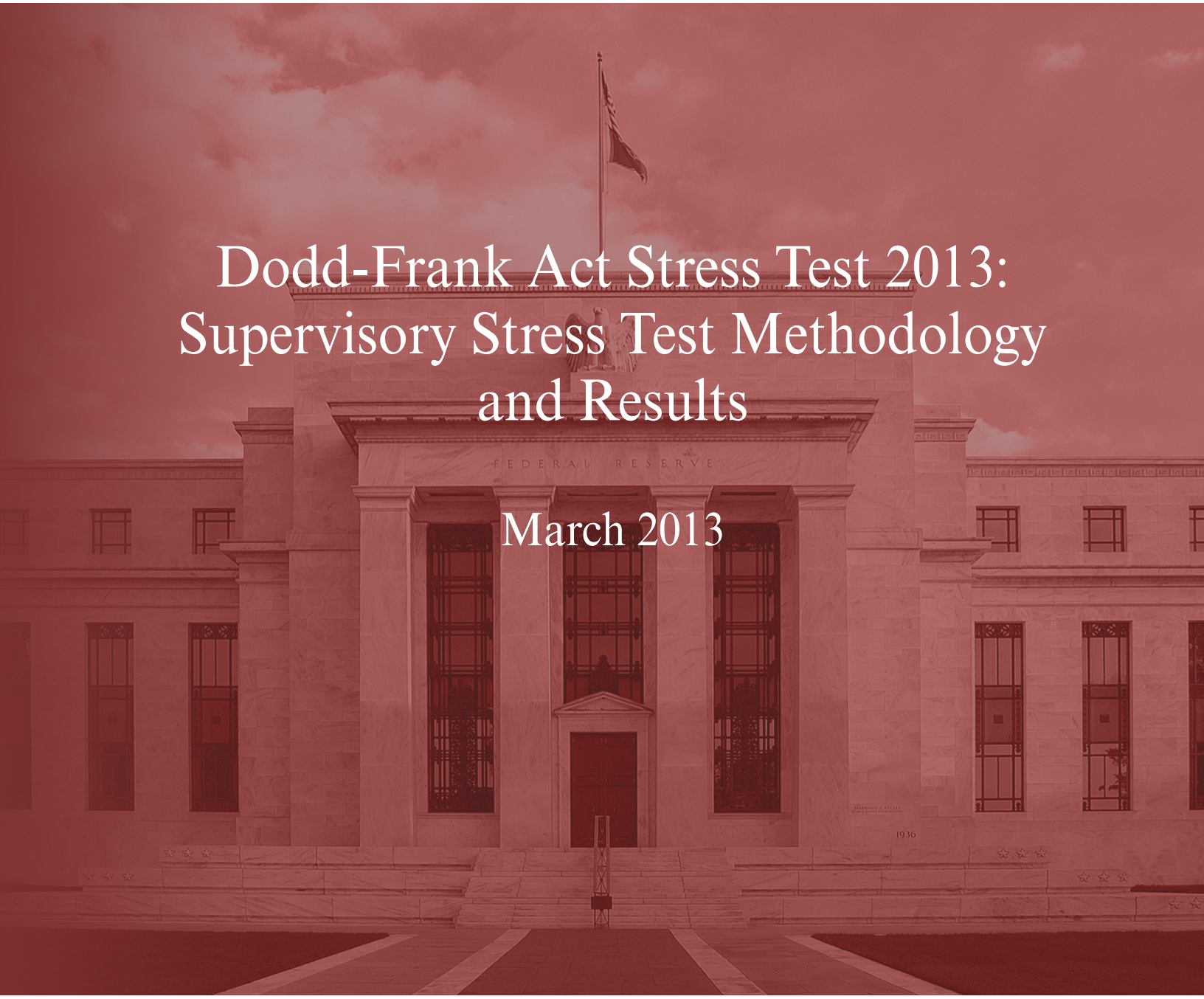

Dodd-Frank Act Stress Test 2013: Supervisory Stress Test Methodology and Results

March 2013

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

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Executive Summary

The Federal Reserve expects large, complex bank holding companies (BHCs) to hold sufficient capital to continue lending to support real economic activity, even under adverse economic conditions. Stress testing is one tool that helps bank supervisors measure whether a BHC has enough capital to support its operations throughout periods of stress. The Federal Reserve previously highlighted the use of stress tests as a means of assessing capital sufficiency under stress during the 2009 Supervisory Capital Assessment Program (SCAP) and the 2011 and 2012 Comprehensive Capital Analysis and Review (CCAR) exercises.[1]

In the wake of the financial crisis, the Congress enacted the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act),[2] which requires the Federal Reserve to conduct an annual stress test of large BHCs and all nonbank financial companies designated by the Financial Stability Oversight Council (FSOC) for Federal Reserve supervision to evaluate whether they have sufficient capital to absorb losses resulting from adverse economic conditions. The Dodd-Frank Act also requires BHCs and other financial companies supervised by the Federal Reserve to conduct their own stress tests. The Federal Reserve adopted rules implementing these requirements in October 2012. Under the rules, 18 BHCs are part of the Dodd-Frank Act supervisory stress tests this year (DFAST 2013).[3]

This report describes the hypothetical, severely adverse scenario designed by the Federal Reserve; provides an overview of the analytical framework and methods used to generate the projections of revenues, expenses, losses, and the resulting post-stress capital ratios for each of the 18 BHCs; and discloses the results of the 2013 Dodd-Frank Act supervisory stress test. The Federal Reserve believes that disclosure of stress test results provides valuable information to market participants and the public, enhances transparency, and promotes market discipline. The projections provide a unique perspective on the robustness of the capital positions of these firms because they incorporate detailed information about the risk characteristics and business activities of each BHC and because they are estimated using a consistent approach across all the BHCs, providing comparable results across firms. The Federal Reserve also believes that providing information about the methodology used to produce the results will offer useful context to interpret those results.

The projections were calculated using input data provided by the 18 BHCs and a set of models developed or selected by the Federal Reserve,[4] based on a hypothetical, severely adverse macroeconomic and financial market scenario developed by the Federal Reserve. The severely adverse scenario features a deep recession in the United States, Europe, and Japan, significant declines in asset prices and increases in risk premia, and a marked economic slowdown in developing Asia. The Federal Reserve also applied a separate global market shock to six BHCs with large trading, private equity, and counter-

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[1] The CCAR is an annual exercise by the Federal Reserve to ensure that institutions have robust, forward-looking capital planning processes that account for their unique risks and sufficient capital to continue operations throughout times of economic and financial stress. As part of the CCAR, the Federal Reserve evaluates institutions' capital adequacy, internal capital adequacy assessment processes, and their plans to make capital distributions, such as dividend payments or stock repurchases, and other actions that affect capital.

[2] See 12 USC 5365(i)(1).

[3] The 18 BHCs that participated in the 2013 Dodd-Frank Act stress test are Ally Financial Inc.; American Express Company; Bank of America Corporation; The Bank of New York Mellon Corporation; BB&T Corporation; Capital One Financial Corporation; Citigroup, Inc.; Fifth Third Bancorp; The Goldman Sachs Group, Inc.; JPMorgan Chase & Co.; KeyCorp; Morgan Stanley; The PNC Financial Services Group, Inc.; Regions Financial Corporation; State Street Corporation; SunTrust Banks, Inc.; U.S. Bancorp; and Wells Fargo & Company. Although MetLife, Inc. had participated in the 2009 SCAP and previous CCAR exercises, it did not participate in the 2013 Dodd-Frank Act stress test because it was in the process of deregistering as a bank holding company when the exercise began and has now completed that process.

[4] A list of providers of the proprietary models and data used by the Federal Reserve in connection with DFAST 2013 is available in appendix B.

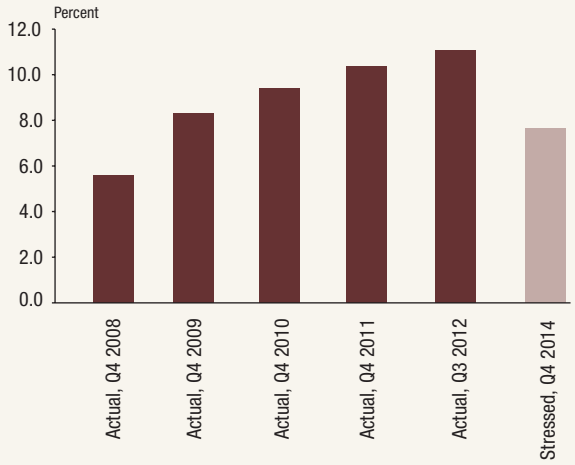
party exposures from derivatives and financing transactions.[5]

The models project revenues, expenses, losses, and the resulting post-stress capital ratios for each BHC over a nine-quarter planning horizon extending through the end of 2014. **The Federal Reserve's projections should not be interpreted as expected or likely outcomes for these firms, but rather as possible results under hypothetical, severely adverse conditions.** These projections incorporate a number of conservative modeling assumptions, but do not make explicit behavioral assumptions about the possible actions of a BHC's creditors and counterparties in the scenario, except through the severely adverse scenario's characterizations of financial asset prices and economic activity.

To make the projections of post-stress capital ratios more comparable across BHCs, the projections reflect assumptions about capital distributions prescribed in the Dodd-Frank Act stress test rule. Over the nine-quarter planning horizon, each BHC maintains its common stock dividend payments at the same level as the previous year, but repurchases and issuance of common stock is assumed to be zero except for common stock issuance associated with expensed employee compensation.[6]

The results of these projections suggest that, in the aggregate, the 18 BHCs would experience substantial losses under the severely adverse scenario. Over the nine quarters of the planning horizon, losses at the 18 BHCs under the severely adverse scenario are projected to be $462 billion, including losses across loan portfolios, losses on securities held in the BHCs' investment portfolios, trading and counterparty credit losses from the global market shock, and other losses. Projected net revenue before provisions for loan and lease losses (pre-provision net revenue, or PPNR) at the 18 BHCs over the nine quarters of the planning horizon under the severely adverse scenario is $268 billion, which is net of losses related to operational-risk events and mortgage repurchases, as well as expenses related to disposition of owned real estate of $101 billion. Taken together, the high projected losses and low projected PPNR at the 18 BHCs results in projected net income before taxes of -$194 billion.

Figure 1. Historical and stressed tier 1 common ratio



Note: Aggregate capital ratios for 18 participating bank holding companies (BHCs). Post-stress estimates are supervisory estimates under the severely adverse scenario.

The tier 1 common ratio in the fourth quarter of 2008 includes the tier 1 common capital and risk-weighted assets for Ally Financial Inc. as of the first quarter of 2009, as Ally was not a Y-9C filer in the fourth quarter of 2008.

These net income projections result in substantial projected declines in regulatory capital ratios for nearly all of the BHCs under the severely adverse scenario. As illustrated in figure 1, the aggregate tier 1 common ratio would fall from an actual 11.1 percent in the third quarter of 2012 to a post-stress level of 7.7 percent in the fourth quarter of 2014, including assumed capital actions for the 18 BHCs.

[5] The six BHCs subject to the global market shock are Bank of America Corporation; Citigroup, Inc.; The Goldman Sachs Group, Inc.; JPMorgan Chase & Co.; Morgan Stanley; and Wells Fargo & Company. See 12 CFR 252.134(b); see also 12 CFR 252.144(b)(2)(i).

[6] See 12 CFR 252.146(b)(2).

Dodd-Frank Act Stress Testing

The Dodd-Frank Act requires the Federal Reserve to conduct an annual supervisory stress test of BHCs with $50 billion or more in total consolidated assets and nonbank financial companies designated by the FSOC for Federal Reserve supervision (collectively, "covered companies"). The Dodd-Frank Act also requires covered companies to conduct their own stress tests (company-run stress tests) semiannually.[7] Together, the Dodd-Frank Act supervisory stress tests and the company-run stress tests are intended to provide BHC management and boards of directors, the public, and supervisors with forward-looking information to help identify downside risks and the potential effect of adverse conditions on capital adequacy of these large banking organizations. The Federal Reserve adopted rules implementing these requirements in October 2012.

Under the implementation phase-in provisions of the Federal Reserve's Dodd-Frank stress test rules, only the 18 BHCs that previously participated in the SCAP are required to conduct company-run stress tests during the current stress test cycle that began in October 2012.[8] Similarly, the Federal Reserve has conducted supervisory stress tests on only these 18 BHCs for DFAST 2013. Both sets of stress tests are also integrated into the Federal Reserve's assessment of capital adequacy under CCAR. Important differences between the Dodd-Frank Act supervisory stress tests and the CCAR post-stress capital analysis are outlined in box 1.

To provide context to the Federal Reserve's Dodd-Frank Act supervisory stress test results, the following sections contain an overview of the Federal Reserve's Dodd-Frank Act stress test rules, focusing on the process for the supervisory stress tests and the requirements for company-run stress tests for covered companies.

Supervisory Stress Tests

Under the Dodd-Frank Act stress test rules, the Federal Reserve conducts annual supervisory stress tests to evaluate whether a covered company has the capital, on a total consolidated basis, necessary to absorb losses and continue its operations by maintaining ready access to funding, meeting its obligations to creditors and other counterparties, and continuing to serve as a credit intermediary under adverse economic and financial conditions. As part of this supervisory stress test for each covered company, the Federal Reserve projects revenue, expenses, losses, and resulting post-stress capital levels, regulatory capital ratios, and the tier 1 common ratio under three scenarios (baseline, adverse, and severely adverse), using data as of September 30.

The Federal Reserve generally uses a common set of scenarios for all covered companies in the supervisory stress test. However, the Federal Reserve may use additional scenarios or components of scenarios for all or a subset of the covered companies to capture salient sources of risk, and these scenarios may use data from dates other than the end of the third quarter. In DFAST 2013, large, complex BHCs with significant trading activities are subject to a global

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[7] The Dodd-Frank Act requires all financial companies that have more than $10 billion in total consolidated assets and are regulated by a Federal financial regulatory agency to conduct capital stress tests at least annually. The Federal Reserve finalized those requirements for BHCs with between $10 billion and $50 billion in assets and state member banks and savings and loan holding companies with over $10 billion in assets on October 9, 2012. See 12 CFR part 225, subpart H.

[8] Six state member bank subsidiaries of BHCs that participated in SCAP are also required to conduct stress tests this year under the Federal Reserve's "Annual Company-Run Stress Test Requirements for Banking Organizations with Total Consolidated Assets over $10 Billion Other Than Covered Companies" (12 CFR part 252, subpart H). Those banks are Bank of New York Mellon; Fifth Third Bank; Goldman Sachs Bank USA; Regions Bank; State Street Bank and Trust Company; and SunTrust Bank.

Box 1. Dodd-Frank Act Supervisory Stress Tests and the CCAR Post-Stress Capital Analysis

While closely related, there are some important differences between the Dodd-Frank Act supervisory stress tests and the CCAR post-stress capital analysis. The projections of pre-tax net income from the Dodd-Frank Act supervisory stress tests are direct inputs to the CCAR post-stress capital analysis. The primary difference between the Dodd-Frank Act supervisory stress tests and the CCAR post-stress capital analysis is the capital action assumptions that are combined with these projections to estimate post-stress capital levels and ratios.

