but the labor market is judged to be strengthening and higher-than-usual credit losses stemming from previously elevated unemployment rates were either already realized—or were in the process of being realized—and thus removed from banks' balance sheets.[5] The proposed change would have maintained an unemployment rate path in the macroeconomic scenarios broadly similar to the approach used to formulate previous scenarios, except during times in the credit cycle when a smaller change would have been appropriate.

Commenters were generally supportive of the proposed changes to the methods to set the path of the unemployment rate in the severely adverse scenario.[6] The Board is adopting the revisions to the policy statement regarding the unemployment rate guide as proposed.

[5] Evidence of a strengthening labor market could include a declining unemployment rate, steadily expanding nonfarm payroll employment, or improving labor force participation. Evidence that credit losses were being realized could include elevated charge-offs on loans and leases, loan-loss provisions in excess of gross charge-offs, or other-than-temporary-impairment losses being realized in securities portfolios that include securities that are subject to credit risk.

[6] A commenter requested clarity on an alternative guide for the unemployment rate path considered, described in Question number 1 in the proposed amendments to the policy statement. In the question, the Board described an alternative guide that would require the path of the unemployment rate to reach the lesser of a level 4 percentage points above its level at the beginning of the scenario, or 11 percent. The alternative guide the Board considered was the path of unemployment rate reaching the greater of a level 4 percentage points above its level at the beginning of the scenario, or 11 percent. This guide would have further limited procyclicality in the stress test through scenario design relative to the current unemployment rate guide.

B. House Prices in the Severely Adverse Scenario

The proposal would have revised the policy statement to include guidance for the path of the nominal house price index in the severely adverse scenario. The nominal house price index is a key variable in the macroeconomic scenarios. Providing explicit guidance for the path of this variable over the planning horizon would limit the procyclicality of the scenarios when initial conditions already reflect stress. This adjustment also would have improved the transparency of the Board's scenario design framework.

The proposal would have established a quantitative guide for house prices, informed by the ratio of the nominal house price index to nominal per capita disposable income (HPI-DPI ratio). The guide incorporates minimum declines in the ratio to ensure that the scenario features stress even when house prices are already depressed, as they were in 2012. Under most circumstances, the Board would have expected the decline in the HPI-DPI ratio in the severely adverse scenario to be 25 percent from its starting value or enough to bring the ratio down to its Great Recession trough, whichever is greater. The Great Recession trough reflects the lowest point in the HPI-DPI ratio since 1976, but is comparable to troughs in the ratio reached in other housing recessions.

Commenters were divided in their views on this aspect of the proposal. One commenter supported the proposal, and asserted that publishing the quantitative guide promotes transparency and reliability. Another commenter asserted that the proposed changes could result in a guide that specifies house prices that are unlikely to be realized and that may be procyclical, as the guide could impose severe declines following a recession characterized by declining house prices.

Another commenter expressed the view that it would be preferable to set the level and change in house prices using different ratios, such as the ratio of house prices to median income or the ratio of house prices to nominal rents, and asserted that the use of per capita income in the ratio that determines the path of house prices does not reflect the affordability of a home for the average family.

The Board's proposed approach to formulating house price paths would allow for levels of severity that may fall outside of U.S. postwar historical experience. As the 2007–2009 financial crisis demonstrated, house prices are difficult to predict. Formulating a house price guide that could lead to a more

severe decline in house prices than the U.S. has experienced in recent history is an important element of the scenario design process, as the universe of plausible economic stress scenarios is not limited to those that have already occurred.

The proposed guide to specifying the path of house prices would limit procyclicality in the stress test through scenario design, as the scenarios will get less severe as house price growth outstrips income growth or more severe when house price growth lags behind income growth. If, for example, house prices were particularly elevated relative to disposable personal incomes, as is often the case in times of economic expansion, the proposed guide would specify a larger decline in house prices in the scenario, relative to the initial level of house prices, than would a specified fixed decline.

In developing the proposed guide for the path of house prices in the macroeconomic scenario, the Board considered alternative quantitative approaches, including using a long-term trend in the real house price index to compute fair-market value and setting the house price guide based on behavior of real house prices relative to trend. Outcomes under this alternative guide are similar to the path of house prices that would result from adhering to the HPI-DPI guide. The Board also considered basing the quantitative guide for house prices in the severely adverse scenario on the ratio of nominal house prices to nominal rents to assess fair-market value. Historical price-to-rent ratios trend upward over time. The drawback of either of these alternative approaches is the uncertainty and difficulty surrounding estimation of statistical trends.[7] The HPI-DPI ratio is preferable in that respect, as it does not appear to exhibit a trend.

For the reasons stated above and after considering the comments, the Board is adopting the proposed guide for the path of house prices in the severely adverse scenario, consistent with the greater of a decline in the HPI-DPI ratio of 25 percent of its starting value or a decline sufficient to bring the ratio to its Great Recession trough. The introduction of the quantitative guide with both a minimum change in the ratio and a level of severity that the ratio would be required to reach is consistent with the rule for the path of the unemployment rate and will further the Board's goal of limiting procyclicality in the stress test through scenario design. The guide offers a more systematic approach to specifying house price paths than the current approach, while broadly preserving the decline in nominal HPI featured in recent stress testing cycles.

C. Incorporating Short-Term Wholesale Funding Costs in the Adverse and Severely Adverse Scenarios

The proposal would have provided notice that the Board may in the future include variables, or an additional component in the scenarios, to capture the cost of wholesale funds to banking organizations. Including stress to funding costs in the scenarios would account for the impact of increased costs of certain runnable liabilities on net income and capital of banking organizations reliant on short-term wholesale funding in times of economic stress.

Several commenters supported the inclusion of changes in wholesale funding costs in stress scenarios. Commenters expressed the view that not incorporating short-term wholesale funding in past scenarios reflects a significant gap in scenario design. Another commenter who supported inclusion of wholesale funding costs in stress test scenarios suggested that the Board use the liquidity classifications used for the Liquidity Coverage Ratio and the Net Stable Funding Ratio to capture changes in funding costs or availability. One commenter requested that the Board include a run of a certain percentage of firms' funding as part of the stress test, asserting that dependence on runnable funding is a key source of risk that should be examined.

Other commenters sought additional detail about the proposed funding stress, expressing concern that the proposed amendments did not contain sufficient information. A commenter stated that, without additional information, it is unclear whether the funding shock would be duplicative of other regimes that address funding-related risks.

One commenter opposed the inclusion of a wholesale funding stress in the Board's scenarios, and another commenter expressed that implementing the funding stress through a single supervisory model would distort the accuracy and predictability of stress testing exercises. A commenter recommended that the Board proceed with caution when designing any measure of short-term wholesale funding costs for inclusion in supervisory stress testing, and noted that the Board should not rely on the methodology used to calculate the presence of short-term wholesale funding in its Method 2 global systemically important bank (GSIB) surcharge approach.

In response to comments, the Board has determined that it will delay the inclusion of scenario variables or an additional component in the scenarios to capture the cost of wholesale funding costs for banking organizations in the adverse and severely adverse scenarios. Instead, the Board will further explore incorporating a stress to wholesale funding costs in the supervisory stress test. The reliance by banking organizations on certain types of runnable liabilities is a key risk dimension that is not currently addressed in the supervisory stress test, and accordingly, the Board will continue to research appropriate methods for capturing the impact on capital adequacy of changes in wholesale funding conditions under stress.

D. Scenario Design Framework and Process for Scenario Publication

In the proposal, the Board asked questions relating to whether there are other risks that the Board should consider capturing in the scenarios and whether there are other modifications not included in the proposal that could further enhance the scenario development process. In response to these questions, the Board received comments relating to the inclusion of salient risks in the scenarios, the severity of the scenarios, the release date of the scenarios, and the transparency of scenario variables.

1. Inclusion of Salient Risks in Scenarios

Several commenters strongly supported the inclusion of salient market risks in the scenarios in general to make the supervisory stress test sufficiently dynamic. One commenter recommended that the Board incorporate events that are not in the historical record in scenarios, and that the Board allow the list of variables included in the scenarios to change. Similarly, a commenter expressed support for the incorporation in the stress test of shocks unlike those already experienced, since firms should be prepared to withstand events beyond those already endured. The commenter recommended that the Board consider extraordinary shocks, such as a war with North Korea, the collapse of the Bitcoin market, or major losses caused by trader misconduct, in its scenarios.

The current policy statement states that it may be appropriate to augment scenarios with salient risks, as

[7] *See* Rochelle M. Edge and Ralf R. Meisenzahl (2011), ''The Unreliability of Credit-to-GDP Ratio Gaps in Real Time: Implications for Countercyclical Capital Buffers,'' *International Journal of Central Banking,* vol. 7, no. 4, pp. 261–298.

approaches that only look to past recessions or rely only on historical relationships between variables may not always capture current risks to the economic environment.

Since the inception of the supervisory stress test, the Board has included various salient risks in its published scenarios. For example, recent scenarios have included oil price shocks, a severe recession in the euro area, a hard landing in China, stresses in other emerging economies, and stresses in domestic housing and corporate sectors. The salient risks included in the scenarios were not necessarily based on historical record, and were instead relevant to the risk exposures of firms participating in the supervisory stress test and based on economic developments unfolding while the scenarios were being designed. Where appropriate, the Board intends to continue augmenting the scenarios with risks it considers to be salient.

2. Scenario Severity

Commenters expressed views on appropriate levels of scenario severity. Several commenters asserted that maintaining the Board's current scenario design framework, specifically as related to the change in the unemployment rate, would lead to implausible scenarios that are more severe than historical post-war recessions. One commenter asserted that coupling the global market shock and largest counterparty default component with the macroeconomic scenario design framework leads to economic stress scenarios that are particularly implausible. Another commenter expressed support for changing scenarios more aggressively and unexpectedly than the Board's current scenario design framework would specify.

