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Blackline: Federal Reserve's Policy Statement on the Scenario Design Framework for Stress Testing – Final (Nov. 7, 2013) vs. Proposed (Nov. 15, 2012)

PART 252—ENHANCED PRUDENTIAL STANDARDS * * * * *

Appendix A – Policy Statement on the Scenario Design Framework for Stress Testing

1. Background

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 (~~stress test rules~~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 ~~Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act or Act),~~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 $50 billion or more and each 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 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]

The stress test rules provide that the Board will notify covered companies by no later than November 15 of each year of the scenarios it will use to conduct its annual supervisory stress tests and provide, also by no later than November 15, covered companies and other ~~banking~~

[1] 12 U.S.C. 5365(i)(1); ~~77 FR 62378 (October 12, 2012), to be codified at~~ 12 CFR part 252, subpart F.

[2] 12 U.S.C. 5365(i)(2); ~~77 FR 62378, 62396 (October 12, 2012), to be codified at~~ 12 CFR part 252, subparts G and H.

[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 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 252.132(a), (d), (m), and (n); 12 CFR 252.142(a), (d), (o), and (p); 12 CFR 252.152(a), (e), (o), and (p).

~~organizations~~financial companies subject to the final rules the set of scenarios they must use to conduct their annual company-run stress tests.[4] 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.[5]For example, the Board expects to require large banking organizations with significant trading activities to include a ~~global~~ trading and counterparty component (market shock ~~component (~~, 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 December 1 of each year.[6] 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).

In addition, section 225.8 of the Board's Regulation Y (capital plan rule) requires all U.S. bank holding companies with total consolidated assets of $50 billion or more to submit annual capital plans, including stress test results, to the Board 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.[7]

Stress tests required under the stress test rules and under the capital plan rule require the Board and ~~banking organizations~~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 ~~on~~ 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 ~~institutions~~companies eroded rapidly in the face of changes in the current and expected economic and financial conditions, and this loss in market confidence imperiled ~~institutions'~~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.

The stress tests required under the stress test rules and capital plan rule are a valuable supervisory tool that provides a forward-looking assessment of large financial ~~institutions'~~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 ~~firms'~~companies' trading and counterparty positions—and not on other types of risk, such as liquidity risk ~~or operational risk unrelated to the macroeconomic environment~~. Pressures stemming from these sources are considered in separate supervisory exercises. No single supervisory tool, including the stress tests, can

[4] 12 CFR 252.144(b), 12 CFR 252.154(b). The annual company-run stress tests use data as of September 30 of each calendar year.

[5] 12 CFR 252.144(b), 154(b).

[6] *Id.*

[7] *See* Capital plans, 76 FR 74631 (Dec. 1, 2011) (codified at 12 CFR 225.8).

provide an assessment of ~~an institution's~~a company's ability to withstand every potential source of risk.

Selecting appropriate scenarios is an especially significant consideration~~,~~ for stress tests required under the capital plan rule, which ties the review of a bank holding 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

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 F, G, and H, as well as the Board's capital plan rule (12 CFR 225.8).[8]

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.

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 ~~macro~~macroeconomic scenarios and the market shock component of the stress test scenarios applicable to ~~firms~~companies with significant trading activity. Section 4 describes the Board's approach for developing the ~~macro~~macroeconomic scenarios, and section 5 describes the approach for the market shocks. Section 6 describes the relationship between the ~~macro~~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

[8] The Board may determine that modifications to the approach are appropriate, for instance, to address a broader range of risks, such as, operational risk.

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.[9] 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.

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.

Early in each stress testing cycle, the Board plans to publish the ~~macro~~macroeconomic scenarios along with a brief narrative summary that provides a description of the economic situation underlying the scenario and explains how ~~these~~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 to for their company-run stress tests. In cases where scenarios are ~~changed~~designed to reflect particular risks and vulnerabilities, the narrative will also explain the underlying motivation for these ~~changes.~~features of the scenario. The Board also plans to release a broad description of the market shock components.