Capital Action Assumptions for the Dodd-Frank Act Supervisory Stress Tests

To project post-stress capital ratios for the Dodd-Frank Act supervisory stress tests, the Federal Reserve uses a standardized set of capital action assumptions that are specified in the Dodd-Frank Act stress test rules.[1] Common stock dividend payments are assumed to continue at the same level as the previous year. Scheduled dividend, interest, or principal payments on any other capital instrument eligible for inclusion in the numerator of a regulatory capital ratio are assumed to be paid. The assumptions are that repurchases of common stock are zero. The capital action assumptions do not include issuance of new common stock, preferred stock, or other instrument that would be included in regulatory capital, except for common stock issuance associated with expensed employee compensation.[2]

Capital Actions for CCAR

In contrast, for the CCAR post-stress capital analysis, the Federal Reserve uses BHCs' planned capital actions, and assesses whether a BHC would be capable of meeting supervisory expectations for minimum capital ratios even if stressful conditions emerged and the BHC did not reduce planned capital distributions.

As a result, post-stress capital ratios projected for the Dodd-Frank Act supervisory stress tests should be expected to differ significantly from those for the CCAR post-stress capital analysis. For example, if a BHC includes a dividend cut in its planned capital actions, its post-stress capital ratios projected for the CCAR capital analysis could be higher than those projected for the Dodd-Frank Act supervisory stress tests. Conversely, if a BHC includes significant dividend increases, repurchases, or other actions that deplete capital in its planned capital actions, the post-stress capital ratios for the CCAR could be lower.

[1] In order to make the results of its supervisory stress test comparable to the company-run stress tests, the Federal Reserve uses the same capital action assumptions as those required for the company-run stress tests, outlined in the Dodd-Frank stress test rules. See 12 CFR 252.146(b)(2).

[2] The Dodd-Frank Act stress test rule for covered companies assumes that future capital actions that are subject to future adjustment, market conditions, or other regulatory approvals will not be reflected in a company's projected regulatory capital for the purpose of the company-run stress tests because of the uncertainty of these actions. Accordingly, under the rule, a company must assume in the second through ninth quarters of the planning horizon no redemption or repurchase of any capital instrument eligible for inclusion in the numerator of a regulatory capital ratio. See 12 CFR 252.146(b)(2)(iii). The Federal Reserve clarified in subsequent guidance that, for similar reasons, a company should assume that it will not issue any new common stock, preferred stock, or other instrument that would be included in regulatory capital in the second through ninth quarters of the planning horizon, except for common stock issuances associated with expensed employee compensation.

market shock that reflects general market stress and heightened uncertainty, which affects trading positions and elevates counterparty credit risk.

The Dodd-Frank Act codified the Federal Reserve's practice of disclosing a summary of the results of its supervisory stress test. In this paper, the Federal Reserve is disclosing the results of the 2013 Dodd-Frank Act supervisory stress tests conducted under the severely adverse scenario, including firm-specific results based on the projections made by the Federal Reserve of each BHC's revenues, expenses, losses, and post-stress capital ratios over the planning horizon.[9]

[9] For DFAST 2013, similar to the public disclosure following CCAR in early 2012, the Federal Reserve is only disclosing results under the severely adverse scenario for each company. As the Federal Reserve implements the Dodd-Frank Act stress testing requirements, it intends to evaluate whether public disclosure of the results of the adverse and baseline would assist in informing the company and market participants about the condition of the banking organization.

Company-Run Stress Tests

As required by the Dodd-Frank Act, the Federal Reserve's stress test rules require covered companies to conduct two company-run stress tests each year. In conducting the "annual" test, a covered company uses data as of September 30 and reports its stress test results to the Federal Reserve by January 5. In addition, a covered company must conduct a "mid-cycle" test and report the results to the Federal Reserve by July 5. The Dodd-Frank Act stress test rules align the timing of annual company-run stress tests with the annual supervisory stress tests of covered companies.

In their annual stress tests, covered companies subject to the Dodd-Frank Act stress test rules must use the scenarios provided by the Federal Reserve. Each year, the Federal Reserve will provide at least three scenarios—baseline, adverse, and severely adverse—that are identical to the scenarios the Federal Reserve uses in the annual supervisory stress tests of covered companies.[10] By providing a common set of scenarios to all firms, the results of company-run and supervisory stress tests for all 18 BHCs will be based on comparable underlying assumptions. To further enhance comparability, the supervisory stress tests and company-run stress tests conducted under the Dodd-Frank stress test rules use the same set of capital action assumptions. According to these assumptions, over the nine-quarter planning horizon, each BHC maintains its common stock dividend payments at the same level as the previous year; scheduled dividend, interest or principal payments on any other capital instrument eligible for inclusion in the numerator of a regulatory capital ratio are assumed to be paid; but repurchases of such capital instruments and issuance of stock is assumed to be zero.

Finally, each covered company must publicly disclose a summary of the results of its company-run stress test under the severely adverse scenario provided by the Federal Reserve.

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[10] Under the stress test rules, the Federal Reserve will provide the scenarios to companies no later than November 15 each year. See 12 CFR 252.144(b)(1); 12 CFR 252.154(b)(1).

Severely Adverse Scenario

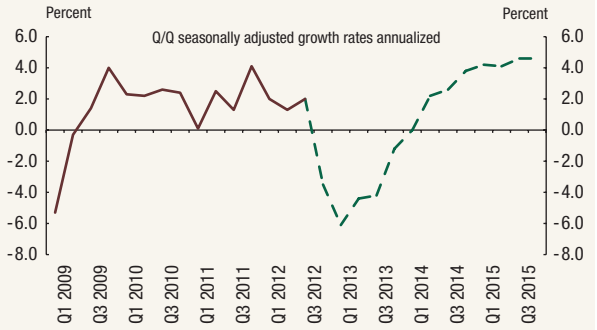
On November 15, 2012, the Federal Reserve released three supervisory stress test scenarios: baseline, adverse, and severely adverse.[11] This section describes the severely adverse scenario that is the basis for the projections contained in this report.

It is important to note that the severely adverse scenario is not a forecast, but rather a hypothetical scenario designed to assess the strength of banking organizations and their resilience to an adverse economic environment. The severely adverse scenario represents an outcome in which the U.S. economy experiences a significant recession and financial market stress, and economic activity in other major economies also contracts significantly.

The severely adverse scenario includes trajectories for 26 variables. These include 14 variables that capture economic activity, asset prices, and interest rates in the U.S. economy and financial markets and three variables (real GDP growth, inflation, and the U.S./foreign currency exchange rate) in each of four countries or country blocks (the euro area, the United Kingdom, developing Asia, and Japan).

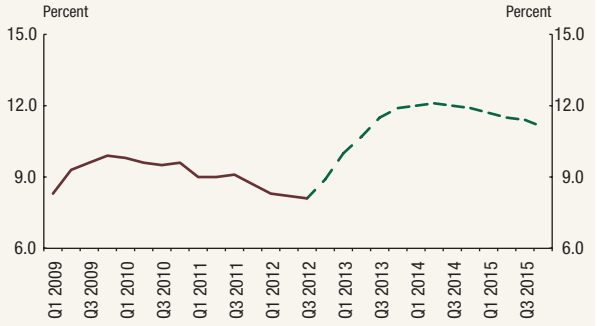
Figures 2 through 6 illustrate the hypothetical trajectories for some of the key variables describing U.S. economic activity and asset prices as well as global economic growth under the severely adverse scenario. As the figures show, real GDP declines nearly 5 percent between the third quarter of 2012 and the end of 2013; over this period, the unemployment rate rises to 12 percent, and the four-quarter percent change in the consumer price index (CPI) decelerates to 1 percent. Equity prices fall more than 50 percent over the course of the recession and, correspondingly, the equity market volatility index jumps from about 21 in the third quarter of 2012 to more than 70 at the start of the scenario. House prices decline more than 20 percent by the end of 2014, and commercial real estate prices fall by a similar amount. The international component of the severely adverse scenario

Figure 2. Real GDP growth rate in the severely adverse scenario, Q1 2009–Q4 2015



Source: Bureau of Economic Analysis and Federal Reserve assumptions in the severely adverse scenario.

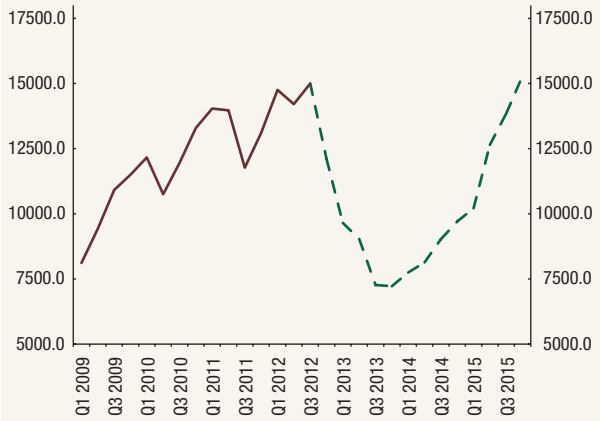
Figure 3. Unemployment rate in the severely adverse scenario, Q1 2009–Q4 2015



Source: Bureau of Labor Statistics and Federal Reserve assumptions in the severely adverse scenario.

[11] See Board of Governors of the Federal Reserve System (2012), "2013 Supervisory Scenarios for Annual Stress Tests Required under the Dodd-Frank Act Stress Testing Rules and the Capital Plan Rule" (Washington: Board of Governors, November 15), www.federalreserve.gov/newsevents/press/bcreg/20121115a.htm for additional information and for the details of the supervisory baseline and supervisory adverse scenarios.

Figure 4. Dow Jones Stock Market Index, end of quarter in the severely adverse scenario, Q1 2009–Q4 2015



Source: Dow Jones and Federal Reserve assumptions in the severely adverse scenario.

features recessions in the euro area, the United Kingdom, and Japan and below-trend growth in developing Asia.

The severely adverse scenario is similar in severity to the 2012 CCAR supervisory stress scenario.[12] The main qualitative difference between this year's severely adverse scenario and last year's supervisory stress scenario is a much more substantial slowdown in developing Asia.

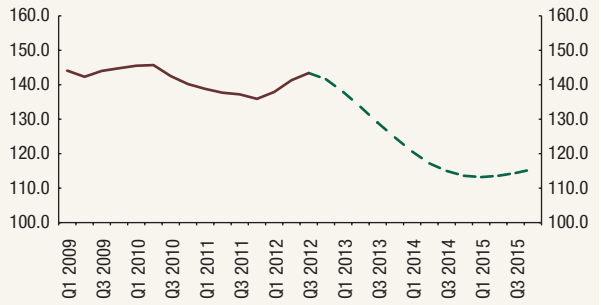
On November 19, 2012, the Federal Reserve provided six BHCs with large trading, private equity, and counterparty exposures from derivatives and financing transactions with a global market shock to include in their severely adverse scenario.[13] The global market shock is a set of one-time, hypothetical shocks to a broad range of risk factors. Generally, these shocks involve large and sudden changes in asset prices, rates, and spreads, reflecting general market stress and heightened uncertainty.[14]

[12] The Federal Reserve CCAR 2012 macroeconomic scenarios were included in the "Federal Reserve System Comprehensive Capital Analysis and Review: Summary Instructions and Guidance," published November 22, 2011; see www.federalreserve.gov/newsevents/press/bcreg/20111122a.htm.

[13] See 12 CFR 252.144(b)(2)(i).

[14] See Board of Governors of the Federal Reserve System (2013), "Federal Reserve Board Announces Release Dates for Results from Supervisory Stress Tests and from the Comprehensive Capital Analysis and Review (CCAR)," press release (Washington: Board of Governors, January 28), www.federalreserve.gov/newsevents/press/bcreg/20130128a.htm.

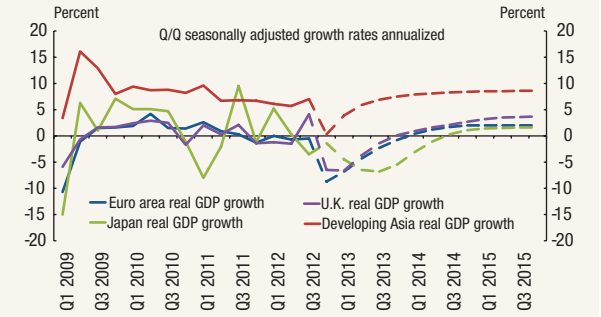
Figure 5. National House Price Index in the severely adverse scenario, Q1 2009–Q4 2015



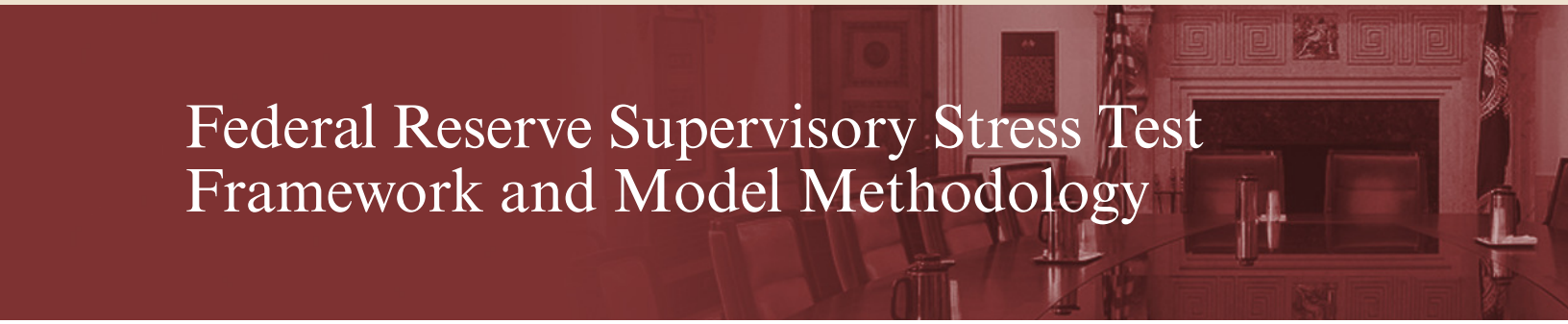
Source: CoreLogic (seasonally adjusted by Federal Reserve) and Federal Reserve assumptions in the severely adverse scenario.

The global market shock is generally based on the price and rate movements that occurred in the second half of 2008, a period that featured severe market stress and the failure of a major, globally active financial institution. In addition, this global market shock incorporates hypothetical euro-zone-based shocks, including sharp increases in certain government yields, widening corporate spreads and sovereign credit default swap (CDS) spreads, and large depreciation of the euro against major currencies. Although these shocks are felt across the euro zone in the scenario, the severity of the shocks varies across countries within the euro zone, with more pronounced effects experienced by periphery countries.