By design, the severity of the scenarios increases as economic conditions improve. This feature of the Board's scenario design framework limits the extent to which scenario design adds sources of procyclicality in the supervisory stress test. A comparison of the severity of recent CCAR scenarios to benchmarks in past recessions or financial crises, both domestic and international, suggests that the scenarios used in the 2017 and 2018 CCAR assessments are plausibly severe.[8]

Additionally, the Board has reviewed the impact of amending the policy statement to clarify its approach to setting the unemployment rate and to establish a quantitative guide for the path of house prices. This impact analysis was included in the proposal to amend the policy statement. The Board concluded that the proposed changes would not have materially enhanced the severity of scenarios had they been in effect in prior stress test cycles. Had the proposed quantitative guide for the path of house prices been in effect in prior stress test cycles, the implied severity of house prices would have been similar to that of the path of house prices included in the scenarios from those stress test cycles published by Board. The amendments to the unemployment rate guide that the Board is adopting in the final policy statement would not increase the severity of the scenarios, as they allow for the possibility of a smaller increase in the unemployment rate than would have been specified in prior cycles if credit losses had already been recognized when the unemployment rate at the start of the scenarios was elevated and the labor market was judged to be strengthening.

3. Release Date of Scenarios

Commenters requested that the Board set a fixed date in early January of each calendar year for the release of the scenarios and additional components used in the stress test. Another commenter expressed strong support for scenario disclosure after the effective date of the supervisory stress test, when firms' positions are fixed.

The effective date of the supervisory stress test is December 31, and the Board publishes final scenarios after December 31 but no later than February 15, as required under the Board's stress test rules.[9] Given the need to appropriately incorporate data from major data releases and other information released prior to scenario publication into the final scenarios, it is infeasible for the Board to publish the scenarios in early January.

4. Transparency of Scenario Variables

A commenter asserted that some core input variables the Board publishes in its scenarios are insufficiently transparent to the public, and recommended that the Board release historical revisions and latest actuals for core variables more frequently.

With the release of the CCAR 2018 scenarios, the Board modified the public document that describes sources of scenario variables. The note regarding scenario variables provided more details on data sources, and described how each variable series can be retrieved from the source and replicated. For example, the Board enhanced the transparency of its description of its U.S. mortgage rate series, which now explains that the quarterly average of the weekly series for the interest rate of a conventional, conforming, 30-year fixed-rate mortgage is obtained from the Primary Mortgage Market Survey of the Federal Home Loan Mortgage Corporation.

5. Publication of Scenarios for Notice and Comment

Commenters expressed opposing views regarding the publication of the Board's scenarios for notice and comment. One commenter asserted that a fully transparent scenario would allow the Board to best achieve public benefits of disclosure. Another commenter requested that the Board maintain its current practice of disclosing scenarios only after banks' portfolios are fixed, as disclosure of the scenarios prior to the effective date of the stress test could incent firms to modify their businesses to change the results of the stress test without changing the risks that firms face. This commenter expressed the view that the stress test would yield useful information and encourage firms to maintain a prudent framework for capital planning as long as the Board does not disclose scenarios for comment before the effective date of the stress test.

The Board is considering these comments and weighing the costs and benefits of publishing the scenarios for comment.

E. Impact Analysis

The amendments to the policy statement will not materially affect the severity of the scenarios. The inclusion of a stress to wholesale funding, which would have been expected to increase the stringency of the stress test, will be delayed, as noted.

The unemployment rate clarification will reduce the stringency of the scenario if the economy had already experienced stress and was recovering, and will not impact the stringency of the scenario at other points during the economic cycle. The house price guide formalizes an approach that was previously judgmental with little persistent impact on the severity of the stress to house prices in the severely adverse scenario. However, the element of the house price guide that would limit procyclicality in the stress test through the scenario would increase the severity of the scenario stress to house

[8] *See* Bora Durdu, Rochelle Edge, and Daniel Schwindt (2017), ''Measuring the Severity of Stress-Test Scenarios,'' FEDS Notes (Washington: Board of Governors of the Federal Reserve System, May 5), *https://www.federalreserve.gov/econres/notes/feds-notes/measuring-the-severity-of-stress-test-scenarios-20170505.htm.*

[9] 12 CFR 252.54(b)(1).

prices when the ratio of house prices to disposable personal income is particularly elevated at the start of the stress test.

IV. Administrative Law Matters

A. Use of Plain Language

Section 722 of the Gramm-Leach-Bliley Act (Pub. L. 106–102, 113 Stat. 1338, 1471, 12 U.S.C. 4809) requires the Federal banking agencies to use plain language in all proposed and final rules published after January 1, 2000. The Board received no comments on these matters and believes the final policy statement is written plainly and clearly.

B. Paperwork Reduction Act

In accordance with the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 3506), the Board has reviewed the final policy statement to assess any information collections. There are no collections of information as defined by the Paperwork Reduction Act in the final policy statement.

C. Regulatory Flexibility Act Analysis

The Regulatory Flexibility Act (RFA), 5 U.S.C. 601 *et seq.,* generally requires that, in connection with a proposed rulemaking, an agency prepare and make available for public comment an initial regulatory flexibility analysis (IRFA).[10] The Board solicited public comment on this policy statement in a notice of proposed rulemaking [11] and has since considered the potential impact of this policy statement on small entities in accordance with section 604 of the RFA. Based on the Board's analysis, and for the reasons stated below, the Board believes the final rule will not have a significant economic impact on a substantial number of small entities.

The RFA requires an agency to prepare a final regulatory flexibility analysis (FRFA) unless the agency certifies that the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. The FRFA must contain: (1) A statement of the need for, and objectives of, the rule; (2) a statement of the significant issues raised by the public comments in response to the IRFA, a statement of the agency's assessment of such issues, and a statement of any changes made in the proposed rule as a result of such comments; (3) the response of the agency to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration in response to the proposed rule, and a detailed statement of any changes made to the proposed rule in the final rule as a result of the comments; (4) a description of an estimate of the number of small entities to which the rule will apply or an explanation of why no such estimate is available; (5) a description of the projected reporting, recordkeeping and other compliance requirements of the rule, including an estimate of the classes of small entities which will be subject to the requirement and type of professional skills necessary for preparation of the report or record; and (6) a description of the steps the agency has taken to minimize the significant economic impact on small entities, including a statement for selecting or rejecting the other significant alternatives to the rule considered by the agency.

The final policy statement adopts changes to the Board's policy statement on the scenario design framework for stress testing. The final policy statement clarifies that the Board may adopt a change in the unemployment rate in the severely adverse scenario of less than 4 percentage points under certain economic conditions and institutes a quantitative guide for the change in the house price index in the severely adverse scenario. Commenters did not raise any issues in response to the IRFA. In addition, the Chief Counsel for Advocacy of the Small Business Administration did not file any comments in response to the proposed policy statement.

Under regulations issued by the Small Business Administration (SBA), a ''small entity'' includes a depository institution, bank holding company, or savings and loan holding company with assets of $550 million or less (small banking organizations).[12] As discussed in the **SUPPLEMENTARY INFORMATION**, the final policy statement generally would apply to bank holding companies with total consolidated assets of $100 billion or more and U.S. intermediate holding companies of foreign banking, which generally have at least total consolidated assets of $50 billion or more.

Companies that are subject to the final policy statement therefore substantially exceed the $550 million asset threshold at which a banking entity is considered a ''small entity'' under SBA regulations. Because the final policy statement does not apply to any company with assets of $550 million or less, the final policy statement would not apply to any ''small entity'' for purposes of the RFA.

There are no projected reporting, recordkeeping, or other compliance requirements associated with the final policy statement. As discussed above, the final policy statement does not apply to small entities.

The Board does not believe that the final policy statement duplicates, overlaps, or conflicts with any other Federal Rules. In addition, the Board does not believe there are significant alternatives to the final policy statement that have less economic impact on small entities. In light of the foregoing, the Board does not believe the final policy statement will have a significant economic impact on a substantial number of small entities.

List of Subjects in 12 CFR Part 252

Administrative practice and procedure, Banks, Banking, Federal Reserve System, Holding companies, Nonbank Financial Companies Supervised by the Board, Reporting and recordkeeping requirements, Securities, Stress Testing.

Authority and Issuance

For the reasons stated in the preamble, the Board of Governors of the Federal Reserve System amends 12 CFR part 252 as follows:

PART 252—ENHANCED PRUDENTIAL STANDARDS (REGULATION YY)

■ 1. The authority citation for part 252 continues to read as follows:

Authority: 12 U.S.C. 321–338a, 1467a(g), 1818, 1831p–1, 1844(b), 1844(c), 5361, 5365, 5366.

■ 2. Appendix A to part 252 is revised to read as follows:

Appendix A to Part 252—Policy Statement on the Scenario Design Framework for Stress Testing

1. Background

(a) The Board has imposed stress testing requirements through its regulations (stress test rules) implementing section 165(i) of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act or Act) and through its capital plan rule (12 CFR 225.8). Under the stress test rules issued under section 165(i)(1) of the Act, the Board conducts an annual stress test (supervisory stress tests), on a consolidated basis, of each bank holding company with total consolidated assets of $100 billion or more, intermediate holding company of a foreign banking organization, and nonbank financial company that the Financial Stability Oversight Council has designated for supervision by the Board (together, covered companies).[1] In addition, under the stress test rules issued under section 165(i)(2) of the Act, covered companies must conduct stress tests semi-annually and other financial companies with total consolidated assets of

[10] *See* 5 U.S.C. 603, 604 and 605.