3.1 ~~Macro~~Macroeconomic scenarios

The ~~macro~~macroeconomic scenarios will consist of the future paths of a set of economic and financial variables.[10]The economic and financial variables included in the scenarios will likely comprise those included in the ~~2012 Comprehensive~~"2014 Supervisory Scenarios for Annual Stress Tests Required under the Dodd-Frank Act Stress Testing Rules and the Capital

[9] 12 CFR 252.134(b), 12 CFR 252.144(b), 12 CFR 252.154(b).

[10] 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.

~~Analysis and Review (CCAR).~~[11] Plan Rule" (2013 supervisory scenarios). The domestic U.S. variables provided for in the ~~2012 CCAR~~2013 supervisory scenarios included:

- ~~Five~~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;

- 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

- ~~Four~~Six measures of interest rates: the rate on the three-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.

The international variables provided for in the ~~2012 CCAR~~2014 supervisory scenarios included, for the euro area, the United Kingdom, developing Asia, and Japan:

- Percent change in real GDP;

- Percent change in the Consumer Price Index or local equivalent; and

- The U.S./foreign currency exchange rate.[12]

The economic variables included in the scenarios influence key items affecting ~~banking organizations'~~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 ~~banks'~~companies' net income and, thus, capital positions.

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 ~~banks'~~companies' pre-provision net revenue or credit losses ceases to do so, resulting in

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~~[11] *See* Appendix III of the 2012 CCAR Instructions and Guidance (*www.federalreserve.gov/newsevents/press/bcreg/bcreg20111122d1.pdf*)~~

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

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.

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.[13] The Board expects the companies will 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 ~~within-country~~ variables and their aggregate, macro-economic counterparts. The Board will provide the ~~macro~~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

The market shock component of the ~~stress test~~adverse and severely adverse scenarios will only apply to companies with significant trading activity and their subsidiaries.[14] The component consists of large moves in market prices and rates that would be expected to generate losses. Market shocks differ from ~~macro~~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 December 1 of each year. Finally, as described in section 4, the market ~~shocks include~~shock includes a much larger set of risk factors than the set of economic and financial variables included in ~~macro~~macroeconomic scenarios. Broadly, these risk factors include shocks to financial market variables that affect asset prices, such as a credit spread or the

[13] ~~The Board expects banking organizations will ensure that the paths of such additional variables are consistent with the scenarios the Board provided.~~

[14] Currently, companies with significant trading activity include the six bank holding companies that are subject to the market risk rule and have total consolidated assets greater than $500 billion, as reported on their FR Y-9C. 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 ~~banking organization's~~financial company's trading activities evolve.

yield on a bond, and, in some cases, the value of the position itself (*e.g.*, the market value of private equity positions).

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 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. ~~For example, risk factor shocks for interest rates would capture changes in the level, correlation, and volatility, by country and maturity. Risk factors will be specified separately by currency or geographic region, and include key sub-categories relevant to each asset class. For example, the risk factor shocks applied to credit spreads will differ by risk category and the risk factor shocks for spot oil prices will vary by grade and type of crude oil.~~

Examples of risk factors include, but are not limited to:

- 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;
- Cross-currency FX rates of all major and many minor currencies, along term structures of implied volatilities;
- 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 ~~banks~~companies may have exposure;
- Term structures of implied volatilities that are key inputs to the pricing of interest rate derivatives;
- Term structures of futures prices for energy products including crude oil (differentiated by country of origin), natural gas, and power;
- Term structures of futures prices for metals and agricultural commodities;
- "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
- Shocks to the values of private equity positions.

4. Approach for formulating the macroeconomic assumptions for scenarios

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.

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.

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

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.

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.*

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 ~~banking organization~~financial company and that overall are more severe than those associated with the adverse scenario. The ~~banking organization~~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 ~~banking organization~~financial company under the adverse scenario and the severely adverse scenario.

4.2.1 General approach: the recession approach

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.

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.[15] 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.[16]

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

[16] 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 (….continued)

After specifying the unemployment rate, the Board will specify the paths of other macroeconomic variables based on the paths of unemployment, income, and activity. However, many of these other variables have taken wildly divergent paths in previous recessions (*e.g.*, house prices), 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.*, the relative fragility of the housing finance system).

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 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

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.[17]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.

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

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(continued….)

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.

[17] 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.

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.

Under this method, if the initial unemployment rate were 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 were 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.