Figure 6. Real GDP growth in four country/country block areas in the severely adverse scenario, Q1 2009–Q4 2015



Source: Federal Reserve calculations based on official sector sources and Federal Reserve assumptions in the severely adverse scenario. Q3 2012 data based on Federal Reserve calculations using available data as of November 13, 2012.



Federal Reserve Supervisory Stress Test Framework and Model Methodology

Analytical Framework

The effect of the severely adverse scenario on the regulatory capital ratios of the 18 BHCs is estimated by projecting the net income for each BHC over a nine-quarter planning horizon ending in the fourth quarter of 2014. Projected net income is combined with the capital action assumptions prescribed in the Federal Reserve's Dodd-Frank Act stress test rules to project changes in equity capital, which in turn determine changes in regulatory capital measures. This approach is consistent with U.S. generally accepted accounting principles (GAAP) and regulatory capital rules, and provides a perspective on the capital of the BHCs and on the primary determinants of the projected changes in capital over time: earnings and capital actions.

Projected net income for the 18 BHCs is generated from individual projections of revenue, expenses, and various types of losses and provisions that flow into pre-tax net income, including loan losses and changes in the allowance for loan and lease losses (ALLL); losses on investment securities; losses generated by operational-risk events; expenses related to the disposition of foreclosed properties; expenses related to demands by mortgage investors to repurchase loans deemed to have breached representations and warranties or related to litigation ("mortgage repurchase/put-back losses"); and, for BHCs with large trading operations, losses on trading and counterparty positions resulting from the global market shock.

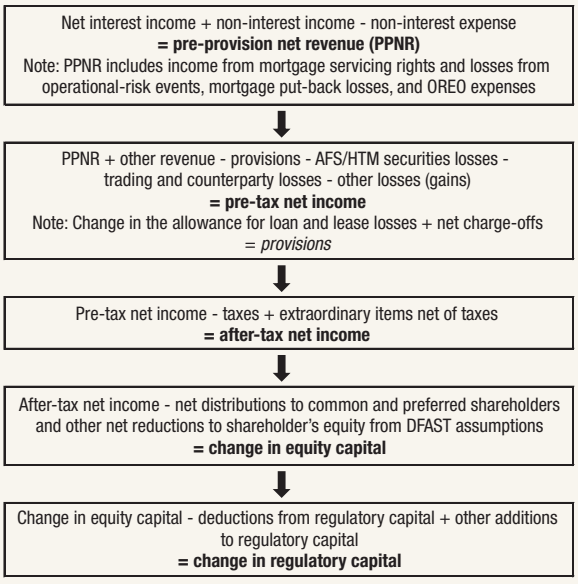
Projected pre-tax net income, in turn, flows into a calculation of regulatory capital measures that accounts for taxes and deductions that limit the recognition of certain intangible assets and impose other restrictions, as specified in current U.S. regulatory capital guidelines.[15] Figure 7 illustrates the framework used to calculate changes in net income and regulatory capital.

[15] See generally 12 CFR part 225, appendix A.

The framework begins with a projection of PPNR, which equals projected net interest income plus non-interest income minus non-interest expense. Consistent with U.S. GAAP, the PPNR projection incorporates projected losses generated by operational-risk events such as fraud, computer system or other operating disruptions, or employee lawsuits; mortgage repurchase losses; and expenses related to the disposition of foreclosed properties (other real estate owned (OREO) expenses).

The PPNR projection flows into the projection of pre-tax net income, which equals the PPNR projection, plus other revenue, minus provisions to the ALLL, losses on securities, and losses on trading and counterparty positions from the global market shock (for the six BHCs with large trading operations), and losses on loans held for sale and measured under the fair-value option. Net income projections also incorporate extraordinary items, goodwill impairment,

Figure 7. Projecting net income and regulatory capital



income attributable to minority interests, and other losses under the severely adverse scenario.

Provisions for loan and lease losses equal projected loan losses for the quarter plus the amount needed for the ALLL to be at an appropriate level at the end of the quarter, which is a function of projected future loan losses. The amount of provisions over and above loan losses may be negative, representing a drawdown of the ALLL (an ALLL release, increasing net income), or positive, representing a need to build the ALLL (an additional provision, decreasing net income) during the quarter.

Projected loan losses for the quarter are estimated separately for different categories of loans based on the type of obligor (e.g., consumer or commercial and industrial), collateral (e.g., residential real estate, commercial real estate), loan structure (e.g., revolving credit lines), and accounting treatment (accrual or fair value). These categories generally follow the major regulatory report classifications, though some loss projections are made for more granular loan categories than those included on BHC regulatory reports.[16]

These loss projections follow U.S. GAAP and regulatory guidelines and thus incorporate any differences in the way these guidelines recognize income and losses based upon where assets are held on the BHCs' balance sheets. As a result, losses projected for similar or identical assets held in different portfolios can sometimes differ. For example, losses on loans held in accrual portfolios equal credit losses due to failure to pay obligations (cash flow losses resulting in net charge-offs). For similar loans that are held for sale, projected losses represent the change in the market value on the underlying asset under the severely adverse scenario.

Losses on securities held in the available-for-sale (AFS) or held-to-maturity (HTM) accounts are projected other-than-temporary impairments (OTTI) for these positions. Consistent with U.S. GAAP, OTTI projections incorporate other-than-temporary differences between book value and fair value due to credit impairment, but not differences reflecting changes in liquidity or market conditions.

As with the accrual loan portfolio, loss projections for different categories of securities are made based on obligor, collateral or underlying cash flow, and security structure. These categories include various types of securitized obligations (e.g., commercial and residential mortgage-backed securities), corporate bonds, municipal bonds, and sovereign bonds.

For the six BHCs with large trading operations, losses on trading, private equity positions, and counterparty exposures from derivatives and financing transactions are projected assuming an instantaneous re-pricing of positions under a global market shock. The global market shock presumes a set of severe, instantaneous changes in market rates, prices, and volatilities that are in effect layered over the losses from changes in financial market variables contained elsewhere in the severely adverse scenario. Losses related to the global market shock are assumed to occur in the first quarter of the planning horizon. These losses include mark-to-market losses on each of the six BHCs' trading and private equity positions, changes in credit valuation adjustments (CVA) for counterparty exposures, and incremental default-related losses on trading and counterparty exposures that may result from the global market shock. No subsequent recoveries on these positions are assumed, nor are there offsetting changes such as reductions in compensation or other expenses in reaction to the global market shock.

The Federal Reserve's forward-looking projections of income and losses may include the effects of planned mergers, acquisitions, or divestitures. The inclusion of the effects of such planned actions does not—and is not intended to—express a view on the merits of such proposals and is not an approval or non-objection to them.

After-tax net income (or loss) is calculated by applying a consistent tax rate to pre-tax net income (or loss) for all BHCs; the effect of changing this tax rate assumption on the post-stress tier 1 common ratio is discussed in box 2. Along with each BHC's assumed capital actions under the Federal Reserve's Dodd-Frank Act stress test rules, after-tax net income is the primary determinant of projected changes in equity capital, which in turn determines projected changes in the regulatory capital measures. Capital ratios are calculated using average total assets and risk-weighted assets that are based on projections made by the BHCs under the severely adverse scenario.

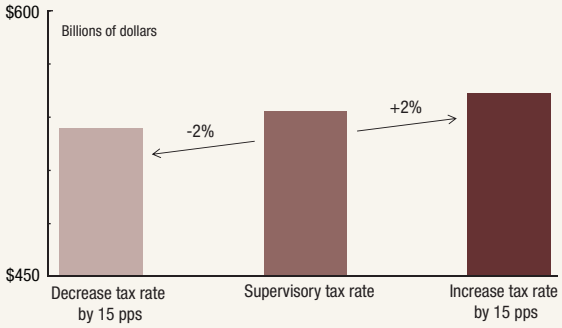
[16] See Consolidated Financial Statements for Bank Holding Companies (FR Y-9C).

Box 2. Tier 1 Common Results Not Materially Sensitive to Tax Rates

After-tax net income (or loss) is calculated by applying a consistent tax rate to pre-tax net income (or loss) for all BHCs. This assumed tax rate is also used to determine certain aspects of the allowable deferred tax asset (DTA) included in regulatory capital.

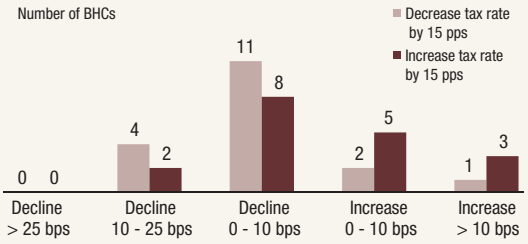
Changing the tax rate assumption has a limited effect on minimum projected capital levels. As shown in figure A, adjusting the assumed tax rate by 15 percentage points in either direction leads to only a small change in aggregate tier 1 common capital at the end of the planning horizon. In addition, the minimum post-stress tier 1 common ratio changed less than 10 basis points for most BHCs (figure B). The effect of changing the tax rate assumption is limited because nearly all BHCs participating in DFAST 2013 are in a cumulative net loss position over the planning horizon. Net losses are reduced by the tax rate, but these "tax benefits" are largely reversed due to restrictions on deferred tax assets under current regulatory capital rules.

Figure A. Ending aggregate tier 1 common levels using different tax rates



Source: Federal Reserve projections in the severely adverse scenario.
"Pps" is percentage points.

Figure B. Change in minimum tier 1 common ratio when tax rate is adjusted by 15 pps



Source: Federal Reserve projections in the severely adverse scenario.
"Bps" is basis points; "pps" is percentage points.

Modeling Design and Implementation

The Federal Reserve's projections of revenue, expenses, and various types of losses and provisions that flow into pre-tax net income are based on data provided by the 18 BHCs participating in DFAST 2013 and on models developed or selected by Federal Reserve staff and reviewed by an independent group of Federal Reserve economists and analysts and academics.[17] The models are intended to capture how the revenues, expenses, and losses of each BHC are affected by the macroeconomic and financial conditions described in the severely adverse scenario and by characteristics of the BHCs' loans and securities portfolios; trading, private equity, and counterparty exposures from derivatives and financing transactions; business activities; and other relevant factors.[18]

The FR Y-14 Report

The Federal Reserve collects extensive data on PPNR, loans, securities, trading and counterparty risk, and losses related to operational-risk events on the FR Y-14 report, which includes a set of schedules collected in monthly, quarterly, or annual frequencies (FR Y-14M, FR Y-14Q, and FR Y-14A schedules).[19] Each of the 18 BHCs submitted FR Y-14M and FR Y-14Q schedules (as of September 30, 2012) in October and November of 2012 and submitted FR Y-14A schedules on January 7, 2013. These data, along with data collected in other regulatory reports and other

[17] For more, see Board of Governors of the Federal Reserve System (2012), "Federal Reserve Announces the Formation of the Model Validation Council," press release (Washington: Board of Governors, April 20), www.federalreserve.gov/newsevents/press/bcreg/20120420a.htm.

[18] In some cases, the loss models estimated the effect of local-level macroeconomic data, which were projected based on their historical covariance with national variables included in the severely adverse scenario.

[19] The FR Y-14 schedules are available at www.federalreserve.gov/apps/reportforms/default.aspx.

proprietary third-party data, were used in the supervisory models of revenues, expenses, and losses.

Quarterly loan losses are projected using information collected on the FR Y-14 about the BHCs' loan portfolios, including borrower characteristics, collateral characteristics, characteristics of the loans or credit facilities, amounts outstanding and yet to be drawn down (for credit lines), payment history, and current payment status. Loan portfolio data are reported either at a monthly frequency (for domestic retail credit card and residential mortgages) or at a quarterly frequency (all other retail and wholesale portfolios). Data are collected on individual loans or credit facilities for wholesale loan, domestic retail credit card, and residential mortgage portfolios and are collected on segments of the loan portfolios for other domestic and international retail portfolios (for example, segments defined by loan-to-value (LTV) ratio, geographic location, and borrower credit score). BHC-projected balances reported on the FR Y-14 are also used to project loan losses, and where applicable, incremental loan balances were calculated based on these projected balances.

Over the past year, several changes have been made to the FR Y-14 report, which have allowed the Federal Reserve to estimate expected loan losses using more granular, loan-specific information. For example, in mid-2012, the Federal Reserve began collecting monthly loan-level data on credit card accounts and on first- and second-lien mortgages on the FR Y-14M. The FR Y-14M replaced a quarterly, segment-level data collection and allows the Federal Reserve to estimate expected losses on each loan in the BHC's portfolio, based on the individual characteristics of the loan.

Losses on securities held in the AFS and HTM portfolios are estimated using securities data collected quarterly at the individual security (CUSIP) level, including the amortized cost, market value, and any OTTI taken on the security to date.

BHCs were required to submit detailed loan and securities information for all material portfolios, where the portfolio is deemed to be "material" if it exceeds either 5 percent of tier 1 capital or $5 billion. The portfolio categories are defined in the FR Y-14M and Y-14Q instructions. For portfolios falling below these thresholds, the BHCs had the option to submit or not submit the detailed data.

Portfolios for which the Federal Reserve did not receive detailed data were assigned a loss rate equal to a high percentile of the loss rates projected for BHCs that did submit data for that category of loan or security. The Federal Reserve made considerable efforts to validate BHC-reported data, and requested multiple resubmissions as needed. However, in certain instances, BHC-reported data were still not sufficient or were deemed unreliable to produce supervisory estimates. In such instances, the BHC received a loss rate at or near the 90th percentile of the loss rates projected for the relevant loan type at the BHCs that did provide reliable data. In some instances where certain data elements were reported as missing values, these missing data were assigned conservative values (e.g., high LTV values or low credit scores) based on the remainder of the portfolio.[20] These assumptions are intended to reflect a conservative view of the risk characteristics of the portfolios, given insufficient information to make more risk-sensitive projections.

Losses related to the global market shock, including losses related to derivatives and other counterparty exposures, are projected using information on trading, financing, and derivatives positions, private equity holdings, and certain other assets subject to fair-value accounting held by BHCs with large trading operations. The FR Y-14 schedules collect BHC-estimated sensitivities of these positions to the set of risk factors specified by the Federal Reserve, including changes in a wide range of U.S. and global market rates and asset prices as well as volatilities of those rates and prices. The specific risk factors are those judged to be most relevant to the positions held by the BHCs. The schedules also collect information on the BHC's counterparty exposures revalued with respect to these risk factors, both for segments of counterparties and for individual large counterparties. These data, which are collected for positions in the trading and private equity portfolios held by the BHCs and counterparty exposures, are as of market close November 14, 2012.

Most components of PPNR are projected using data on historical revenues and operating and other non-credit-related expenses reported on the FR Y-9C

[20] The method of applying conservative assumptions to certain risk segments was used only in cases in which the data-related issues were isolated in such a way that the remainder of the portfolio could be readily modeled using the existing supervisory framework.

report, which contains consolidated income statement and balance sheet information for each BHC, including components of interest income, non-interest income, and non-interest expenses.[21] Separate data are collected on the FR Y-14 about mortgage loans that were sold or securitized and the BHCs' historical losses related to operational-risk events to project losses from mortgage repurchase and operational-risk events under the severely adverse scenario.