[11] 82 FR 59533 (Dec. 15, 2017).

[12] *See* 13 CFR 121.201.

[1] 12 U.S.C. 5365(i)(1); 12 CFR part 252, subpart E.

more than $10 billion and for which the Board is the primary regulatory agency must conduct stress tests on an annual basis (together, company-run stress tests).[2] The Board will provide for at least three different sets of conditions (each set, a scenario), including baseline, adverse, and severely adverse scenarios for both supervisory and company-run stress tests (macroeconomic scenarios).[3]

(b) The stress test rules provide that the Board will notify covered companies by no later than February 15 of each year of the scenarios it will use to conduct its annual supervisory stress tests and provide, also by no later than February 15, covered companies and other financial companies subject to the final rules the set of scenarios they must use to conduct their annual company-run stress tests. Under the stress test rules, the Board may require certain companies to use additional components in the adverse or severely adverse scenario or additional scenarios. For example, the Board expects to require large banking organizations with significant trading activities to include a trading and counterparty component (market shock, described in the following sections) in their adverse and severely adverse scenarios. The Board will provide any additional components or scenario by no later than March 1 of each year.[4] The Board expects that the scenarios it will require the companies to use will be the same as those the Board will use to conduct its supervisory stress tests (together, stress test scenarios).

(c) In addition, § 225.8 of the Board's Regulation Y (capital plan rule) requires covered companies to submit annual capital plans, including stress test results, to the Board in order to allow the Board to assess whether they have robust, forward-looking capital planning processes and have sufficient capital to continue operations throughout times of economic and financial stress.[5]

(d) Stress tests required under the stress test rules and under the capital plan rule require the Board and financial companies to calculate pro-forma capital levels—rather than ''current'' or actual levels—over a specified planning horizon under baseline and stressful scenarios. This approach integrates key lessons of the 2007–2009 financial crisis into the Board's supervisory framework. During the financial crisis, investor and counterparty confidence in the capitalization of financial companies eroded rapidly in the face of changes in the current and expected economic and financial conditions, and this loss in market confidence imperiled companies' ability to access funding, continue operations, serve as a credit intermediary, and meet obligations to creditors and counterparties. Importantly, such a loss in confidence occurred even when a financial institution's capital ratios were in excess of regulatory minimums. This is because the institution's capital ratios were perceived as lagging indicators of its financial condition, particularly when conditions were changing.

(e) The stress tests required under the stress test rules and capital plan rule are a valuable supervisory tool that provide a forward-looking assessment of large financial companies' capital adequacy under hypothetical economic and financial market conditions. Currently, these stress tests primarily focus on credit risk and market risk—that is, risk of mark-to-market losses associated with companies' trading and counterparty positions—and not on other types of risk, such as liquidity risk. Pressures stemming from these sources are considered in separate supervisory exercises. No single supervisory tool, including the stress tests, can provide an assessment of a company's ability to withstand every potential source of risk.

(f) Selecting appropriate scenarios is an especially significant consideration for stress tests required under the capital plan rule, which ties the review of a company's performance under stress scenarios to its ability to make capital distributions. More severe scenarios, all other things being equal, generally translate into larger projected declines in banks' capital. Thus, a company would need more capital today to meet its minimum capital requirements in more stressful scenarios and have the ability to continue making capital distributions, such as common dividend payments. This translation is far from mechanical, however; it will depend on factors that are specific to a given company, such as underwriting standards and the company's business model, which would also greatly affect projected revenue, losses, and capital.

2. Overview and Scope

(a) This policy statement provides more detail on the characteristics of the stress test scenarios and explains the considerations and procedures that underlie the approach for formulating these scenarios. The considerations and procedures described in this policy statement apply to the Board's stress testing framework, including to the stress tests required under 12 CFR part 252, subparts B, E, and F as well as the Board's capital plan rule (12 CFR 225.8).[6]

(b) Although the Board does not envision that the broad approach used to develop scenarios will change from year to year, the stress test scenarios will reflect changes in the outlook for economic and financial conditions and changes to specific risks or vulnerabilities that the Board, in consultation with the other federal banking agencies, determines should be considered in the annual stress tests. The stress test scenarios should not be regarded as forecasts; rather, they are hypothetical paths of economic variables that will be used to assess the strength and resilience of the companies' capital in various economic and financial environments.

(c) The remainder of this policy statement is organized as follows. Section 3 provides a broad description of the baseline, adverse, and severely adverse scenarios and describes the types of variables that the Board expects to include in the macroeconomic scenarios and the market shock component of the stress test scenarios applicable to companies with significant trading activity. Section 4 describes the Board's approach for developing the macroeconomic scenarios, and section 5 describes the approach for the market shocks. Section 6 describes the relationship between the macroeconomic scenario and the market shock components. Section 7 provides a timeline for the formulation and publication of the macroeconomic assumptions and market shocks.

3. Content of the Stress Test Scenarios

(a) The Board will publish a minimum of three different scenarios, including baseline, adverse, and severely adverse conditions, for use in stress tests required in the stress test rules.[7] In general, the Board anticipates that it will not issue additional scenarios. Specific circumstances or vulnerabilities that in any given year the Board determines require particular vigilance to ensure the resilience of the banking sector will be captured in either the adverse or severely adverse scenarios. A greater number of scenarios could be needed in some years—for example, because the Board identifies a large number of unrelated and uncorrelated but nonetheless significant risks.

(b) While the Board generally expects to use the same scenarios for all companies subject to the final rule, it may require a subset of companies— depending on a company's financial condition, size, complexity, risk profile, scope of operations, or activities, or risks to the U.S. economy—to include additional scenario components or additional scenarios that are designed to capture different effects of adverse events on revenue, losses, and capital. One example of such components is the market shock that applies only to companies with significant trading activity. Additional components or scenarios may also include other stress factors that may not necessarily be directly correlated to macroeconomic or financial assumptions but nevertheless can materially affect companies' risks, such as the unexpected default of a major counterparty.

(c) Early in each stress testing cycle, the Board plans to publish the macroeconomic

[2] 12 U.S.C. 5365(i)(2); 12 CFR part 252, subparts B and F.

[3] The stress test rules define scenarios as those sets of conditions that affect the U.S. economy or the financial condition of a company that the Board annually determines are appropriate for use in stress tests, including, but not limited to, baseline, adverse, and severely adverse scenarios. The stress test rules define baseline scenario as a set of conditions that affect the U.S. economy or the financial condition of a company and that reflect the consensus views of the economic and financial outlook. The stress test rules define adverse scenario as a set of conditions that affect the U.S. economy or the financial condition of a company that are more adverse than those associated with the baseline scenario and may include trading or other additional components. The stress test rules define severely adverse scenario as a set of conditions that affect the U.S. economy or the financial condition of a company and that overall are more severe than those associated with the adverse scenario and may include trading or other additional components. *See* 12 CFR part 252.

[4] *Id.*

[5] *See* 12 CFR 225.8.

[6] 12 CFR 252.14(a), 12 CFR 252.44(a), 12 CFR 252.54(a).

[7] 12 CFR 252.14(b), 12 CFR 252.44(b), 12 CFR 252.54(b).

scenarios along with a brief narrative summary that provides a description of the economic situation underlying the scenario and explains how the scenarios have changed relative to the previous year. In addition, to assist companies in projecting the paths of additional variables in a manner consistent with the scenario, the narrative will also provide descriptions of the general path of some additional variables. These descriptions will be general—that is, they will describe developments for broad classes of variables rather than for specific variables—and will specify the intensity and direction of variable changes but not numeric magnitudes. These descriptions should provide guidance that will be useful to companies in specifying the paths of the additional variables for their company-run stress tests. Note that in practice it will not be possible for the narrative to include descriptions on all of the additional variables that companies may need for their company-run stress tests. In cases where scenarios are designed to reflect particular risks and vulnerabilities, the narrative will also explain the underlying motivation for these features of the scenario. The Board also plans to release a broad description of the market shock components.

3.1 Macroeconomic Scenarios

(a) The macroeconomic scenarios will consist of the future paths of a set of economic and financial variables.[8] The economic and financial variables included in the scenarios will likely comprise those included in the ''2014 Supervisory Scenarios for Annual Stress Tests Required under the Dodd-Frank Act Stress Testing Rules and the Capital Plan Rule'' (2013 supervisory scenarios). The domestic U.S. variables provided for in the 2013 supervisory scenarios included:

(i) Six measures of economic activity and prices: Real and nominal gross domestic product (GDP) growth, the unemployment rate of the civilian non-institutional population aged 16 and over, real and nominal disposable personal income growth, and the Consumer Price Index (CPI) inflation rate;

(ii) Four measures of developments in equity and property markets: The Core Logic National House Price Index, the National Council for Real Estate Investment Fiduciaries Commercial Real Estate Price Index, the Dow Jones Total Stock Market Index, and the Chicago Board Options Exchange Market Volatility Index; and

(iii) Six measures of interest rates: The rate on the 3-month Treasury bill, the yield on the 5-year Treasury bond, the yield on the 10-year Treasury bond, the yield on a 10-year BBB corporate security, the prime rate, and the interest rate associated with a conforming, conventional, fixed-rate, 30-year mortgage.

(b) The international variables provided for in the 2014 supervisory scenarios included, for the euro area, the United Kingdom, developing Asia, and Japan:

(i) Percent change in real GDP;

(ii) Percent change in the Consumer Price Index or local equivalent; and

(iii) The U.S./foreign currency exchange rate.[9]

(c) The economic variables included in the scenarios influence key items affecting financial companies' net income, including pre-provision net revenue and credit losses on loans and securities. Moreover, these variables exhibit fairly typical trends in adverse economic climates that can have unfavorable implications for companies' net income and, thus, capital positions.