The Board believes that the typical increase in the unemployment rate in the severely adverse scenario ~~would~~will be about 4 percentage points. However, the Board ~~would~~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 believed that cyclical systemic risks were high (as it would be after a sustained long expansion), and to the lower end of the range if cyclical systemic risks were 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.[18] Conversely, it ~~would~~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. However, even at the lower end of the range of unemployment-rate increases, the scenario ~~would~~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.

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.

[18] 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.

In setting the increase in the unemployment rate, the Board ~~would~~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—~~would~~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.

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 ~~banks~~companies are properly capitalized to withstand severe economic and financial conditions, not to serve as an explicit countercyclical offset to the financial system.

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~~will 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

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) and evaluation of these and other factors.

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. For example, declining house prices, which are an important source of stress to a ~~bank's~~company's balance sheet, are not a steadfast feature of recessions, and the historical relationship of house prices with the unemployment rate or any other variable that deteriorates in recessions is not strong. Simply adopting their typical path in a severe recession would likely underestimate risks stemming from the housing sector. In this case, some modified approach—in which perhaps recessions in which house prices declined were judgmentally weighted more heavily—~~would~~will be appropriate.

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 like that used for projecting house prices is followed where judgment and economic models together inform the path of international variables.

4.2.4 Adding salient risks to the severely adverse scenario

The severely adverse scenario will be developed to reflect specific risks to the economic and financial outlook that are especially salient but ~~would~~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.

There are some important instances when it ~~would~~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.

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.

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.

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.[19]

4.3 Approach for formulating macroeconomic assumptions in the adverse scenario

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.[20] 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 current condition of the economy and the financial services industry.

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 ~~bank~~company loss positions and incomes are nonlinear, there could be potential value from this approach.

Another method to specify the adverse scenario is to capture risks in the adverse scenario that the Board believes should be understood better 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.

Under the Board's stress test rules, covered companies are required to develop their own scenarios for mid-cycle company-run stress tests.[21] A particular combination of risks included in these scenarios may inform the design of the adverse scenario for annual stress tests. In

[19] 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.

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

[21] 12 CFR 252.145.

this same vein, another possibility would be to use modified versions of the circumstances that ~~firms~~companies describe in their living wills as being able to cause their failures.

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.

~~Finally,~~ The Board may consider specifying the adverse scenario using the probabilistic approach described in section ~~3~~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 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.

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.

With the exception of cases in which the probabilistic approach is used to generate the adverse scenario, the adverse scenario ~~would~~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 ~~covered~~ companies ~~and large banks~~ that are under some stress.

5. Approach for formulating ~~scenario~~the market ~~price and rate shocks~~ shock component

This section discusses the approach the Board proposes to adopt for developing the ~~stress scenario~~market shock component of the adverse and severely adverse scenarios appropriate for companies with significant trading activities. The design and specification of the ~~stress components for trading differ~~market shock component differs from that of the ~~macro~~macroeconomic scenarios because profits and losses from ~~the~~ 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 ~~trading stress tests. The trading stress~~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 ~~macro~~macroeconomic

scenarios supply a projected path of economic variables that affect traditional banking activities over the entire planning period.

The development of the ~~scenarios in the final rules~~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 ~~scenario for trading variables~~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 ~~shocks~~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 ~~shocks~~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

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 ~~macro~~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.

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.

To enhance the consistency and comparability in market shocks for ~~CCAR~~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 potential difficulty in creating shocks that are coherent and internally consistent, particularly as the framework for developing market shocks deviates from historical events.

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 ~~macro~~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.

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 ~~both SCAP and CCAR~~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 ~~would~~will unfold and any associated market responses.

5.2.2 Approaches to ~~trading stress~~market shock design

As an additional component ***~~design~~***

~~For each scenario~~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 ~~CCAR~~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.

~~For~~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 ~~tweaks~~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 ~~scenario~~market shock.

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, ~~this~~the tailored approach ~~would~~will 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' portfolio to design a common set of shocks that are universally stressful for all covered companies. As a result, this approach ~~would~~will 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 ~~trading stress scenario~~market shock

Consistent with the approach ~~describe~~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 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~~, particularly as the bank holding company's portfolio changes over time and a different combination of events would better capture material risk in bank holding company's portfolio in the given year.~~.