Finally, changes in regulatory capital ratios over the planning horizon are calculated using data collected on the BHCs' projections of risk-weighted assets and balance sheet composition.

Loss, Revenue, and Expense Models

The data collected from the BHCs, along with data collected in other regulatory reports; proprietary industry data; and the variables defining the severely adverse scenario, are inputs into a series of models used to project losses, revenues, and expenses for each BHC over the planning horizon. These models were either developed by Federal Reserve analysts and economists or are third-party models used by Federal Reserve staff. In some cases, the severely adverse scenario projections of certain types of losses made by the Federal Reserve use as an input sensitivities generated by the BHCs using their internal risk-measurement models.

In general, the models were developed using pooled historical data from many financial institutions, either supervisory data collected by the Federal Reserve or proprietary industry data. As a result, the estimated parameters reflect the typical or industry-average response to variation in the macroeconomic and financial market variables and portfolio-specific and instrument-specific characteristics.

This approach reflects not only the difficulty of estimating separate, statistically robust models for each of the 18 BHCs, but also the desire not to assume that historical BHC-specific results will prevail in the future when those results cannot be explained by consistently observable variables incorporated into a robust statistical model. Thus, BHC-specific factors are incorporated through the detailed portfolio and business activity data that are inputs to the models, but the estimated relationships between these variables, the macroeconomic and financial market factors defined in the severely adverse scenario, and revenue or losses are the same for all BHCs. This means that the severely adverse scenario projections made by the Federal Reserve will not necessarily match or mirror similar projections made by individual BHCs, which will incorporate diverse approaches to capturing the effect of portfolio characteristics and economic factors.

The Federal Reserve deviated from the industry-wide modeling approach only in a very limited number of cases where the historical data used to estimate the model were not sufficiently granular to reliably capture cross-firm differences in loss, expense, or revenue-generating characteristics. In these cases, BHC-specific indicator variables ("fixed effects") were included in the models.

The models developed internally by the Federal Reserve draw on economic research and analysis and industry practice in modeling the impact of borrower, instrument, and collateral characteristics and macroeconomic factors on revenue, expenses, and losses. The approaches build on work done by the Federal Reserve in the SCAP and the CCAR in 2011 and 2012. But in some cases, they represent significant refinement and advancement of that work, reflecting advances in modeling technique, richer and more detailed data over which to estimate the models, and longer histories of performance in both adverse and more benign economic settings. In a few cases, these efforts resulted in new models that were implemented in DFAST 2013. These new models and other models used are described in greater detail in appendix B. Overall, the Federal Reserve continues to move toward an overall modeling framework that is increasingly independent of BHC projections.

The models were reviewed by an independent model review team comprised of economists and analysts from across the Federal Reserve System, with a focus on the design and estimation of the models. Model reviewers were primarily Federal Reserve subject matter experts who were not involved in model development and who reported to a different oversight group than model developers. In addition, Federal Reserve analysts developed industry-wide loss and PPNR projections capturing the potential revenue and losses of the banking industry as a whole in a stressed macroeconomic environment, for use as reference points in assessing model outputs across the 18 BHCs.

[21] The FR Y-9C report is available at www.federalreserve.gov/apps/reportforms/default.aspx.

Federal Reserve Supervisory Stress Test Results

This section describes the Federal Reserve's severely adverse scenario projections of losses, revenue, expenses, and capital positions for the 18 BHCs participating in DFAST 2013. The projections presented in this section are based on the severely adverse scenario developed by the Federal Reserve.

The results include projections of post-stress capital ratios for each of the 18 BHCs over the nine-quarter planning horizon spanning the fourth quarter of 2012 to the end of 2014. These ratios include the ratio of the common equity component of tier 1 capital to risk-weighted assets (the tier 1 common ratio), the ratio of tier 1 capital to risk-weighted assets (the tier 1 capital ratio), the ratio of total regulatory capital to risk-weighted assets (the total risk-based capital ratio), and the ratio of tier 1 capital to average assets (the tier 1 leverage ratio).[22] The results also include projections of the components of net income before taxes, including revenues, provisions, and losses, as well as components of loan losses.

The Federal Reserve's projections assume the capital actions prescribed in the Dodd-Frank stress test rules. According to these assumptions, over the nine-quarter planning horizon, each BHC maintains its common stock dividend payments at the same level as the previous year; scheduled dividend, interest, or principal payments on any other capital instrument eligible for inclusion in the numerator of a regulatory capital ratio are assumed to be paid; but repurchases of such capital instruments and issuance of stock is assumed to be zero. As a result, the Federal Reserve's projections do not incorporate any changes in capital actions that BHCs might undertake in reaction to stressed financial conditions. The assumed capital actions also do not incorporate any increases in distributions that BHCs might be planning to make over the nine-quarter planning horizon.

These results are presented both in the aggregate for the 18 BHCs and for individual BHCs. The aggregate results provide a sense of the stringency of the severely adverse scenario projections and the sensitivity of these BHCs as a group to the stressed economic and financial market conditions contained in that scenario. The range of results across individual BHCs reflects differences in business focus, asset composition, revenue and expense sources, as well as differences in portfolio risk characteristics. In addition, the post-stress capital ratio projections reflect differences in capital actions across the BHCs prescribed in the Dodd-Frank stress test final rules. The comprehensive results for individual BHCs are reported in appendix C.

Stressed Regulatory Capital Ratios

The projections suggest significant declines in regulatory capital ratios for nearly all the BHCs under the severely adverse scenario. Overall, the total amount of tier 1 common capital held by the 18 BHCs is estimated to fall by more than $240 billion, or about 31 percent, from the third quarter of 2012 to the fourth quarter of 2014 under the severely adverse scenario and with prescribed capital actions over this period. As shown in table 1, in the aggregate each of the four capital ratios decline over the course of the planning horizon, with year-end 2014 levels ranging from 2.0 percentage points to 3.9 percentage points lower than at the start of the planning horizon. Table 2 presents these ratios for each of the 18 BHCs.

[22] Tier 1 capital, as defined in the Federal Reserve's Risk-Based Capital Adequacy Guidelines, is composed of common and non-common equity elements, some of which are subject to limits on their inclusion in tier 1 capital. See 12 CFR part 225, appendix A, section II.A.1. These elements include common stockholders' equity, qualifying perpetual preferred stock, certain minority interests, and trust preferred securities. Certain intangible assets, including goodwill and deferred tax assets, are deducted from tier 1 capital or are included subject to limits. See 12 CFR part 225, appendix A, section II.B. Total regulatory capital consists of tier 1 capital plus certain subordinated debt instruments and the allowance for loan and lease losses, subject to certain limits.

Table 1.A. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan:
18 participating bank holding companies
Federal Reserve estimates in the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	11.1	7.7	7.4
Tier 1 capital ratio (%)	12.9	9.2	9.0
Total risk-based capital ratio (%)	15.7	11.8	11.7
Tier 1 leverage ratio (%)	8.0	6.0	6.0

Note: The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Source: Federal Reserve estimates in the severely adverse scenario.

Table 1.B. Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario: 18 participating bank holding companies

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	267.8	2.4
Other revenue[3]	1.2	
less		
Provisions	317.2	
Realized losses/gains on securities (AFS/HTM)	12.9	
Trading and counterparty losses[4]	97.0	
Other losses/gains[5]	36.0	
equals		
Net income before taxes	-194.1	-1.7

1 Average assets is the nine-quarter average of total assets.

2 Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.

3 Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

4 Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.

5 Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Source: Federal Reserve estimates in the severely adverse scenario.

Table 1.C. Projected loan losses by type of loans for Q4 2012–Q4 2014 under the severely adverse scenario: 18 participating bank holding companies

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	316.6	7.5
First-lien mortgages, domestic	60.1	6.6
Junior liens and HELOCs, domestic	37.2	9.6
Commercial and industrial	60.5	6.8
Commercial real estate, domestic	32.9	8.0
Credit cards	87.1	16.7
Other consumer	26.8	6.1
Other loans	11.9	1.8

1 Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Source: Federal Reserve estimates in the severely adverse scenario.

Table 2. Dodd-Frank Act stress testing 2013
Projected regulatory capital ratios and tier 1 common ratios through Q4 2014 under the severely adverse scenario
Federal Reserve estimates in the severely adverse scenario

Bank holding company	Tier 1 common ratio (%)			Tier 1 capital ratio (%)			Total risk-based capital ratio (%)			Tier 1 leverage ratio (%)		
	Actual Q3 2012	Projected Q4 2014	Projected mimimum	Actual Q3 2012	Projected Q4 2014	Projected mimimum	Actual Q3 2012	Projected Q4 2014	Projected mimimum	Actual Q3 2012	Projected Q4 2014	Projected mimimum
Ally Financial Inc.[1]	7.3	1.5	1.5	13.6	11.0	11.0	14.6	12.6	12.6	11.3	9.4	9.4
American Express Company	12.7	11.3	11.1	12.7	11.3	11.1	14.7	13.4	13.2	10.7	9.5	8.9
Bank of America Corporation	11.4	6.9	6.8	13.6	8.5	8.5	17.2	11.6	11.6	7.8	5.4	5.4
The Bank of New York Mellon Corporation	13.3	15.9	13.2	15.3	17.1	14.8	16.9	17.9	16.0	5.6	5.9	5.1
BB&T Corporation[2]	9.5	9.4	9.4	10.9	11.2	11.2	14.0	13.4	13.4	7.9	8.3	7.9
Capital One Financial Corporation	10.7	7.4	7.4	12.7	7.8	7.8	15.0	10.1	10.1	9.9	5.7	5.7
Citigroup Inc.	12.7	8.9	8.3	13.9	9.8	9.3	17.1	12.9	12.5	7.4	5.6	5.3
Fifth Third Bancorp	9.7	8.6	8.6	10.8	9.3	9.3	14.8	12.4	12.4	10.1	8.8	8.8
The Goldman Sachs Group, Inc.	13.1	8.2	5.8	15.0	10.8	8.4	18.1	13.8	11.3	7.2	6.2	3.9
JPMorgan Chase & Co.	10.4	6.8	6.3	11.9	7.9	7.4	14.7	10.3	9.9	7.1	4.7	4.7
KeyCorp	11.3	8.0	8.0	12.1	8.6	8.6	15.2	11.2	11.2	11.4	8.1	8.1
Morgan Stanley	13.9	6.4	5.7	16.9	8.2	7.5	17.0	9.4	8.7	7.2	5.1	4.5
The PNC Financial Services Group, Inc.	9.5	8.7	8.7	11.7	10.8	10.8	14.5	13.4	13.4	10.4	8.7	8.7
Regions Financial Corporation	10.5	7.5	7.5	11.5	8.5	8.5	15.0	11.7	11.7	9.1	6.8	6.8
State Street Corporation	17.8	13.0	12.8	19.8	14.5	14.4	21.3	16.6	16.2	7.6	7.1	6.6
SunTrust Banks, Inc.	9.8	7.3	7.3	10.6	8.2	8.2	13.0	10.4	10.4	8.5	6.5	6.5
U.S. Bancorp	9.0	8.3	8.3	10.9	10.3	10.3	13.3	12.3	12.3	9.2	8.7	8.7
Wells Fargo & Company	9.9	7.0	7.0	11.5	8.7	8.7	14.5	11.4	11.2	9.4	7.0	7.0
18 participating bank holding companies	**11.1**	**7.7**	**7.4**	**12.9**	**9.2**	**9.0**	**15.7**	**11.8**	**11.7**	**8.0**	**6.0**	**6.0**

Note: The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of capital ratios. The minimum stressed ratios (%) are the lowest quarterly ratios from Q4 2012 to Q4 2014 under the severely adverse scenario.

[1] The post-stress capital ratios presented in the table are based on an assumption that Ally remains subject to contingent liabilities associated with Residential Capital, LLC ("ResCap"). On May 14, 2012, ResCap and certain of its subsidiaries filed for relief under Chapter 11 of the Bankruptcy Code in the United States Bankruptcy Court for the Southern District of New York. As of March 6, 2013, the outcome of the ResCap bankruptcy remained pending.

[2] The actual and post-stress capital ratios presented in the table are based on information that BB&T provided to the Federal Reserve in regulatory reports on or before February 6, 2013. The information that BB&T provided to the Federal Reserve includes information regarding BB&T's risk-weighted assets. On March 4, 2013, BB&T disclosed publicly that it had reevaluated its process related to calculating risk-weighted assets and determined that certain adjustments, primarily related to the presentation of certain unfunded lending commitments, were required in order to conform to regulatory guidance. These adjustments resulted in an increase to risk-weighted assets and a decrease in BB&T's risk-based capital ratios and are not reflected in this table.

Source: Federal Reserve estimates in the severely adverse scenario. Stressed ratios with Dodd-Frank Act capital action assumptions through Q4 2014.

Table 3 shows estimates of the minimum tier 1 common ratio during the severely adverse scenario for each of the 18 BHCs with all prescribed capital actions through the fourth quarter of 2014.

The changes in post-stress regulatory capital ratios vary considerably across BHCs (see figures 8 and 9 and table 2). Overall, post-stress regulatory capital ratios decline from the beginning to the end of the planning horizon for all but two of the BHCs. The post-stress capital ratios incorporate projected levels of total average assets and risk-weighted assets over the planning horizon, based on projections provided by the BHCs in their FR Y-14 submissions. Because the Federal Reserve's projections of losses and PPNR also reflect the projected growth or reduction of risk-weighted assets and total assets for each BHC, projected changes in risk-weighted assets and total assets do not always have a straightforward effect on projected stressed capital ratios.

Projected Losses

The Federal Reserve's severely adverse scenario projections suggest that the 18 BHCs as a group would experience significant losses under the severely adverse scenario. In this scenario, losses are projected to be $462 billion for the 18 BHCs in the aggregate over the nine quarters of the planning horizon. These

Table 3. Dodd-Frank Act stress testing 2013
Minimum stressed tier 1 common ratios, Q4 2012 to Q4 2014
Federal Reserve estimates in the severely adverse scenario

Bank holding company	Stressed ratios with DFA stress testing capital action assumptions
Ally Financial Inc.[1]	1.5
American Express Company	11.1
Bank of America Corporation	6.8
The Bank of New York Mellon Corporation	13.2
BB&T Corporation[2]	9.4
Capital One Financial Corporation	7.4
Citigroup Inc.	8.3
Fifth Third Bancorp	8.6
The Goldman Sachs Group, Inc.	5.8
JPMorgan Chase & Co.	6.3
KeyCorp	8.0
Morgan Stanley	5.7
The PNC Financial Services Group, Inc.	8.7
Regions Financial Corporation	7.5
State Street Corporation	12.8
SunTrust Banks, Inc.	7.3
U.S. Bancorp	8.3
Wells Fargo & Co.	7.0

Note: The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected.