(d) The economic variables included in the scenario may change over time. For example, the Board may add variables to a scenario if the international footprint of companies that are subject to the stress testing rules changed notably over time such that the variables already included in the scenario no longer sufficiently capture the material risks of these companies. Alternatively, historical relationships between macroeconomic variables could change over time such that one variable (*e.g.,* disposable personal income growth) that previously provided a good proxy for another (*e.g.,* light vehicle sales) in modeling companies' pre-provision net revenue or credit losses ceases to do so, resulting in the need to create a separate path, or alternative proxy, for the other variable. However, recognizing the amount of work required for companies to incorporate the scenario variables into their stress testing models, the Board expects to eliminate variables from the scenarios only in rare instances.

(e) The Board expects that the company may not use all of the variables provided in the scenario, if those variables are not appropriate to the company's line of business, or may add additional variables, as appropriate. The Board expects the companies to ensure that the paths of such additional variables are consistent with the scenarios the Board provided. For example, the companies may use, as part of their internal stress test models, local-level variables, such as state-level unemployment rates or city-level house prices. While the Board does not plan to include local-level macro variables in the stress test scenarios it provides, it expects the companies to evaluate the paths of local-level macro variables as needed for their internal models, and ensure internal consistency between these variables and their aggregate, macro-economic counterparts. The Board will provide the macroeconomic scenario component of the stress test scenarios for a period that spans a minimum of 13 quarters. The scenario horizon reflects the supervisory stress test approach that the Board plans to use. Under the stress test rules, the Board will assess the effect of different scenarios on the consolidated capital of each company over a forward-looking planning horizon of at least nine quarters.

3.2 Market Shock Component

(a) The market shock component of the adverse and severely adverse scenarios will only apply to companies with significant trading activity and their subsidiaries.[10] The component consists of large moves in market prices and rates that would be expected to generate losses. Market shocks differ from macroeconomic scenarios in a number of ways, both in their design and application. For instance, market shocks that might typically be observed over an extended period (*e.g.,* 6 months) are assumed to be an instantaneous event which immediately affects the market value of the companies' trading assets and liabilities. In addition, under the stress test rules, the as-of date for market shocks will differ from the quarter-end, and the Board will provide the as-of date for market shocks no later than February 1 of each year. Finally, as described in section 4 of this Appendix, the market shock includes a much larger set of risk factors than the set of economic and financial variables included in macroeconomic scenarios. Broadly, these risk factors include shocks to financial market variables that affect asset prices, such as a credit spread or the yield on a bond, and, in some cases, the value of the position itself (*e.g.,* the market value of private equity positions).

(b) The Board envisions that the market shocks will include shocks to a broad range of risk factors that are similar in granularity to those risk factors that trading companies use internally to produce profit and loss estimates, under stressful market scenarios, for all asset classes that are considered trading assets, including equities, credit, interest rates, foreign exchange rates, and commodities. Examples of risk factors include, but are not limited to:

(i) Equity indices of all developed markets, and of developing and emerging market nations to which companies with significant trading activity may have exposure, along with term structures of implied volatilities;

(ii) Cross-currency FX rates of all major and many minor currencies, along term structures of implied volatilities;

(iii) Term structures of government rates (*e.g.,* U.S. Treasuries), interbank rates (*e.g.,* swap rates) and other key rates (*e.g.,* commercial paper) for all developed markets and for developing and emerging market nations to which companies may have exposure;

(iv) Term structures of implied volatilities that are key inputs to the pricing of interest rate derivatives;

(v) Term structures of futures prices for energy products including crude oil (differentiated by country of origin), natural gas, and power;

(vi) Term structures of futures prices for metals and agricultural commodities;

[8] The future path of a variable refers to its specification over a given time period. For example, the path of unemployment can be described in percentage terms on a quarterly basis over the stress testing time horizon.

[9] The Board may increase the range of countries or regions included in future scenarios, as appropriate.

[10] Currently, companies with significant trading activity include any bank holding company or intermediate holding company that (1) has aggregate trading assets and liabilities of $50 billion or more, or aggregate trading assets and liabilities equal to 10 percent or more of total consolidated assets, and (2) is not a large and noncomplex firm.. The Board may also subject a state member bank subsidiary of any such bank holding company to the market shock component. The set of companies subject to the market shock component could change over time as the size, scope, and complexity of financial company's trading activities evolve.

(vii) ''Value-drivers'' (credit spreads or instrument prices themselves) for credit-sensitive product segments including: Corporate bonds, credit default swaps, and collateralized debt obligations by risk; non-agency residential mortgage-backed securities and commercial mortgage-backed securities by risk and vintage; sovereign debt; and, municipal bonds; and

(viii) Shocks to the values of private equity positions.

4. Approach for Formulating the Macroeconomic Assumptions for Scenarios

(a) This section describes the Board's approach for formulating macroeconomic assumptions for each scenario. The methodologies for formulating this part of each scenario differ by scenario, so these methodologies for the baseline, severely adverse, and the adverse scenarios are described separately in each of the following subsections.

(b) In general, the baseline scenario will reflect the most recently available consensus views of the macroeconomic outlook expressed by professional forecasters, government agencies, and other public-sector organizations as of the beginning of the annual stress-test cycle. The severely adverse scenario will consist of a set of economic and financial conditions that reflect the conditions of post-war U.S. recessions. The adverse scenario will consist of a set of economic and financial conditions that are more adverse than those associated with the baseline scenario but less severe than those associated with the severely adverse scenario.

(c) Each of these scenarios is described further in sections below as follows: Baseline (subsection 4.1), severely adverse (subsection 4.2), and adverse (subsection 4.3)

4.1 Approach for Formulating Macroeconomic Assumptions in the Baseline Scenario

(a) The stress test rules define the baseline scenario as a set of conditions that affect the U.S. economy or the financial condition of a banking organization, and that reflect the consensus views of the economic and financial outlook. Projections under a baseline scenario are used to evaluate how companies would perform in more likely economic and financial conditions. The baseline serves also as a point of comparison to the severely adverse and adverse scenarios, giving some sense of how much of the company's capital decline could be ascribed to the scenario as opposed to the company's capital adequacy under expected conditions.

(b) The baseline scenario will be developed around a macroeconomic projection that captures the prevailing views of private-sector forecasters (*e.g.* Blue Chip Consensus Forecasts and the Survey of Professional Forecasters), government agencies, and other public-sector organizations (*e.g.,* the International Monetary Fund and the Organization for Economic Co-operation and Development) near the beginning of the annual stress-test cycle. The baseline scenario is designed to represent a consensus expectation of certain economic variables over the time period of the tests and it is not the Board's internal forecast for those economic variables. For example, the baseline path of short-term interest rates is constructed from consensus forecasts and may differ from that implied by the FOMC's *Summary of Economic Projections.*

(c) For some scenario variables—such as U.S. real GDP growth, the unemployment rate, and the consumer price index—there will be a large number of different forecasts available to project the paths of these variables in the baseline scenario. For others, a more limited number of forecasts will be available. If available forecasts diverge notably, the baseline scenario will reflect an assessment of the forecast that is deemed to be most plausible. In setting the paths of variables in the baseline scenario, particular care will be taken to ensure that, together, the paths present a coherent and plausible outlook for the U.S. and global economy, given the economic climate in which they are formulated.

4.2 Approach for Formulating the Macroeconomic Assumptions in the Severely Adverse Scenario

The stress test rules define a severely adverse scenario as a set of conditions that affect the U.S. economy or the financial condition of a financial company and that overall are more severe than those associated with the adverse scenario. The financial company will be required to publicly disclose a summary of the results of its stress test under the severely adverse scenario, and the Board intends to publicly disclose the results of its analysis of the financial company under the adverse scenario and the severely adverse scenario.

4.2.1 General Approach: The Recession Approach

(a) The Board intends to use a recession approach to develop the severely adverse scenario. In the recession approach, the Board will specify the future paths of variables to reflect conditions that characterize post-war U.S. recessions, generating either a typical or specific recreation of a post-war U.S. recession. The Board chose this approach because it has observed that the conditions that typically occur in recessions—such as increasing unemployment, declining asset prices, and contracting loan demand—can put significant stress on companies' balance sheets. This stress can occur through a variety of channels, including higher loss provisions due to increased delinquencies and defaults; losses on trading positions through sharp moves in market prices; and lower bank income through reduced loan originations. For these reasons, the Board believes that the paths of economic and financial variables in the severely adverse scenario should, at a minimum, resemble the paths of those variables observed during a recession.

(b) This approach requires consideration of the type of recession to feature. All post-war U.S. recessions have not been identical: Some recessions have been associated with very elevated interest rates, some have been associated with sizable asset price declines, and some have been relatively more global. The most common features of recessions, however, are increases in the unemployment rate and contractions in aggregate incomes and economic activity. For this and the following reasons, the Board intends to use the unemployment rate as the primary basis for specifying the severely adverse scenario. First, the unemployment rate is likely the most representative single summary indicator of adverse economic conditions. Second, in comparison to GDP, labor market data have traditionally featured more prominently than GDP in the set of indicators that the National Bureau of Economic Research reviews to inform its recession dates.[11] Third and finally, the growth rate of potential output can cause the size of the decline in GDP to vary between recessions. While changes in the unemployment rate can also vary over time due to demographic factors, this seems to have more limited implications over time relative to changes in potential output growth. The unemployment rate used in the severely adverse scenario will reflect an unemployment rate that has been observed in *severe* post-war U.S. recessions, measuring severity by the absolute level of and relative increase in the unemployment rate.[12]

(c) The Board believes that the severely adverse scenario should also reflect a housing recession. The house prices path set in the severely adverse scenario will reflect developments that have been observed in post-war U.S. housing recessions, measuring severity by the absolute level of and relative decrease in the house prices.