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 ~~dominant~~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.

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 ~~stress scenario for the CCAR 2012~~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 ~~in~~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 ~~the~~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.

~~For the time being, the development of market shocks in the severely adverse scenario will begin with the risk factor movements in the particular historical period, such as the second half of 2008. The Board will then develop hypothetical but plausible scenarios, based on financial stability reports, supervisory information, and internal and external assessments of market risks and potential flash points.~~ 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 ~~swaps~~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 ~~would~~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 ~~consistency with the macro scenario,~~ *a priori* expectation 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 ~~scenario for trading variables~~market shock under the adverse scenario

The market shock component included in the adverse scenario will ~~be designed to be~~feature risk factor movements that are generally less ~~severe~~significant than the market shock component of the severely adverse scenario ~~while providing~~. 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 ~~macro~~macroeconomic scenario, the market shock component in the adverse scenario can be developed in a number of different ways.

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. ~~As discussed above, due to differences in companies' trading positions, it can be difficult to know *ex ante* whether the adverse scenario or severely adverse scenario would result in greater losses for a given company.~~

~~However, the Board anticipates that the adverse scenario would generally result in lower aggregate trading losses than the severely adverse scenario, particularly given the importance of credit-related losses.~~ 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.

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 for the market shock in 2012 ~~CCAR~~, 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 ~~would~~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. 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 ~~would~~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 remains possible, although unlikely, that a scaled adverse scenario actually ~~would~~will result in greater losses, for some companies, than the 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 where 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.

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 ~~more~~ 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. ~~However, this approach would provide valuable information to supervisors, by focusing on different facets of potential vulnerabilities.~~

Finally, the design of the adverse scenario for annual stress tests could be informed by the companies' own ~~market shock components used for~~trading scenarios used for their BHC-designed scenarios in CCAR and in their mid-cycle company-run stress tests.[22]

6. Consistency between the ~~economic and financial variable~~macroeconomic scenarios and the market ~~price and rate~~ shock ~~scenarios~~

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 ~~macro~~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.

~~Generally,~~ The market shock ~~scenario will~~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 ~~macro scenario, though the magnitude of moves in broad risk factors, such as interest rates, foreign exchange rates, and prices, may differ~~macroeconomic scenario. Because the market shock is designed, in part, to mimic the effects of a sudden market dislocation, while the ~~macro~~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. ~~However, such differences should not be viewed as inconsistency in scenarios as long as the macro scenario and the market shock component of the scenario are directionally consistent.~~ 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.

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 ~~would~~may also seek to reflect the same risk in one of the market shocks. For example, if the ~~macro~~macroeconomic scenario were to feature a substantial decline in house ~~price~~prices, it ~~would~~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.

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

[22] 12 CFR 252.145.

The Board will provide a description of the ~~macro~~macroeconomic scenarios by no later than November 15 of each year. 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 July and August of each year and to update the scenarios based on incoming macroeconomic data releases and other information through the end of October.

~~Currently, the Board does not plan to publish the details of the market shock component. The Board~~ 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 December 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.~~1~~6	3.2	3.2
1960Q2	1961Q1	~~Typical~~Moderate	4 (Medium)	-1.0~~.5~~	1.6	1.8
1969Q4	1970Q4	~~Typical~~Moderate	5 (Medium)	-0.~~1~~2	2.2	2.4
1973Q4	1975Q1	Severe	6 (Long)	-3.1	3.4	4.1
1980Q1	1980Q3	~~Typical~~Moderate	3 (Short)	-2.2	1.4	1.4
1981Q3	1982Q4	Severe	6 (Long)	-2.~~6~~8	3.3	3.3

1990Q3	1991Q1	Mild	3 (Short)	-1.3	0.9	1.9
2001Q1	2001Q4	Mild	4 (Medium)	0.~~7~~2	1.3	2.0
2007Q4	2009Q2	Severe	7 (Long)	~~[~~ -4.~~7]~~3	4.5	5.1
Average	--	Severe	6	-3.~~8~~5	3.7	3.9
Average	--	Moderate	4	-1.~~0~~1	1.8	1.8
Average	--	Mild	3	-0.~~3~~6	1.1	1.9

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