1 The post-stress capital ratios presented in the table are based on an assumption that Ally remains subject to contingent liabilities associated with Residential Capital, LLC ("ResCap"). On May 14, 2012, ResCap and certain of its subsidiaries filed for relief under Chapter 11 of the Bankruptcy Code in the United States Bankruptcy Court for the Southern District of New York. As of March 6, 2013, the outcome of the ResCap bankruptcy remained pending.

2 The actual and post-stress capital ratios presented in the table are based on information that BB&T provided to the Federal Reserve in regulatory reports on or before February 6, 2013. The information that BB&T provided to the Federal Reserve includes information regarding BB&T's risk-weighted assets. On March 4, 2013, BB&T disclosed publicly that it had reevaluated its process related to calculating risk-weighted assets and determined that certain adjustments, primarily related to the presentation of certain unfunded lending commitments, were required in order to conform to regulatory guidance. These adjustments resulted in an increase to risk-weighted assets and a decrease in BB&T's risk-based capital ratios and are not reflected in this table.

Source: Federal Reserve estimates in the severely adverse scenario.

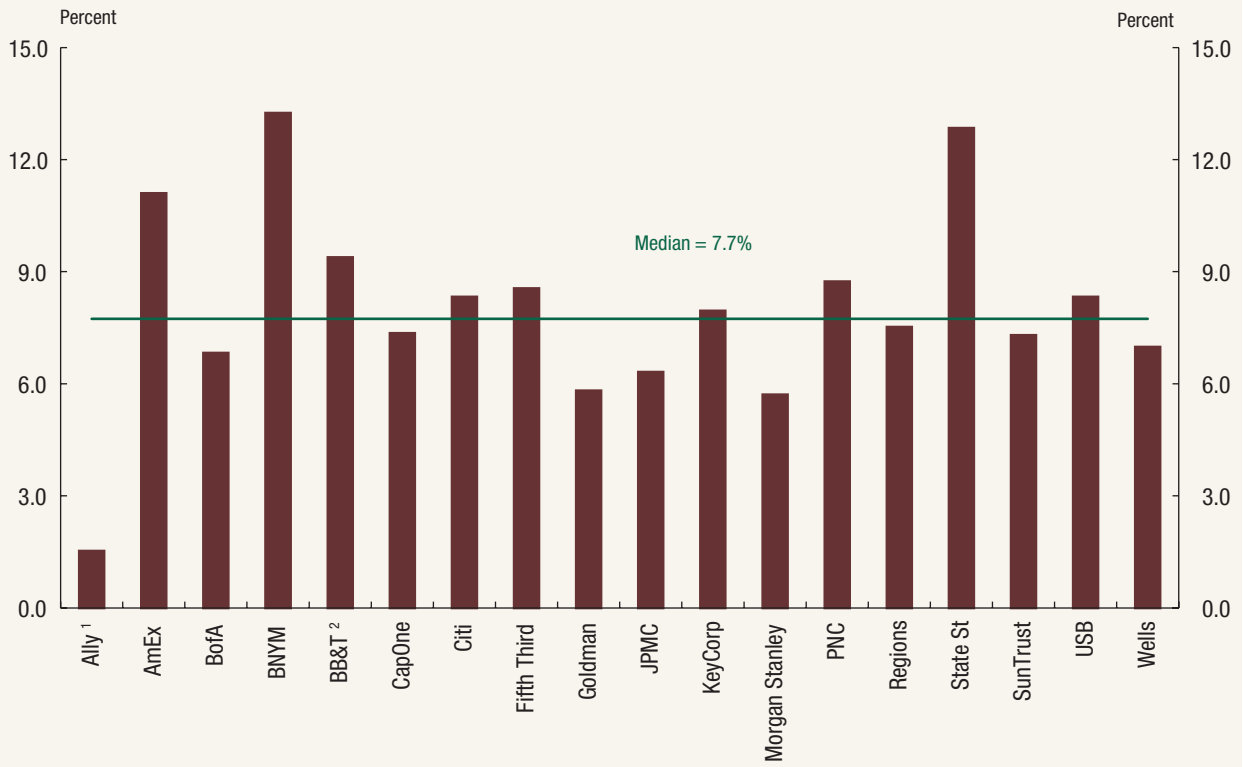
losses include $317 billion in accrual loan portfolio losses, $13 billion in OTTI and other realized securities losses, $97 billion in trading and counterparty losses at the six BHCs with large trading portfolios, and $36 billion in additional losses from items such as loans measured under the fair-value option (losses on these loans were calculated based on the global market shock, consistent with the treatment of fair valued positions in the trading portfolio), and goodwill impairment charges. Table 1 presents these results in the aggregate, while table 4 presents them individually for each of the 18 BHCs.

The biggest sources of loss are losses on the accrual loan portfolios and trading and counterparty losses from the global market shock. Together, these two account for nearly 90 percent of the projected losses for the 18 BHCs under the severely adverse scenario (figure 10).

Loan Losses

Projected losses on consumer-related lending—domestic residential mortgages, credit cards, and other consumer loans—represent 67 percent of projected loan losses and 46 percent of total projected losses for the 18 BHCs (see figure 10 and table 1). This is consistent with both the share of these types of loans in the BHCs' loan portfolios—these loans represent 54 percent of the accrual loan portfolio at these firms as of the third quarter of 2012—and with the severely adverse scenario, which features very high unemployment rates and significant further declines in housing prices. Losses on domestic residential mortgage loans, including both first liens and junior liens/home equity, is the single largest category of losses, at $97 billion, representing 31 percent of total projected loan losses. Projected losses on credit card lending—at $87 billion—is the second largest cat-

Figure 8. Minimum tier 1 common ratio in the severely adverse scenario



1. The post-stress capital ratios presented in the figure are based on an assumption that Ally remains subject to contingent liabilities associated with Residential Capital, LLC ("ResCap"). On May 14, 2012, ResCap and certain of its subsidiaries filed for relief under Chapter 11 of the Bankruptcy Code in the United States Bankruptcy Court for the Southern District of New York. As of March 6, 2013, the outcome of the ResCap bankruptcy remained pending.

2. The actual and post-stress capital ratios presented in the figure are based on information that BB&T provided to the Federal Reserve in regulatory reports on or before February 6, 2013. The information that BB&T provided to the Federal Reserve includes information regarding BB&T's risk-weighted assets. On March 4, 2013, BB&T disclosed publicly that it had reevaluated its process related to calculating risk-weighted assets and determined that certain adjustments, primarily related to the presentation of certain unfunded lending commitments, were required in order to conform to regulatory guidance. These adjustments resulted in an increase to risk-weighted assets and a decrease in BB&T's risk-based capital ratios and are not reflected in this figure.

Source: Federal Reserve estimates in the severely adverse scenario.

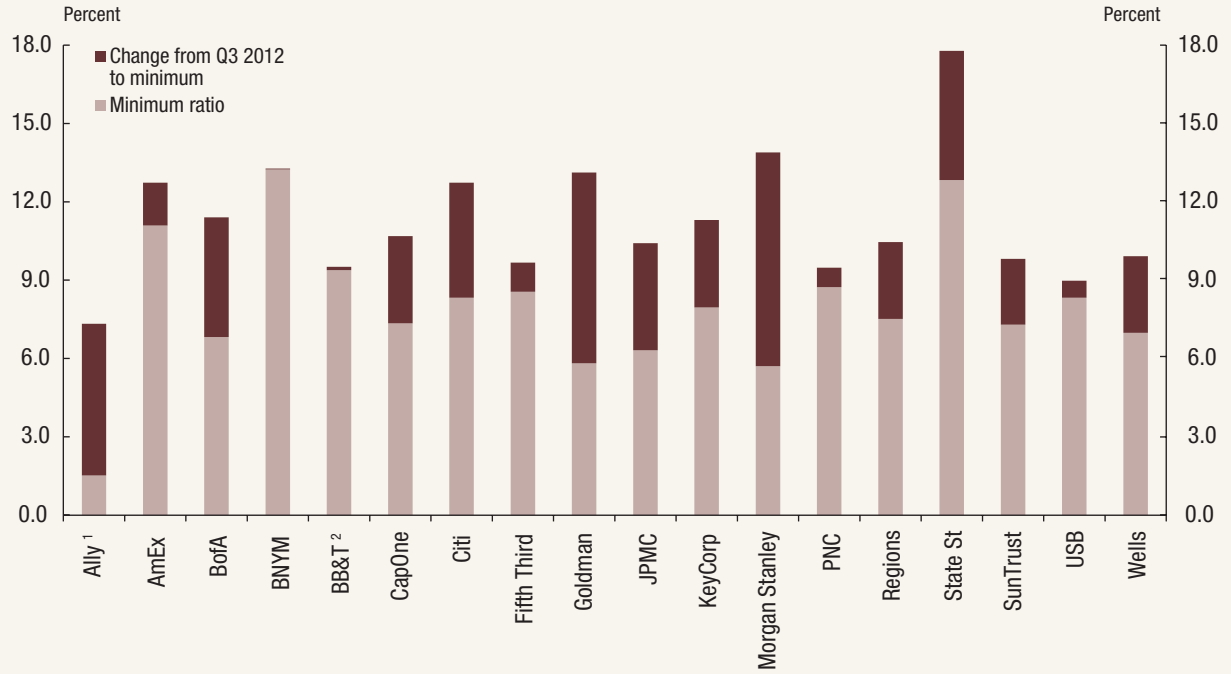
egory, representing 28 percent. The next largest category is projected losses on commercial and industrial loans, at $61 billion.

For the 18 BHCs as a group, the nine-quarter cumulative loss rate on the accrual loan portfolio is 7.5 percent, where the loss rate is calculated as total projected loan losses over the nine quarters of the planning horizon divided by average loan balances over the horizon. This rate is very high by historical standards, more severe than any U.S. recession since the 1930s. As illustrated in figure 11, total loan loss rates vary significantly across BHCs, ranging between 2.0 percent and 13.2 percent across these institutions.

The differences in total loan loss rates across the BHCs reflect differences in loan portfolio composition and differences in risk characteristics for each type of lending across these firms. Loan portfolio composition matters because projected loss rates vary significantly by loan type.[23] In the aggregate, nine-quarter cumulative loss rates range between 1.8 percent on other loans and 16.7 percent on credit cards, reflecting both differences in typical performance of these loans—some loan types tend to generate higher losses, though generally also higher revenue—and differences in the sensitivity of lending to the severely adverse scenario. In particular, lending categories whose performance is sensitive to unemployment rates or housing prices may experience high stressed loss rates due to the considerable stress on these factors in the severely adverse scenario.

[23] The loan categories are defined to be generally consistent with categories on the FR Y-9 C reports.

Figure 9. Change from Q3 2012 to minimum tier 1 common ratio in the severely adverse scenario



1. The post-stress capital ratios presented in the figure are based on an assumption that Ally remains subject to contingent liabilities associated with Residential Capital, LLC ("ResCap"). On May 14, 2012, ResCap and certain of its subsidiaries filed for relief under Chapter 11 of the Bankruptcy Code in the United States Bankruptcy Court for the Southern District of New York. As of March 6, 2013, the outcome of the ResCap bankruptcy remained pending.

2. The actual and post-stress capital ratios presented in the figure are based on information that BB&T provided to the Federal Reserve in regulatory reports on or before February 6, 2013. The information that BB&T provided to the Federal Reserve includes information regarding BB&T's risk-weighted assets. On March 4, 2013, BB&T disclosed publicly that it had reevaluated its process related to calculating risk-weighted assets and determined that certain adjustments, primarily related to the presentation of certain unfunded lending commitments, were required in order to conform to regulatory guidance. These adjustments resulted in an increase to risk-weighted assets and a decrease in BB&T's risk-based capital ratios and are not reflected in this figure.

Source: Federal Reserve estimates in the severely adverse scenario.

Figures 12 through 18 present the nine-quarter cumulative loss rates on seven different categories of loans for each of the 18 BHCs. There are significant differences across BHCs in projected loan loss rates for similar types of loans. For example, while the median projected loss rate on domestic first-lien residential mortgages is 6.0 percent, the rates among BHCs with first lien mortgage portfolios vary from a low of 0.6 percent to a high of 10.3 percent. Similarly, for commercial and industrial loans, the range of projected loss rates is from 3.5 percent to 49.8 percent, with a median of 6.5 percent. Projected loss rates on most loan categories show similar dispersion across BHCs.[24]

[24] Losses are calculated based on the exposure at default, which includes both outstanding balances and any additional drawdown of the credit line that occurs prior to default, while loss rates are calculated as a percent of outstanding balances. See appendix B for more detail on the models used to project net income and stressed capital.

Differences in projected loss rates across BHCs primarily reflect differences in loan characteristics, such as loan-to-value ratio or debt service coverage ratio, and borrower characteristics, such as credit rating or FICO score. In addition, some BHCs have taken write-downs on portfolios of impaired loans either purchased or acquired through mergers. Losses on these loans are projected using the same loss models used for loans of the same type, and the resulting loss projections are reduced by the amount of such write-downs. For these BHCs, projected loss rates will be lower than for BHCs that hold similar loans not subject to purchase-related write-downs.

Losses on Trading, Private Equity, and Derivatives Positions

The severely adverse scenario results include $97 billion in trading and counterparty credit losses from the global market shock at the six BHCs with large

Table 4. Dodd-Frank Act stress testing 2013
Projected losses, revenues, and net income before taxes for 18 participating bank holding companies
Federal Reserve estimates in the severely adverse scenario
Billions of dollars

Bank holding company	Sum of revenues		Minus sum of provisions and losses				Equals
	Pre-provision net revenue[1]	Other revenue[2]	Provisions	Realized losses/gains on securities (AFS/HTM)	Trading and counterparty losses[3]	Other losses/gains[4]	Net income before taxes
Ally Financial Inc.	-3.7	0.3	5.1	0.7	0.0	0.0	-9.3
American Express Company	15.4	0.0	14.2	0.0	0.0	0.4	0.8
Bank of America Corporation	24.1	1.0	49.7	0.5	14.1	12.5	-51.8
The Bank of New York Mellon Corporation	6.8	0.0	1.1	0.2	0.0	0.0	5.5
BB&T Corporation	7.1	0.0	6.4	0.1	0.0	0.1	0.6
Capital One Financial Corporation	18.7	0.0	26.4	0.3	0.0	0.0	-8.0
Citigroup Inc.	44.0	0.0	49.4	4.4	15.9	2.7	-28.6
Fifth Third Bancorp	4.9	0.0	5.1	0.1	0.0	0.0	-0.3
The Goldman Sachs Group, Inc.	14.4	0.0	2.6	0.2	24.9	7.1	-20.5
JPMorgan Chase & Co.	45.0	0.0	51.3	0.9	23.5	1.6	-32.3
KeyCorp	2.5	0.0	4.3	0.0	0.0	0.6	-2.4
Morgan Stanley	1.2	0.0	2.3	0.0	11.7	6.7	-19.4
The PNC Financial Services Group, Inc.	9.8	-0.1	9.8	0.8	0.0	0.4	-1.4
Regions Financial Corporation	3.1	0.0	5.2	0.1	0.0	0.0	-2.2
State Street Corporation	3.0	0.0	0.4	0.4	0.0	0.7	1.5
SunTrust Banks, Inc.	4.6	0.0	7.9	0.0	0.0	0.7	-4.1
U.S. Bancorp	21.2	0.1	17.2	0.2	0.0	0.3	3.6
Wells Fargo & Company	45.9	0.0	58.8	3.9	6.9	2.0	-25.7
18 participating bank holding companies	**267.8**	**1.2**	**317.2**	**12.9**	**97.0**	**36.0**	**-194.1**

Note: These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, or net income before taxes.