(d) The Board will specify the paths of most other macroeconomic variables based on the paths of unemployment, income, house prices, and activity. Some of these other variables, however, have taken wildly divergent paths in previous recessions (*e.g.,* foreign GDP), requiring the Board to use its informed judgment in selecting appropriate paths for these variables. In general, the path for these other variables will be based on their underlying structure at the time that the scenario is designed (*e.g.,* economic or financial-system vulnerabilities in other countries).

(e) The Board considered alternative methods for scenario design of the severely adverse scenario, including a probabilistic approach. The probabilistic approach constructs a baseline forecast from a large-scale macroeconomic model and identifies a scenario that would have a specific probabilistic likelihood given the baseline forecast. The Board believes that, at this time, the recession approach is better suited for developing the severely adverse scenario than a probabilistic approach because it guarantees a recession of some specified

[11] More recently, a monthly measure of GDP has been added to the list of indicators.

[12] Even though all recessions feature increases in the unemployment rate and contractions in incomes and economic activity, the size of this change has varied over post-war U.S. recessions. Table 1 documents the variability in the depth of post-war U.S. recessions. Some recessions—labeled mild in Table 1—have been relatively modest with GDP edging down just slightly and the unemployment rate moving up about a percentage point. Other recessions—labeled severe in Table 1—have been much harsher with GDP dropping 3¾ percent and the unemployment rate moving up a total of about 4 percentage points.

severity. In contrast, the probabilistic approach requires the choice of an extreme tail outcome—relative to baseline—to characterize the severely adverse scenario (*e.g.,* a 5 percent or a 1 percent tail outcome). In practice, this choice is difficult as adverse economic outcomes are typically thought of in terms of how variables evolve in an absolute sense rather than how far away they lie in the probability space away from the baseline. In this sense, a scenario featuring a recession may be somewhat clearer and more straightforward to communicate. Finally, the probabilistic approach relies on estimates of uncertainty around the baseline scenario and such estimates are in practice model-dependent.

4.2.2 Setting the Unemployment Rate Under the Severely Adverse Scenario

(a) The Board anticipates that the severely adverse scenario will feature an unemployment rate that increases between 3 to 5 percentage points from its initial level over the course of 6 to 8 calendar quarters.[13] The initial level will be set based on the conditions at the time that the scenario is designed. However, if a 3 to 5 percentage point increase in the unemployment rate does not raise the level of the unemployment rate to at least 10 percent—the average level to which it has increased in the most recent three severe recessions—the path of the unemployment rate in most cases will be specified so as to raise the unemployment rate to at least 10 percent.

(b) This methodology is intended to generate scenarios that feature stressful outcomes but do not induce greater procyclicality in the financial system and macroeconomy. When the economy is in the early stages of a recovery, the unemployment rate in a baseline scenario generally trends downward, resulting in a larger difference between the path of the unemployment rate in the severely adverse scenario and the baseline scenario and a severely adverse scenario that is relatively more intense. Conversely, in a sustained strong expansion—when the unemployment rate may be below the level consistent with full employment—the unemployment in a baseline scenario generally trends upward, resulting in a smaller difference between the path of the unemployment rate in the severely adverse scenario and the baseline scenario and a severely adverse scenario that is relatively less intense. Historically, a 3 to 5 percentage point increase in unemployment rate is reflective of stressful conditions. As illustrated in Table 1, over the last half-century, the U.S. economy has experienced four severe post-war recessions. In all four of these recessions, the unemployment rate increased 3 to 5 percentage points and in the three most recent of these recessions, the unemployment rate reached a level between 9 percent and 11 percent.

(c) Under this method, if the initial unemployment rate was low—as it would be after a sustained long expansion—the unemployment rate in the scenario would increase to a level as high as what has been seen in past severe recessions. However, if the initial unemployment rate was already high—as would be the case in the early stages of a recovery—the unemployment rate would exhibit a change as large as what has been seen in past severe recessions.

(d) The Board believes that the typical increase in the unemployment rate in the severely adverse scenario will be about 4 percentage points. However, the Board will calibrate the increase in unemployment based on its views of the status of cyclical systemic risk. The Board intends to set the unemployment rate at the higher end of the range if the Board believes that cyclical systemic risks are high (as it would be after a sustained long expansion), and to the lower end of the range if cyclical systemic risks are low (as it would be in the earlier stages of a recovery). This may result in a scenario that is slightly more intense than normal if the Board believed that cyclical systemic risks were increasing in a period of robust expansion.[14] Conversely, it will allow the Board to specify a scenario that is slightly less intense than normal in an environment where systemic risks appeared subdued, such as in the early stages of an expansion. Indeed, the Board expects that, in general, it will adopt a change in the unemployment rate of less than 4 percentage points when the unemployment rate at the start of the scenarios is elevated but the labor market is judged to be strengthening and higher-than-usual credit losses stemming from previously elevated unemployment rates were either already realized—or are in the process of being realized—and thus removed from banks' balance sheets.[15] However, even at the lower end of the range of unemployment-rate increases, the scenario will still feature an increase in the unemployment rate similar to what has been seen in about half of the severe recessions of the last 50 years.

(e) As indicated previously, if a 3 to 5 percentage point increase in the unemployment rate does not raise the level of the unemployment rate to 10 percent—the average level to which it has increased in the most recent three severe recessions—the path of the unemployment rate will be specified so as to raise the unemployment rate to 10 percent. Setting a floor for the unemployment rate at 10 percent recognizes the fact that not only do cyclical systemic risks build up at financial intermediaries during robust expansions but that these risks are also easily obscured by the buoyant environment.

(f) In setting the increase in the unemployment rate, the Board will consider the extent to which analysis by economists, supervisors, and financial market experts finds cyclical systemic risks to be elevated (but difficult to be captured more precisely in one of the scenario's other variables). In addition, the Board—in light of impending shocks to the economy and financial system—will also take into consideration the extent to which a scenario of some increased severity might be necessary for the results of the stress test and the associated supervisory actions to sustain confidence in financial institutions.

(g) While the approach to specifying the severely adverse scenario is designed to avoid adding sources of procyclicality to the financial system, it is not designed to explicitly offset any existing procyclical tendencies in the financial system. The purpose of the stress test scenarios is to make sure that the companies are properly capitalized to withstand severe economic and financial conditions, not to serve as an explicit countercyclical offset to the financial system.

(h) In developing the approach to the unemployment rate, the Board also considered a method that would increase the unemployment rate to some fairly elevated fixed level over the course of 6 to 8 quarters. This would result in scenarios being more severe in robust expansions (when the unemployment rate is low) and less severe in the early stages of a recovery (when the unemployment rate is high) and so would not result in pro-cyclicality. Depending on the initial level of the unemployment rate, this approach could lead to only a very modest increase in the unemployment rate—or even a decline. As a result, this approach—while not procyclical—could result in scenarios not featuring stressful macroeconomic outcomes.

4.2.3 Setting the Other Variables in the Severely Adverse Scenario

(a) Generally, all other variables in the severely adverse scenario will be specified to be consistent with the increase in the unemployment rate. The approach for specifying the paths of these variables in the scenario will be a combination of (1) how economic models suggest that these variables should evolve given the path of the unemployment rate, (2) how these variables have typically evolved in past U.S. recessions, and (3) evaluation of these and other factors.

(b) Economic models—such as medium-scale macroeconomic models—should be able to generate plausible paths consistent with the unemployment rate for a number of scenario variables, such as real GDP growth, CPI inflation and short-term interest rates, which have relatively stable (direct or indirect) relationships with the unemployment rate (*e.g.,* Okun's Law, the Phillips Curve, and interest rate feedback rules). For some other variables, specifying their paths will require a case-by-case consideration.

(c) Declining house prices, which are an important source of stress to a company's balance sheet, are not a steadfast feature of

[13] Six to eight quarters is the average number of quarters for which a severe recession lasts plus the average number of subsequent quarters over which the unemployment rate continues to rise. The variable length of the timeframe reflects the different paths to the peak unemployment rate depending on the severity of the scenario.

[14] Note, however, that the severity of the scenario would not exceed an implausible level: Even at the upper end of the range of unemployment-rate increases, the path of the unemployment rate would still be consistent with severe post-war U.S. recessions.

[15] Evidence of a strengthening labor market could include a declining unemployment rate, steadily expanding nonfarm payroll employment, or improving labor force participation. Evidence that credit losses are being realized could include elevated charge-offs on loans and leases, loan-loss provisions in excess of gross charge-offs, or losses being realized in securities portfolios that include securities that are subject to credit risk.

recessions, and the historical relationship of house prices with the unemployment rate is not strong. Simply adopting their typical path in a severe recession would likely underestimate risks stemming from the housing sector. In specifying the path for nominal house prices, the Board will consider the ratio of the nominal house price index (HPI) to nominal, per capita, disposable income (DPI). The Board believes that the typical decline in the HPI-DPI ratio will be at a minimum 25 percent from its starting value, or enough to bring the ratio down to its Great Recession trough. As illustrated in Table 2, housing recessions have on average featured HPI-DPI ratio declines of about 25 percent and the HPI-DPI ratio fell to its Great Recession trough.[16]

(d) In addition, judgment is necessary in projecting the path of a scenario's international variables. Recessions that occur simultaneously across countries are an important source of stress to the balance sheets of companies with notable international exposures but are not an invariable feature of the international economy. As a result, simply adopting the typical path of international variables in a severe U.S. recession would likely underestimate the risks stemming from the international economy. Consequently, an approach that uses both judgment and economic models informs the path of international variables.