Average balances used for profitability ratios and portfolio loss rates are averages over the nine-quarter period. Estimates may not sum precisely due to rounding.

[1] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.

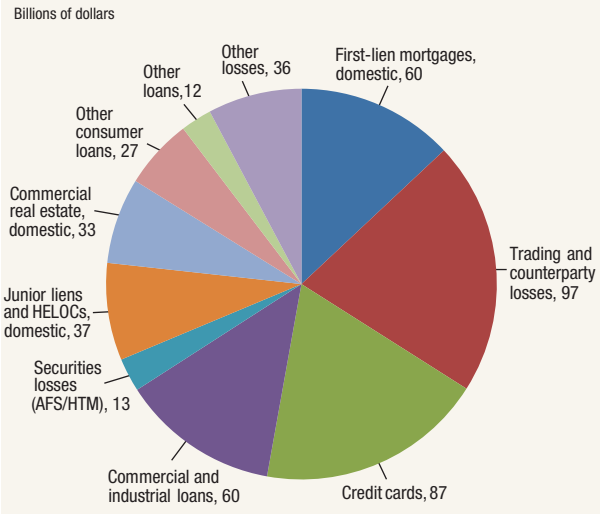
[2] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

[3] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.

[4] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

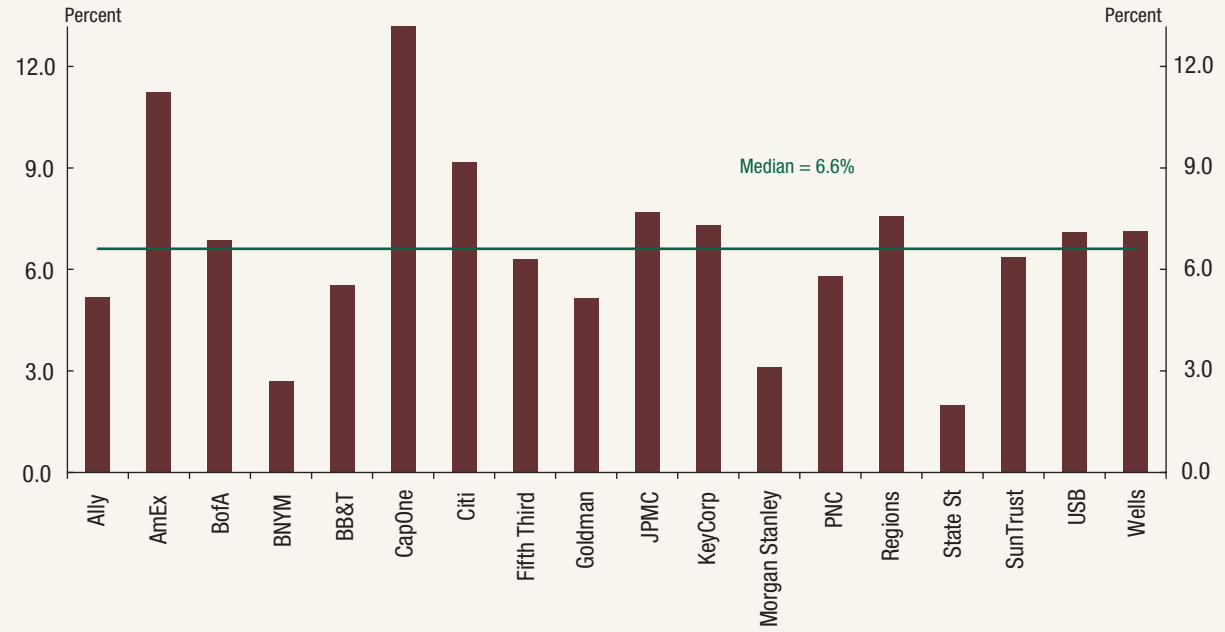
trading, private equity, and counterparty exposures from derivatives and financing transactions. Trading and counterparty credit losses range between $7 billion and $25 billion across the six BHCs (see table 4), with the largest losses at those BHCs with the most significant trading activities. Even so, the relative size of losses across firms depends not on nominal portfolio size, but rather on the specific risk characteristics of each BHC's trading positions, inclusive of hedges. Importantly, projected losses related to the global market shock are based on the trading positions held by these firms on a single date (November 14, 2012) and could have differed, perhaps significantly over the nine-quarter planning horizon, based on trading positions from a different date.

Figure 10. Projected losses in the severely adverse scenario



Source: Federal Reserve estimates in the severely adverse scenario.

Figure 11. Total loan loss rates in the severely adverse scenario



Note: Estimates are for the nine-quarter period from Q4 2012 to Q4 2014 as a percent of average balances.
Source: Federal Reserve estimates in the severely adverse scenario.

Projected Pre-Provision Net Revenue and Net Income

In the aggregate, the 18 BHCs are projected to generate $268 billion in PPNR cumulatively over the nine quarters of the planning horizon, equal to 2.4 percent of average assets for these firms (see table 1). Relatively low PPNR projections reflect low levels of net interest income because of the effect of low interest rates and further flattening of the yield curve in the early part of the severely adverse scenario, given the BHCs' current and projected balance sheet composition. The results also reflect low levels of noninterest income, consistent with the falling asset prices and sharply contracting economic activity in the severely adverse scenario. In addition, the PPNR projections incorporate elevated levels of losses from operational-risk events such as fraud, employee lawsuits, or computer system or other operating disruptions and expenses related to put-backs of mortgages, netted against reserves already taken by the BHCs.[25]

The ratio of projected cumulative PPNR to average assets varies across BHCs (see figure 19 and table 4). A significant portion of this variation reflects differences in business focus across the institutions. For instance, the ratio of PPNR to assets tends to be higher at BHCs focusing on credit card lending, reflecting the higher net interest income that credit cards generally produce relative to other forms of lending.[26] Lower PPNR rates do not necessarily imply lower net income, however, since the same business focus and revenue risk characteristics determining differences in PPNR across firms could also result in offsetting differences in projected losses.

Projected PPNR and losses are the primary determinants of projected net income. Table 1 presents aggregate projections of the components of pre-tax net income, including provisions into the ALLL and one-time income and expense and extraordinary items, under the severely adverse scenario. Table 4 presents these projections for each of the 18 BHCs. The projections are cumulative for the nine quarters of the planning horizon.

[25] These estimates are conditional on the hypothetical severely adverse scenario and on conservative assumptions. They are not a supervisory estimate of the current legal liability that BHCs might actually face.

[26] As noted, credit card lending also tends to generate relatively high loss rates, so the higher PPNR rates at these BHCs do not necessarily indicate higher profitability.

Table 5. Dodd-Frank Act stress testing 2013
Projected loan losses, by type of loan, for 18 participating bank holding companies
Federal Reserve estimates in the severely adverse scenario

Bank holding company	Loan losses[1]	First-lien mortgages, domestic	Junior liens and HELOCs, domestic	Commercial and industrial	Commercial real estate, domestic	Credit cards	Other consumer	Other loans
Portfolio loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario (billions of dollars)								
Ally Financial Inc.	4.5	0.3	0.2	1.4	0.1	0.0	2.4	0.0
American Express Company	10.7	0.0	0.0	2.6	0.0	8.0	0.0	0.0
Bank of America Corporation	57.5	15.3	9.4	8.5	4.7	15.3	3.0	1.3
The Bank of New York Mellon Corporation	1.2	0.4	0.0	0.1	0.1	0.0	0.0	0.5
BB&T Corporation	5.9	0.9	0.4	1.1	2.1	0.3	0.9	0.3
Capital One Financial Corporation	23.6	1.4	0.5	1.5	0.9	16.4	2.7	0.1
Citigroup Inc.	54.6	8.8	4.5	7.8	0.8	23.3	6.5	2.9
Fifth Third Bancorp	5.3	0.7	0.9	1.9	0.8	0.4	0.5	0.2
The Goldman Sachs Group, Inc.	2.0	0.0	0.0	1.4	0.1	0.0	0.0	0.6
JPMorgan Chase & Co.	53.9	11.3	6.7	11.1	5.2	14.8	2.3	2.6
KeyCorp	3.9	0.4	1.1	1.0	0.6	0.1	0.4	0.3
Morgan Stanley	1.6	0.1	0.0	1.2	0.0	0.0	0.1	0.1
The PNC Financial Services Group, Inc.	10.0	1.4	1.6	3.4	2.0	0.6	0.7	0.3
Regions Financial Corporation	5.4	1.1	0.8	1.2	1.7	0.2	0.3	0.2
State Street Corporation	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.2
SunTrust Banks, Inc.	7.4	1.7	1.7	2.1	1.1	0.1	0.5	0.2
U.S. Bancorp	15.1	1.3	1.0	4.3	3.0	3.2	1.6	0.7
Wells Fargo & Company	53.8	15.3	8.4	9.9	9.6	4.4	5.0	1.2
18 participating bank holding companies	**316.6**	**60.1**	**37.2**	**60.5**	**32.9**	**87.1**	**26.8**	**11.9**
Portfolio loss rates, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario (percent of average balances)								
Ally Financial Inc.	5.2	6.0	9.3	5.2	6.5	0.0	4.9	1.8
American Express Company	11.2	0.0	0.0	9.4	0.0	12.0	0.0	4.5
Bank of America Corporation	6.9	5.9	10.0	5.1	8.6	16.2	4.3	1.3
The Bank of New York Mellon Corporation	2.7	6.7	12.8	3.5	7.7	0.0	0.5	1.7
BB&T Corporation	5.5	2.8	6.1	7.2	7.1	16.6	7.0	3.0
Capital One Financial Corporation	13.2	3.8	21.1	8.9	4.8	22.2	11.8	1.8
Citigroup Inc.	9.2	9.4	13.4	6.0	11.3	17.9	16.5	1.8
Fifth Third Bancorp	6.3	5.4	10.4	6.3	7.7	21.6	3.6	2.4
The Goldman Sachs Group, Inc.	5.2	7.7	9.8	49.8	8.2	0.0	2.8	1.6
JPMorgan Chase & Co.	7.7	8.8	8.8	8.5	7.3	14.4	3.9	1.9
Keycorp	7.3	10.3	12.6	5.8	7.2	19.1	8.8	2.8
Morgan Stanley	3.1	0.6	9.5	7.8	10.2	0.0	1.4	0.8
The PNC Financial Services Group, Inc.	5.8	6.1	6.3	6.4	7.3	15.5	3.5	1.6
Regions Financial Corporation	7.6	8.2	8.5	6.7	9.7	18.0	6.8	2.2
State Street Corporation	2.0	0.0	0.0	0.0	18.3	0.0	0.0	1.5
SunTrust Banks, Inc.	6.4	6.5	11.4	6.2	9.7	15.0	2.6	2.2
U.S. Bancorp	7.1	2.8	6.1	9.5	8.0	17.3	5.4	3.8
Wells Fargo & Company	7.1	7.1	9.3	6.6	8.6	17.7	5.9	1.6
18 participating bank holding companies	**7.5**	**6.6**	**9.6**	**6.8**	**8.0**	**16.7**	**6.1**	**1.8**

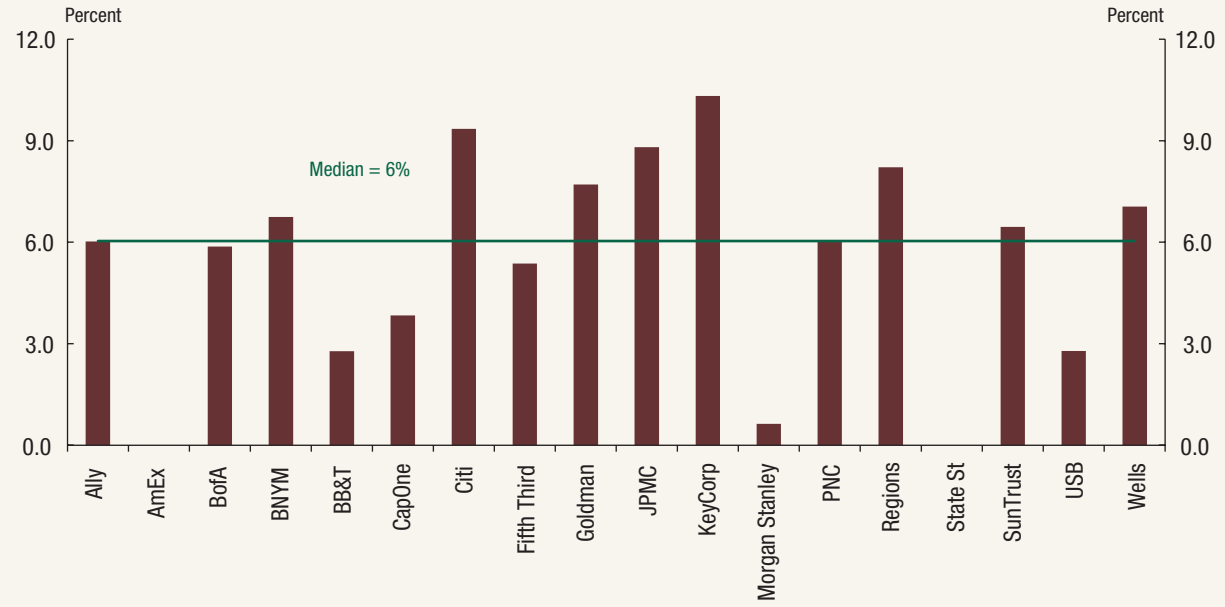
Note: These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected loan losses.

Average balances used for profitability ratios and portfolio loss rates are averages over the nine-quarter period. Estimates may not sum precisely due to rounding.

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option.

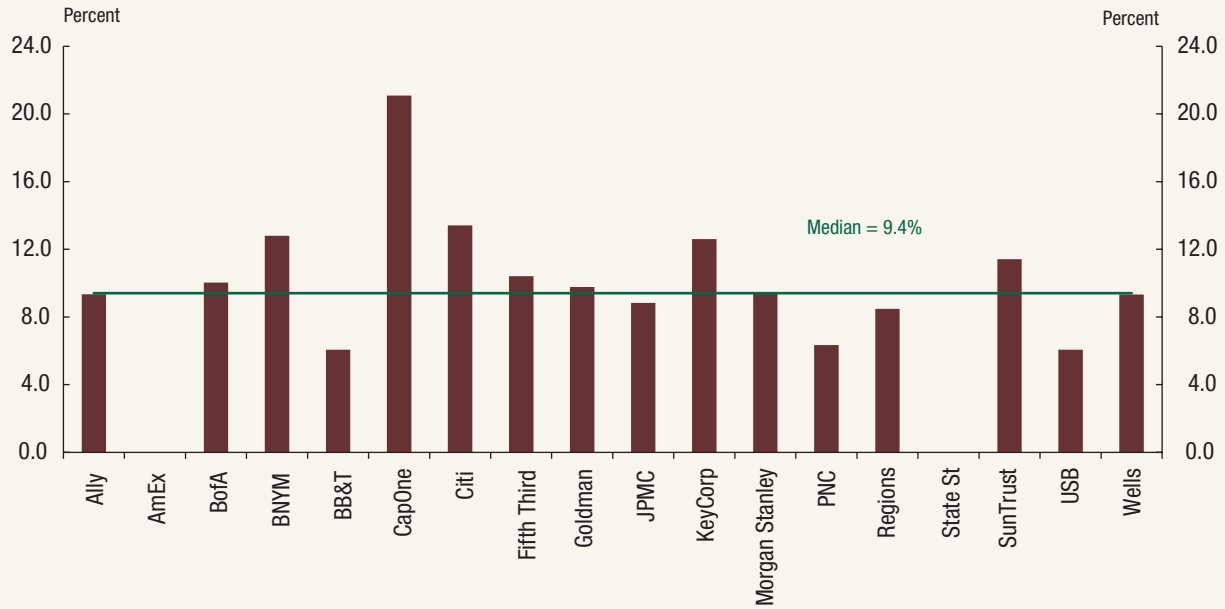
Of note, following U.S. GAAP, the net income projections incorporate loan losses indirectly through provisions, which equal projected loan losses plus the amount needed for the ALLL to be at an appropriate level at the end of each quarter. The slightly more than $317 billion in total provisions reported in table 1 is the result of slightly less than $317 billion in net charge-offs and almost no net change in the ALLL over the nine-quarter planning horizon. Table 1 is cumulative over the planning horizon, and masks variation in the ALLL during the course of the nine quarters. Specifically, the projected ALLL

Figure 12. First-lien mortgages, domestic loss rates in the severely adverse scenario



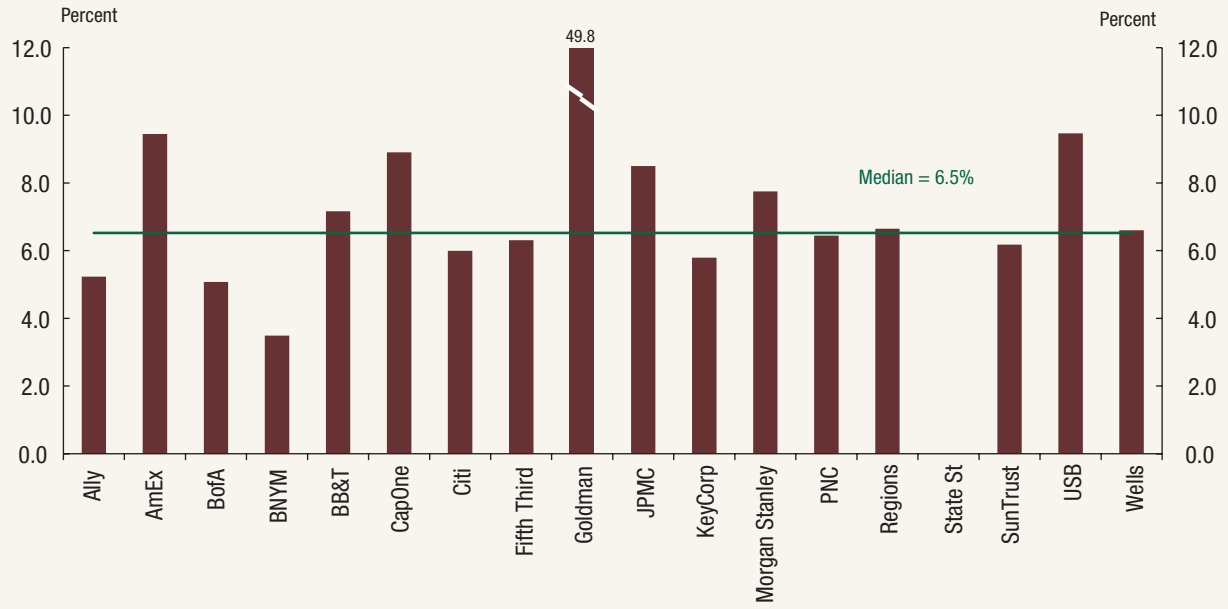
Note: Estimates are for the nine-quarter period from Q4 2012 to Q4 2014 as a percent of average balances.
Source: Federal Reserve estimates in the severely adverse scenario.

Figure 13. Junior liens and HELOCs, domestic loss rates in the severely adverse scenario



Note: Estimates are for the nine-quarter period from Q4 2012 to Q4 2014 as a percent of average balances.
Source: Federal Reserve estimates in the severely adverse scenario.

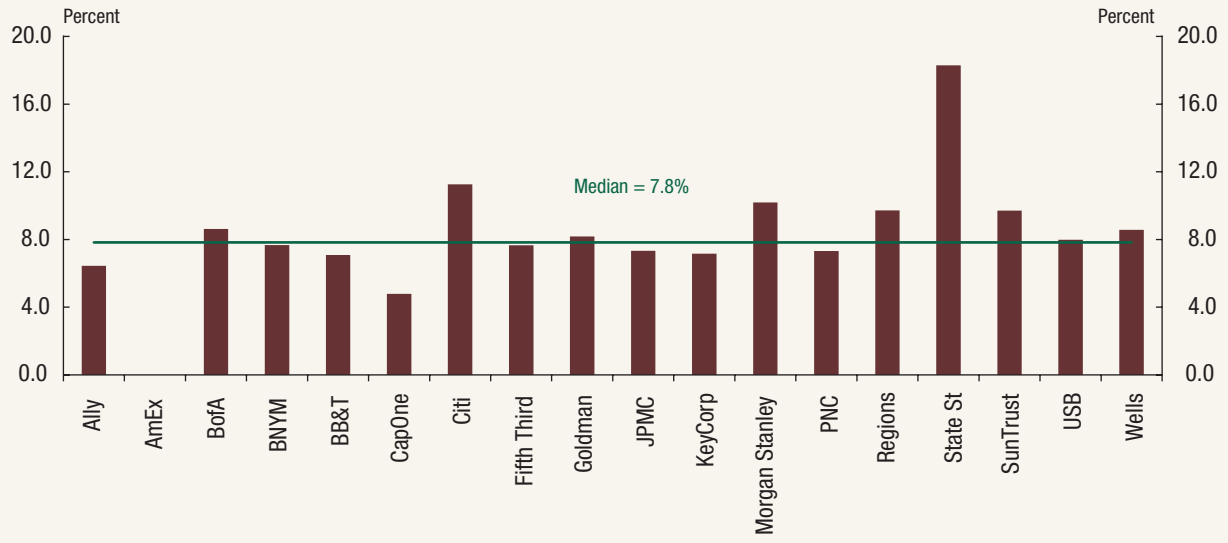
Figure 14. Commercial and industrial loss rates in the severely adverse scenario



Note: Estimates are for the nine-quarter period from Q4 2012 to Q4 2014 as a percent of average balances. Losses are calculated based on the exposure at default, which includes both outstanding balances and any additional drawdown of the credit line that occurs prior to default, while loss rates are calculated as a percent of outstanding balances.

Source: Federal Reserve estimates in the severely adverse scenario.

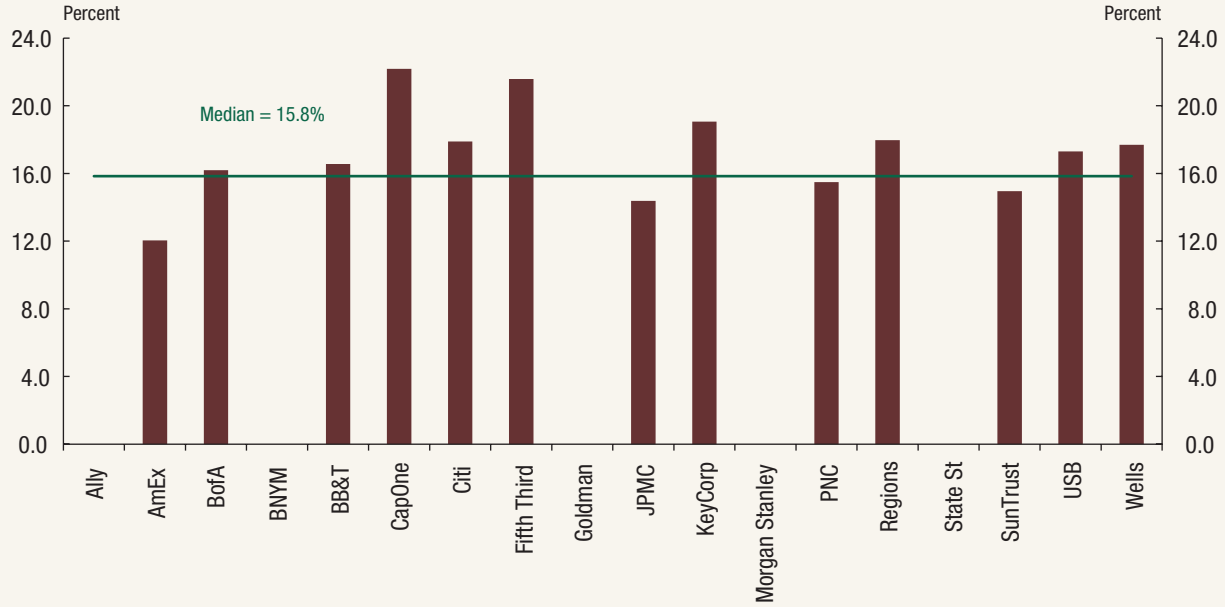
Figure 15. Commercial real estate, domestic loss rates in the severely adverse scenario



Note: Estimates are for the nine-quarter period from Q4 2012 to Q4 2014 as a percent of average balances.

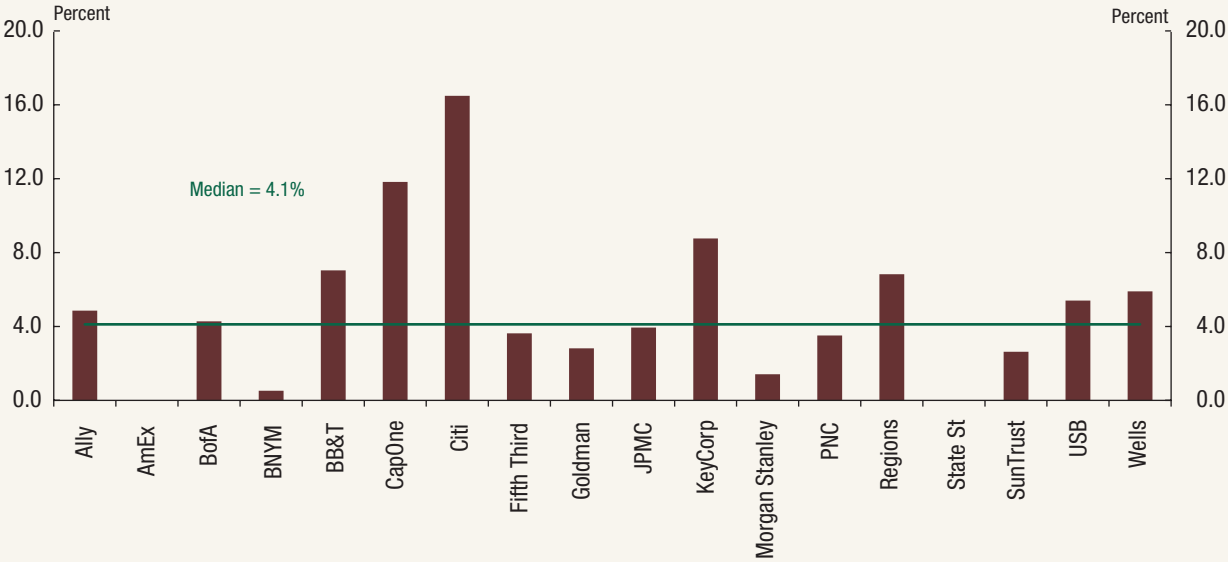
Source: Federal Reserve estimates in the severely adverse scenario.

Figure 16. Credit card loss rates in the severely adverse scenario



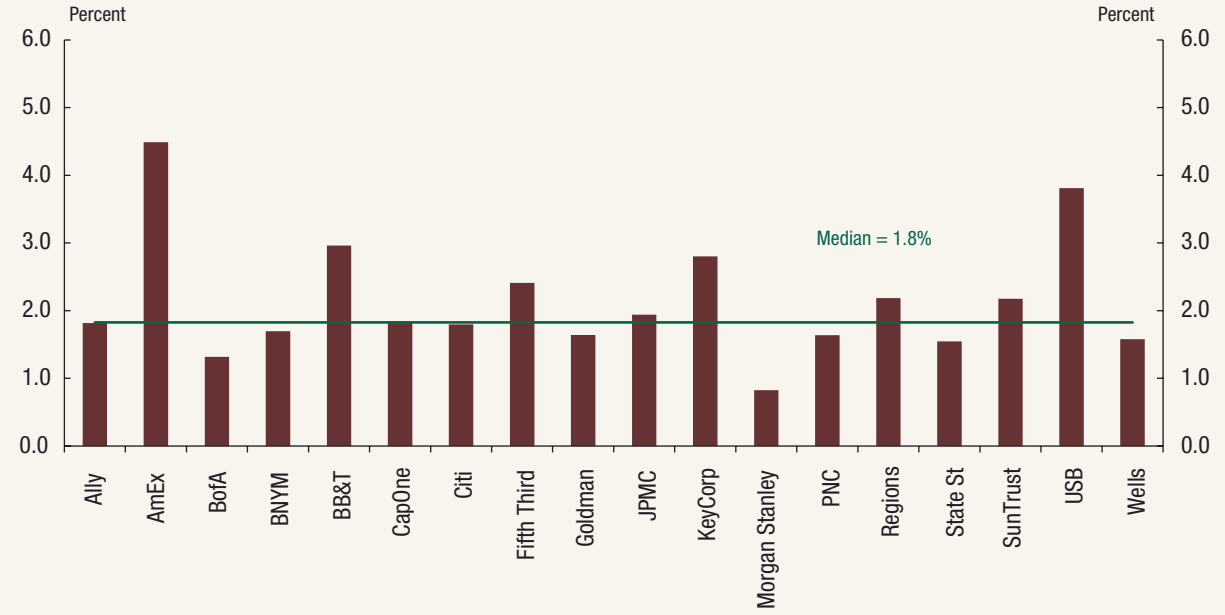
Note: Estimates are for the nine-quarter period from Q4 2012 to Q4 2014 as a percent of average balances.
Source: Federal Reserve estimates in the severely adverse scenario.