4.2.4 Adding Salient Risks to the Severely Adverse Scenario

(a) The severely adverse scenario will be developed to reflect specific risks to the economic and financial outlook that are especially salient but will feature minimally in the scenario if the Board were only to use approaches that looked to past recessions or relied on historical relationships between variables.

(b) There are some important instances when it will be appropriate to augment the recession approach with salient risks. For example, if an asset price were especially elevated and thus potentially vulnerable to an abrupt and potentially destabilizing decline, it would be appropriate to include such a decline in the scenario even if such a large drop were not typical in a severe recession. Likewise, if economic developments abroad were particularly unfavorable, assuming a weakening in international conditions larger than what typically occurs in severe U.S. recessions would likely also be appropriate.

(c) Clearly, while the recession component of the severely adverse scenario is within some predictable range, the salient risk aspect of the scenario is far less so, and therefore, needs an annual assessment. Each year, the Board will identify the risks to the financial system and the domestic and international economic outlooks that appear more elevated than usual, using its internal analysis and supervisory information and in consultation with the Federal Deposit Insurance Corporation (FDIC) and the Office of the Comptroller of the Currency (OCC). Using the same information, the Board will then calibrate the paths of the macroeconomic and financial variables in the scenario to reflect these risks.

(d) Detecting risks that have the potential to weaken the banking sector is particularly difficult when economic conditions are buoyant, as a boom can obscure the weaknesses present in the system. In sustained robust expansions, therefore, the selection of salient risks to augment the scenario will err on the side of including risks of uncertain significance.

(e) The Board will factor in particular risks to the domestic and international macroeconomic outlook identified by its economists, bank supervisors, and financial market experts and make appropriate adjustments to the paths of specific economic variables. These adjustments will not be reflected in the general severity of the recession and, thus, all macroeconomic variables; rather, the adjustments will apply to a subset of variables to reflect co-movements in these variables that are historically less typical. The Board plans to discuss the motivation for the adjustments that it makes to variables to highlight systemic risks in the narrative describing the scenarios.[17]

4.3 Approach for Formulating Macroeconomic Assumptions in the Adverse Scenario

(a) The adverse scenario can be developed in a number of different ways, and the selected approach will depend on a number of factors, including how the Board intends to use the results of the adverse scenario.[18] Generally, the Board believes that the companies should consider multiple adverse scenarios for their internal capital planning purposes, and likewise, it is appropriate that the Board consider more than one adverse scenario to assess a company's ability to withstand stress. Accordingly, the Board does not identify a single approach for specifying the adverse scenario. Rather, the adverse scenario will be formulated according to one of the possibilities listed below. The Board may vary the approach it uses for the adverse scenario each year so that the results of the scenario provide the most value to supervisors, in light of the current condition of the economy and the financial services industry.

(b) The simplest method to specify the adverse scenario is to develop a less severe version of the severely adverse scenario. For example, the adverse scenario could be formulated such that the deviations of the paths of the variables relative to the baseline were simply one-half of or two-thirds of the deviations of the paths of the variables relative to the baseline in the severely adverse scenario. *A priori,* specifying the adverse scenario in this way may appear unlikely to provide the greatest possible informational value to supervisors—given that it is just a less severe version of the severely adverse scenario. However, to the extent that the effect of macroeconomic variables on company loss positions and incomes are nonlinear, there could be potential value from this approach.

(c) Another method to specify the adverse scenario is to capture risks in the adverse scenario that the Board believes should be better understood or should be monitored, but does not believe should be included in the severely adverse scenario, perhaps because these risks would render the scenario implausibly severe. For instance, the adverse scenario could feature sizable increases in oil or natural gas prices or shifts in the yield curve that are atypical in a recession. The adverse scenario might also feature less acute, but still consequential, adverse outcomes, such as a disruptive slowdown in growth from emerging-market economies.

(d) Under the Board's stress test rules, covered companies are required to develop their own scenarios for mid-cycle company-run stress tests.[19] A particular combination of risks included in these scenarios may inform the design of the adverse scenario for annual stress tests. In this same vein, another possibility would be to use modified versions of the circumstances that companies describe in their living wills as being able to cause their failures.

(e) It might also be informative to periodically use a stable adverse scenario, at least for a few consecutive years. Even if the scenario used for the stress test does not change over the credit cycle, if companies tighten and relax lending standards over the cycle, their loss rates under the adverse scenario—and indirectly the projected changes to capital—would decrease and increase, respectively. A consistent scenario would allow the direct observation of how capital fluctuates to reflect growing cyclical risks.

(f) The Board may consider specifying the adverse scenario using the probabilistic approach described in section 4.2.1 (that is, with a specified lower probability of occurring than the severely adverse scenario but a greater probability of occurring than the baseline scenario). The approach has some intuitive appeal despite its shortcomings. For example, using this approach for the adverse

[16] The house-price retrenchments that occurred over the periods 1980–1985, 1989–1996, 2006–2011 (as detailed in Table 2) are referred to in this document as housing recessions. The date-ranges of housing recessions are based on the timing of house-price retrenchments. These dates were also associated with sustained declines in real residential investment, although, the precise timings of housing recessions would likely be slightly different were they to be classified based on real residential investment in addition to house prices. The ratios described in Table 2 are calculated based on nominal HPI and HPI-DPI ratios indexed to 100 in 2000:Q1.

[17] The means of effecting an adjustment to the severely adverse scenario to address salient systemic risks differs from the means used to adjust the unemployment rate. For example, in adjusting the scenario for an increased unemployment rate, the Board would modify all variables such that the future paths of the variables are similar to how these variables have moved historically. In contrast, to address salient risks, the Board may only modify a small number of variables in the scenario and, as such, their future paths in the scenario would be somewhat more atypical, albeit not implausible, given existing risks.

[18] For example, in the context of CCAR, the Board currently uses the adverse scenario as one consideration in evaluating a firm's capital adequacy.

[19] 12 CFR 252.55.

scenario could allow the Board to explore an alternative approach to develop stress testing scenarios and their effect on a company's net income and capital.

(g) Finally, the Board could design the adverse scenario based on a menu of historical experiences—such as, a moderate recession (*e.g.,* the 1990–1991 recession); a stagflation event (*e.g.,* stagflation during 1974); an emerging markets crisis (*e.g.,* the Asian currency crisis of 1997–1998); an oil price shock (*e.g.,* the shock during the run up to the 1990–1991 recession); or high inflation shock (*e.g.,* the inflation pressures of 1977–1979). The Board believes these are important stresses that should be understood; however, there may be notable benefits from formulating the adverse scenario following other approaches—specifically, those described previously in this section—and consequently the Board does not believe that the adverse scenario should be limited to historical episodes only.

(h) With the exception of cases in which the probabilistic approach is used to generate the adverse scenario, the adverse scenario will at a minimum contain a mild to moderate recession. This is because most of the value from investigating the implications of the risks described above is likely to be obtained from considering them in the context of balance sheets of companies that are under some stress.

5. Approach for Formulating the Market Shock Component

(a) This section discusses the approach the Board proposes to adopt for developing the market shock component of the adverse and severely adverse scenarios appropriate for companies with significant trading activities. The design and specification of the market shock component differs from that of the macroeconomic scenarios because profits and losses from trading are measured in mark-to-market terms, while revenues and losses from traditional banking are generally measured using the accrual method. As noted above, another critical difference is the time-evolution of the market shock component. The market shock component consists of an instantaneous ''shock'' to a large number of risk factors that determine the mark-to-market value of trading positions, while the macroeconomic scenarios supply a projected path of economic variables that affect traditional banking activities over the entire planning period.

(b) The development of the market shock component that are detailed in this section are as follows: Baseline (subsection 5.1), severely adverse (subsection 5.2), and adverse (subsection 5.3).

5.1 Approach for Formulating the Market Shock Component Under the Baseline Scenario

By definition, market shocks are large, previously unanticipated moves in asset prices and rates. Because asset prices should, broadly speaking, reflect consensus opinions about the future evolution of the economy, large price movements, as envisioned in the market shock, should not occur along the baseline path. As a result, the market shock will not be included in the baseline scenario.

5.2 Approach for Formulating the Market Shock Component Under the Severely Adverse Scenario

This section addresses possible approaches to designing the market shock component in the severely adverse scenario, including important considerations for scenario design, possible approaches to designing scenarios, and a development strategy for implementing the preferred approach.

5.2.1 Design Considerations for Market Shocks

(a) The general market practice for stressing a trading portfolio is to specify market shocks either in terms of extreme moves in observable, broad market indicators and risk factors or directly as large changes to the mark-to-market values of financial instruments. These moves can be specified either in relative terms or absolute terms. Supplying values of risk factors after a ''shock'' is roughly equivalent to the macroeconomic scenarios, which supply values for a set of economic and financial variables; however, trading stress testing differs from macroeconomic stress testing in several critical ways.

(b) In the past, the Board used one of two approaches to specify market shocks. During SCAP and CCAR in 2011, the Board used a very general approach to market shocks and required companies to stress their trading positions using changes in market prices and rates experienced during the second half of 2008, without specifying risk factor shocks. This broad guidance resulted in inconsistency across companies both in terms of the severity and the application of shocks. In certain areas, companies were permitted to use their own experience during the second half of 2008 to define shocks. This resulted in significant variation in shock severity across companies.

(c) To enhance the consistency and comparability in market shocks for the stress tests in 2012 and 2013, the Board provided to each trading company more than 35,000 specific risk factor shocks, primarily based on market moves in the second half of 2008. While the number of risk factors used in companies' pricing and stress-testing models still typically exceed that provided in the Board's scenarios, the greater specificity resulted in more consistency in the scenario across companies. The benefit of the comprehensiveness of risk factor shocks is at least partly offset by the potential difficulty in creating shocks that are coherent and internally consistent, particularly as the framework for developing market shocks deviates from historical events.

(d) Also importantly, the ultimate losses associated with a given market shock will depend on a company's trading positions, which can make it difficult to rank order, *ex ante,* the severity of the scenarios. In certain instances, market shocks that include large market moves may not be particularly stressful for a given company. Aligning the market shock with the macroeconomic scenario for consistency may result in certain companies actually benefiting from risk factor moves of larger magnitude in the market scenario if the companies are hedging against salient risks to other parts of their business. Thus, the severity of market shocks must be calibrated to take into account how a complex set of risks, such as directional risks and basis risks, interacts with each other, given the companies' trading positions at the time of stress. For instance, a large depreciation in a foreign currency would benefit companies with net short positions in the currency while hurting those with net long positions. In addition, longer maturity positions may move differently from shorter maturity positions, adding further complexity.

(e) The instantaneous nature of market shocks and the immediate recognition of mark-to-market losses add another element to the design of market shocks, and to determining the appropriate severity of shocks. For instance, in previous stress tests, the Board assumed that market moves that occurred over the six-month period in late 2008 would occur instantaneously. The design of the market shocks must factor in appropriate assumptions around the period of time during which market events will unfold and any associated market responses.

5.2.2 Approaches to Market Shock Design

(a) As an additional component of the adverse and severely adverse scenarios, the Board plans to use a standardized set of market shocks that apply to all companies with significant trading activity. The market shocks could be based on a single historical episode, multiple historical periods, hypothetical (but plausible) events, or some combination of historical episodes and hypothetical events (hybrid approach). Depending on the type of hypothetical events, a scenario based on such events may result in changes in risk factors that were not previously observed. In the supervisory scenarios for 2012 and 2013, the shocks were largely based on relative moves in asset prices and rates during the second half of 2008, but also included some additional considerations to factor in the widening of spreads for European sovereigns and financial companies based on actual observation during the latter part of 2011.

(b) For the market shock component in the severely adverse scenario, the Board plans to use the hybrid approach to develop shocks. The hybrid approach allows the Board to maintain certain core elements of consistency in market shocks each year while providing flexibility to add hypothetical elements based on market conditions at the time of the stress tests. In addition, this approach will help ensure internal consistency in the scenario because of its basis in historical episodes; however, combining the historical episode and hypothetical events may require small adjustments to ensure mutual consistency of the joint moves. In general, the hybrid approach provides considerable flexibility in developing scenarios that are relevant each year, and by introducing variations in the scenario, the approach will also reduce the ability of companies with significant trading activity to modify or shift their portfolios to minimize expected losses in the severely adverse market shock.

(c) The Board has considered a number of alternative approaches for the design of market shocks. For example, the Board explored an option of providing tailored

market shocks for each trading company, using information on the companies' portfolio gathered through ongoing supervision, or other means. By specifically targeting known or potential vulnerabilities in a company's trading position, the tailored approach would be useful in assessing each company's capital adequacy as it relates to the company's idiosyncratic risk. However, the Board does not believe this approach to be well-suited for the stress tests required by regulation. Consistency and comparability are key features of annual supervisory stress tests and annual company-run stress tests required in the stress test rules. It would be difficult to use the information on the companies' portfolios to design a common set of shocks that are universally stressful for all covered companies. As a result, this approach would be better suited to more customized, tailored stress tests that are part of the company's internal capital planning process or to other supervisory efforts outside of the stress tests conducted under the capital rule and the stress test rules.

5.2.3 Development of the Market Shock

(a) Consistent with the approach described above, the market shock component for the severely adverse scenario will incorporate key elements of market developments during the second half of 2008, but will also incorporate observations from other periods or price and rate movements in certain markets that the Board deems to be plausible, though such movements may not have been observed historically. Over time, the Board also expects to rely less on market events of the second half of 2008 and more on hypothetical events or other historical episodes to develop the market shock.

(b) The developments in the credit markets during the second half of 2008 were unprecedented, providing a reasonable basis for market shocks in the severely adverse scenario. During this period, key risk factors in virtually all asset classes experienced extremely large shocks; the collective breadth and intensity of the moves have no parallels in modern financial history and, on that basis, it seems likely that this episode will continue to be the most relevant historical scenario, although experience during other historical episodes may also guide the severity of the market shock component of the severely adverse scenario. Moreover, the risk factor moves during this episode are directly consistent with the ''recession'' approach that underlies the macroeconomic assumptions. However, market shocks based only on historical events could become stale and less relevant over time as the company's positions change, particularly if more salient features are not added each year.

(c) While the market shocks based on the second half of 2008 are of unparalleled magnitude, the shocks may become less relevant over time as the companies' trading positions change. In addition, more recent events could highlight the companies' vulnerability to certain market events. For example, in 2011, Eurozone credit spreads in the sovereign and financial sectors surpassed those observed during the second half of 2008, necessitating the modification of the severely adverse market shock in 2012 and 2013 to reflect a salient source of stress to trading positions. As a result, it is important to incorporate both historical and hypothetical outcomes into market shocks for the severely adverse scenario. For the time being, the development of market shocks in the severely adverse scenario will begin with the risk factor movements in a particular historical period, such as the second half of 2008. The Board will then consider hypothetical but plausible outcomes, based on financial stability reports, supervisory information, and internal and external assessments of market risks and potential flash points. The hypothetical outcomes could originate from major geopolitical, economic, or financial market events with potentially significant impacts on market risk factors. The severity of these hypothetical moves will likely be guided by similar historical events, assumptions embedded in the companies' internal stress tests or market participants, and other available information.

(d) Once broad market scenarios are agreed upon, specific risk factor groups will be targeted as the source of the trading stress. For example, a scenario involving the failure of a large, interconnected globally active financial institution could begin with a sharp increase in credit default swap spreads and a precipitous decline in asset prices across multiple markets, as investors become more risk averse and market liquidity evaporates. These broad market movements will be extrapolated to the granular level for all risk factors by examining transmission channels and the historical relationships between variables, though in some cases, the movement in particular risk factors may be amplified based on theoretical relationships, market observations, or the saliency to company trading books. If there is a disagreement between the risk factor movements in the historical event used in the scenario and the hypothetical event, the Board will reconcile the differences by assessing *a priori* expectations based on financial and economic theory and the importance of the risk factors to the trading positions of the covered companies.

5.3 Approach for Formulating the Market Shock Under the Adverse Scenario

(a) The market shock component included in the adverse scenario will feature risk factor movements that are generally less significant than the market shock component of the severely adverse scenario. However, the adverse market shock may also feature risk factor shocks that are substantively different from those included in the severely adverse scenario, in order to provide useful information to supervisors. As in the case of the macroeconomic scenario, the market shock component in the adverse scenario can be developed in a number of different ways.

(b) The adverse scenario could be differentiated from the severely adverse scenario by the absolute size of the shock, the scenario design process (*e.g.,* historical events versus hypothetical events), or some other criteria. The Board expects that as the market shock component of the adverse scenario may differ qualitatively from the market shock component of the severely adverse scenario, the results of adverse scenarios may be useful in identifying a particularly vulnerable area in a trading company's positions.

(c) There are several possibilities for the adverse scenario and the Board may use a different approach each year to better explore the vulnerabilities of companies with significant trading activity. One approach is to use a scenario based on some combination of historical events. This approach is similar to the one used for the market shock in 2012, where the market shock component was largely based on the second half of 2008, but also included a number of risk factor shocks that reflected the significant widening of spreads for European sovereigns and financials in late 2011. This approach will provide some consistency each year and provide an internally consistent scenario with minimal implementation burden. Having a relatively consistent adverse scenario may be useful as it potentially serves as a benchmark against the results of the severely adverse scenario and can be compared to past stress tests.

(d) Another approach is to have an adverse scenario that is identical to the severely adverse scenario, except that the shocks are smaller in magnitude (*e.g.,* 100 basis points for adverse versus 200 basis points for severely adverse). This ''scaling approach'' generally fits well with an intuitive interpretation of ''adverse'' and ''severely adverse.'' Moreover, since the nature of the moves will be identical between the two classes of scenarios, there will be at least directional consistency in the risk factor inputs between scenarios. While under this approach the adverse scenario will be superficially identical to the severely adverse, the logic underlying the severely adverse scenario may not be applicable. For example, if the severely adverse scenario was based on a historical scenario, the same could not be said of the adverse scenario. It is also possible, although unlikely, that a scaled adverse scenario actually will result in greater losses, for some companies, than a severely adverse scenario with similar moves of greater magnitude. For example, if some companies are hedging against tail outcomes, then the more extreme trading book dollar losses may not correspond to the most extreme market moves. The market shock component of the adverse scenario in 2013 was largely based on the scaling approach in which a majority of risk factor shocks were smaller in magnitude than the severely adverse scenario, but it also featured long-term interest rate shocks that were not part of the severely adverse market shock.

(e) Alternatively, the market shock component of an adverse scenario could differ substantially from the severely adverse scenario with respect to the sizes and nature of the shocks. Under this approach, the market shock component could be constructed using some combination of historical and hypothetical events, similar to the severely adverse scenario. As a result, the market shock component of the adverse scenario could be viewed as an alternative to the severely adverse scenario and, therefore, it is possible that the adverse scenario could have larger losses for some companies than the severely adverse scenario.

(f) Finally, the design of the adverse scenario for annual stress tests could be

informed by the companies' own trading scenarios used for their BHC-designed scenarios in CCAR and in their mid-cycle company-run stress tests.[20]

6. Consistency Between the Macroeconomic Scenarios and the Market Shock

(a) As discussed earlier, the market shock comprises a set of movements in a very large number of risk factors that are realized instantaneously. Among the risk factors specified in the market shock are several variables also specified in the macroeconomic scenarios, such as short- and long-maturity interest rates on Treasury and corporate debt, the level and volatility of U.S. stock prices, and exchange rates.

(b) The market shock component is an add-on to the macroeconomic scenarios that is applied to a subset of companies, with no assumed effect on other aspects of the stress tests such as balances, revenues, or other losses. As a result, the market shock component may not be always directionally consistent with the macroeconomic scenario. Because the market shock is designed, in part, to mimic the effects of a sudden market dislocation, while the macroeconomic scenarios are designed to provide a description of the evolution of the real economy over two or more years, assumed economic conditions can move in significantly different ways. In effect, the market shock can simulate a market panic, during which financial asset prices move rapidly in unexpected directions, and the macroeconomic assumptions can simulate the severe recession that follows. Indeed, the pattern of a financial crisis, characterized by a short period of wild swings in asset prices followed by a prolonged period of moribund activity, and a subsequent severe recession is familiar and plausible.

(c) As discussed in section 4.2.4, the Board may feature a particularly salient risk in the macroeconomic assumptions for the severely adverse scenario, such as a fall in an elevated asset price. In such instances, the Board may also seek to reflect the same risk in one of the market shocks. For example, if the macroeconomic scenario were to feature a substantial decline in house prices, it may seem plausible for the market shock to also feature a significant decline in market values of any securities that are closely tied to the housing sector or residential mortgages.

(d) In addition, as discussed in section 4.3, the Board may specify the macroeconomic assumptions in the adverse scenario in such a way as to explore risks qualitatively different from those in the severely adverse scenario. Depending on the nature and type of such risks, the Board may also seek to reflect these risks in one of the market shocks as appropriate.

7. Timeline for Scenario Publication

(a) The Board will provide a description of the macroeconomic scenarios by no later than February 15. During the period immediately preceding the publication of the scenarios, the Board will collect and consider information from academics, professional forecasters, international organizations, domestic and foreign supervisors, and other private-sector analysts that regularly conduct stress tests based on U.S. and global economic and financial scenarios, including analysts at the covered companies. In addition, the Board will consult with the FDIC and the OCC on the salient risks to be considered in the scenarios. The Board expects to conduct this process in October and November of each year and to update the scenarios, based on incoming macroeconomic data releases and other information, through the end of January.

(b) The Board expects to provide a broad overview of the market shock component along with the macroeconomic scenarios. The Board will publish the market shock templates by no later than March 1 of each year, and intends to publish the market shock earlier in the stress test and capital plan cycles to allow companies more time to conduct their stress tests.

TABLE 1—CLASSIFICATION OF U.S. RECESSIONS

Peak	Trough	Severity	Duration (quarters)	Decline in real GDP	Change in the unemployment rate during the recession	Total change in the unemployment rate (incl. after the recession)
1957Q3	1958Q2	Severe	4 (Medium)	−3.6	3.2	3.2
1960Q2	1961Q1	Moderate	4 (Medium)	−1.0	1.6	1.8
1969Q4	1970Q4	Moderate	5 (Medium)	−0.2	2.2	2.4
1973Q4	1975Q1	Severe	6 (Long)	−3.1	3.4	4.1
1980Q1	1980Q3	Moderate	3 (Short)	−2.2	1.4	1.4
1981Q3	1982Q4	Severe	6 (Long)	−2.8	3.3	3.3
1990Q3	1991Q1	Mild	3 (Short)	−1.3	0.9	1.9
2001Q1	2001Q4	Mild	4 (Medium)	0.2	1.3	2.0
2007Q4	2009Q2	Severe	7 (Long)	−4.3	4.5	5.1
Average		Severe	6	−3.5	3.7	3.9
Average		Moderate	4	−1.1	1.8	1.8
Average		Mild	3	−0.6	1.1	1.9

Source: Bureau of Economic Analysis, National Income and Product Accounts, Comprehensive Revision on July 31, 2013.

TABLE 2—HOUSE PRICES IN HOUSING RECESSIONS

Peak	Trough	Severity	Duration (quarters)	%–change in NHPI	%–change in HPI–DPI	HPI–DPI trough level (2000:Q1 = 100)
1980Q2	1985Q2	Moderate	20 (long)	26.6	−15.9	102.1
1989Q4	1997Q1	Moderate	29 (long)	10.5	−17.0	94.9
2005Q4	2012Q1	Severe	25 (long)	−29.6	−41.3	86.9
Average			24.7	2.5	−24.7	94.6

Source: CoreLogic, BEA.

Note: The date-ranges of housing recessions listed in Table 2 are based on the timing of house-price retrenchments.

[20] 12 CFR 252.55.

By order of the Board of Governors of the Federal Reserve System February 22, 2019.

Ann Misback,

Secretary of the Board.

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FEDERAL RESERVE SYSTEM

12 CFR Part 252

[Regulation YY; Docket No. R–1649]

RIN 7100–AF 38

Stress Testing Policy Statement

AGENCY: Board of Governors of the Federal Reserve System (Board).

ACTION: Final rule.

SUMMARY: The Board is adopting a final policy statement on the approach to supervisory stress testing conducted under the Board's stress testing rules and the Board's capital plan rule.

DATES: Effective April 1, 2019.

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SUPPLEMENTARY INFORMATION:

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I. Background

Supervisory stress testing is a tool that allows the Board to assess whether the largest and most complex financial firms are sufficiently capitalized to absorb losses in stressful economic conditions while continuing to meet obligations to creditors and other counterparties and to lend to households and businesses.

The Board's approach to supervisory stress testing has evolved since the Supervisory Capital Assessment Program (SCAP) in 2009, which was the first evaluation of capital levels of bank holding companies (BHCs) on a forward-looking basis under stress. The lessons from SCAP encouraged the creation, pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act),[1] of the Dodd-Frank Act Stress Test (DFAST), a forward-looking, quantitative evaluation of the impact of stressful economic and financial market conditions on firms' capital. Supervisory stress test models are used to produce estimates of post-stress capital ratios for covered companies,[2] pursuant to the Dodd-Frank Act and the Board's stress test rules.[3]

The supervisory models are also used in the Comprehensive Capital Analysis and Review (CCAR), a related supervisory program, pursuant to the Board's capital plan rule.[4] CCAR focuses on forward-looking capital planning and the use of stress testing to assess firms' capital adequacy.[5] By assessing the capital adequacy of a firm under severe projected economic and financial stress, the supervisory stress test complements minimum regulatory capital ratios, which reflect the firm's current condition.

II. Description of Stress Testing Policy Statement

On December 15, 2017, the Board invited comment on a proposal to adopt a stress testing policy statement (Policy Statement).[6] The proposed Policy Statement would have described the Board's approach to the development, implementation, use, and validation of the Federal Reserve's supervisory stress test models, and would have complemented the Board's policy statement on scenario design.[7] The proposal would have included seven principles that have guided decisions regarding supervisory stress test modeling in the past and that would continue to guide the development of the modeling framework. In addition, the proposed Policy Statement would have established procedures and policies designed to adhere to at least one of the foundational principles of supervisory stress testing. These policies and procedures would have included modeling-specific policies and associated assumptions, such as the policy of credit supply maintenance. Finally, the proposed Policy Statement would have addressed principles and policies of supervisory model validation, which is integral to the credibility of the supervisory stress test. By establishing these principles, policies, and procedures, the proposed Policy Statement would have increased transparency around the Federal Reserve's approach to supervisory modeling.

III. Summary of Comments Received and Revisions to the Stress Testing Policy Statement

The Board received twelve comments in response to the proposal. Commenters included public interest groups, academics, individual banking organizations, and trade and industry groups. Commenters generally supported the elements of the proposed Policy Statement, and provided alternative views on certain principles and policies described.

A. Principles of Supervisory Stress Testing

1. Independence

The proposed Policy Statement would have emphasized the use of independent supervisory models for assessing covered companies' capital adequacy. Supervisory models developed internally and independently

[1] 77 FR 62377 (October 12, 2012) (Stress Test rules). *See* 12 CFR part 252, subparts E and F.

[2] Covered companies are BHCs with average total consolidated assets of $50 billion or more, U.S. intermediate holding companies of foreign banking organizations, and any nonbank financial company supervised by the Board. On July 6, 2018, the Board issued a public statement regarding the impact of the Economic Growth, Regulatory Relief, and Consumer Protection Act (EGRRCPA) (Pub. L. 115–174, 132 Stat. 1296 (2018)). The Board stated, consistent with the EGRRCPA, that it will not take action to require BHCs with total consolidated assets greater than or equal to $50 billion but less than $100 billion to comply with the Board's capital plan rule (12 CFR 225.8) or the Board's supervisory stress test and company-run stress test rules (12 CFR 252, subparts E and F). *https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20180706b1.pdf.*

[3] Public Law 111–203, 124 Stat. 1376 (2010); 12 CFR part 252, subpart E.

[4] 12 CFR 225.8.

[5] *Id.* CCAR also includes a qualitative assessment of capital planning practices at the largest and most complex firms, which is not the subject of this proposed Policy Statement.

[6] 82 FR 59528 (December 15, 2017).

[7] *See* 12 CFR 252, Appendix A.