Figure 17. Other consumer loss rates in the severely adverse scenario



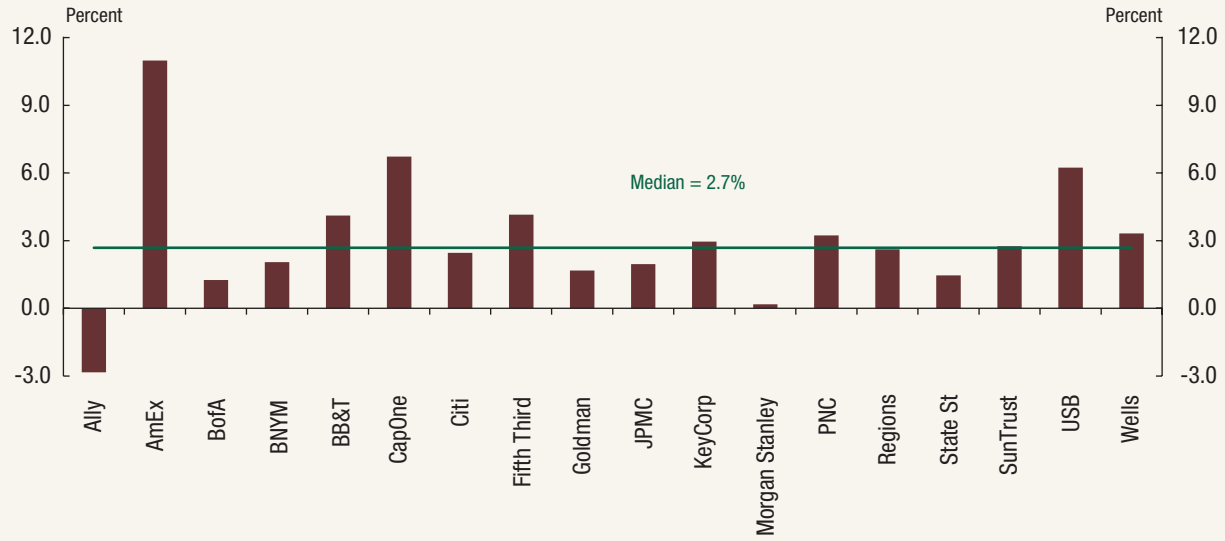
Note: Estimates are for the nine-quarter period from Q4 2012 to Q4 2014 as a percent of average balances.
Source: Federal Reserve estimates in the severely adverse scenario.

Figure 18. Other loan loss rates in the severely adverse scenario



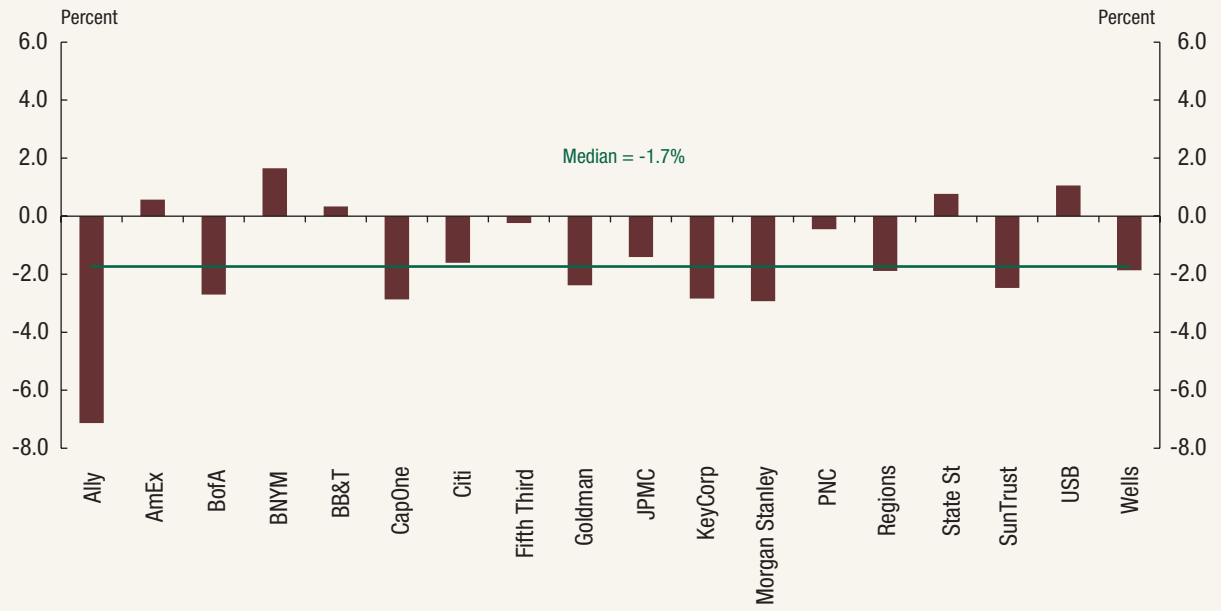
Note: Estimates are for the nine-quarter period from Q4 2012 to Q4 2014 as a percent of average balances.
Source: Federal Reserve estimates in the severely adverse scenario.

Figure 19. PPNR rates in the severely adverse scenario



Note: Estimates are for the nine-quarter period from Q4 2012 to Q4 2014 as a percent of average assets.
Source: Federal Reserve estimates in the severely adverse scenario.

Figure 20. Pre-tax net income rates in the severely adverse scenario



Note: Estimates are for the nine-quarter period from Q4 2012 to Q4 2014 as a percent of average assets.
Source: Federal Reserve estimates in the severely adverse scenario.

increases during the early quarters of the planning horizon, given the increased economic stress in the severely adverse scenario, and then declines as the economic stress abates.

The Federal Reserve's projections of pre-tax net income under the severely adverse scenario imply negative net income at most of the 18 BHCs individually, and for the BHCs as a group, over the nine quarter planning horizon. As table 1 shows, projected net income before taxes ("pre-tax net income") is -$194 billion over the planning horizon for the 18 BHCs.

Figure 20 illustrates the ratio of pre-tax net income to average assets for each of the 18 BHCs. The ratio ranges between -7.1 percent and 1.6 percent. Projected cumulative net income for most of the BHCs (13 of 18) is negative over the planning horizon. Differences across the firms reflect differences in the sensitivity of the various components of net income to the economic and financial market conditions in the severely adverse scenario. Projected net income for the six BHCs with large trading operations is also affected by the effect of the global market shock on their trading, private equity, and counterparty exposures from derivatives and financing transactions, introducing some additional variation in projected net income between these six BHCs and the other firms participating in DFAST 2013.

Appendix A: Severely Adverse Scenario

This appendix includes the severely adverse scenario provided by the Federal Reserve.

It is important to note that the severely adverse scenario is not a forecast but rather a hypothetical scenario to be used to assess the strength and resilience of BHC capital in a severely adverse economic environment. The severely adverse scenario, while unlikely, represents an outcome in which the U.S. economy experiences a significant recession and financial market distress, and economic activity in other major economies also contracts significantly.

Table A.1. Supervisory severely adverse scenario: Domestic

Date	Real GDP growth	Nominal GDP growth	Real disposable income growth	Nominal disposable income growth	Unemployment rate	CPI inflation rate	3-month Treasury yield	10-year Treasury yield	BBB corporate yield	Mortgage rate	Dow Jones Total Stock Market Index	House Price Index	Commercial Real Estate Price Index	Market Volatility Index (VIX)
Q1 2001	-1.3	1.4	3.0	6.0	4.2	3.9	4.8	5.3	7.4	7.0	10645.9	112.3	140.8	32.8
Q2 2001	2.6	5.5	-1.1	0.8	4.4	2.8	3.7	5.5	7.5	7.2	11407.2	114.5	140.0	34.7
Q3 2001	-1.1	0.2	10.6	10.7	4.8	1.1	3.2	5.3	7.3	6.9	9563.0	116.7	143.7	43.7
Q4 2001	1.4	2.7	-4.6	-4.4	5.5	-0.3	1.9	5.1	7.2	6.8	10707.7	119.1	137.9	35.3
Q1 2002	3.5	4.9	11.2	12.3	5.7	1.3	1.7	5.4	7.6	7.0	10775.7	121.4	139.7	26.1
Q2 2002	2.1	4.0	2.2	5.4	5.8	3.2	1.7	5.4	7.6	6.7	9384.0	124.3	137.4	28.4
Q3 2002	2.0	3.8	-1.4	0.6	5.7	2.2	1.6	4.5	7.3	6.2	7773.6	127.8	140.9	45.1
Q4 2002	0.1	2.5	1.0	2.9	5.9	2.4	1.3	4.3	7.0	6.1	8343.2	130.4	144.2	42.6
Q1 2003	1.7	4.5	1.5	4.4	5.9	4.2	1.2	4.2	6.5	5.8	8051.9	133.4	148.7	34.7
Q2 2003	3.4	4.6	6.2	6.5	6.1	-0.7	1.0	3.8	5.7	5.5	9342.4	136.2	151.2	29.1
Q3 2003	6.7	9.1	5.7	8.5	6.1	3.0	0.9	4.4	6.0	6.1	9649.7	139.8	152.2	22.7
Q4 2003	3.7	5.8	2.3	4.2	5.8	1.5	0.9	4.4	5.8	5.9	10799.6	144.3	150.1	21.1
Q1 2004	2.7	6.3	1.8	5.2	5.7	3.4	0.9	4.1	5.5	5.6	11039.4	150.2	155.8	21.6
Q2 2004	2.6	6.1	4.0	7.1	5.6	3.2	1.1	4.7	6.1	6.2	11138.9	156.4	162.6	20.0
Q3 2004	3.0	6.0	2.7	5.3	5.4	2.6	1.5	4.4	5.8	5.8	10895.5	162.2	173.9	19.3
Q4 2004	3.3	6.4	5.7	9.2	5.4	4.4	2.0	4.3	5.4	5.7	11971.1	167.8	178.4	16.6
Q1 2005	4.2	8.1	-4.8	-2.5	5.3	2.0	2.5	4.4	5.4	5.8	11638.3	176.1	179.6	14.6
Q2 2005	1.8	4.5	2.8	5.4	5.1	2.7	2.9	4.2	5.5	5.7	11876.7	183.8	186.5	17.7
Q3 2005	3.2	7.5	2.4	7.1	5.0	6.2	3.4	4.3	5.5	5.8	12289.3	189.9	190.8	14.2
Q4 2005	2.1	5.5	2.2	5.8	5.0	3.8	3.8	4.6	5.9	6.3	12517.7	194.9	199.6	16.5
Q1 2006	5.1	8.3	7.7	9.5	4.7	2.1	4.4	4.7	6.0	6.3	13155.4	199.7	203.0	14.6
Q2 2006	1.6	5.2	3.6	6.7	4.6	3.7	4.7	5.2	6.5	6.6	12849.3	199.7	211.9	23.8
Q3 2006	0.1	3.1	1.9	4.9	4.6	3.8	4.9	5.0	6.4	6.5	13346.0	197.5	224.2	18.6
Q4 2006	2.7	4.6	5.3	5.3	4.4	-1.6	4.9	4.7	6.1	6.2	14257.6	198.0	221.1	12.7
Q1 2007	0.5	5.2	1.8	5.8	4.5	4.0	5.0	4.8	6.1	6.2	14409.3	196.4	233.3	19.6
Q2 2007	3.6	6.5	0.6	4.1	4.5	4.6	4.7	4.9	6.3	6.4	15210.7	192.1	241.5	18.9
Q3 2007	3.0	4.3	1.6	3.9	4.7	2.6	4.3	4.8	6.5	6.5	15362.0	186.4	257.8	30.8
Q4 2007	1.7	3.6	2.2	6.5	4.8	5.0	3.4	4.4	6.4	6.2	14819.6	180.7	260.2	31.1
Q1 2008	-1.8	0.6	5.9	10.0	5.0	4.4	2.1	3.9	6.5	5.9	13332.0	174.5	253.6	32.2
Q2 2008	1.3	4.0	8.2	13.1	5.3	5.4	1.6	4.1	6.8	6.2	13073.5	166.7	242.1	31.0
Q3 2008	-3.7	-0.6	-8.8	-4.9	6.0	6.4	1.5	4.1	7.2	6.3	11875.4	159.8	246.8	46.7
Q4 2008	-8.9	-8.4	-0.2	-5.8	6.9	-9.0	0.3	3.7	9.4	5.8	9087.2	152.0	231.9	80.9
Q1 2009	-5.3	-4.4	-4.7	-6.8	8.3	-2.5	0.2	3.2	9.0	5.0	8113.1	144.1	211.2	56.7
Q2 2009	-0.3	-1.1	-0.5	1.1	9.3	1.9	0.2	3.7	8.2	5.1	9424.9	142.3	175.4	42.3
Q3 2009	1.4	1.9	-6.1	-3.3	9.6	3.6	0.2	3.8	6.8	5.1	10911.7	144.0	158.7	31.3
Q4 2009	4.0	5.3	-0.6	2.5	9.9	3.0	0.1	3.7	6.1	4.9	11497.4	144.8	158.0	30.7
Q1 2010	2.3	3.9	5.7	7.6	9.8	0.9	0.1	3.9	5.8	5.0	12161.0	145.5	153.5	27.3
Q2 2010	2.2	4.1	6.3	6.9	9.6	-0.3	0.1	3.6	5.6	4.8	10750.0	145.7	169.3	45.8
Q3 2010	2.6	4.6	1.2	2.5	9.5	1.4	0.2	2.9	5.1	4.4	11947.1	142.5	171.1	32.9
Q4 2010	2.4	4.5	1.0	3.1	9.6	3.0	0.1	3.0	5.0	4.5	13290.0	140.2	179.8	23.5
Q1 2011	0.1	2.2	4.4	7.7	9.0	4.5	0.1	3.5	5.4	4.9	14036.4	138.8	186.4	29.4
Q2 2011	2.5	5.2	-1.5	2.0	9.0	4.4	0.0	3.3	5.1	4.6	13968.1	137.7	184.4	22.7
Q3 2011	1.3	4.3	-1.3	1.1	9.1	3.1	0.0	2.5	4.9	4.2	11771.9	137.2	184.6	48.0
Q4 2011	4.1	4.2	-0.2	0.9	8.7	1.3	0.0	2.1	5.0	4.0	13109.6	135.9	194.1	45.5
Q1 2012	2.0	4.2	3.7	6.3	8.3	2.5	0.1	2.1	4.7	3.9	14753.1	137.9	195.2	23.0
Q2 2012	1.3	2.8	3.1	3.8	8.2	0.8	0.1	1.8	4.5	3.7	14208.6	141.3	196.8	26.7
Q3 2012	2.0	5.0	0.8	2.6	8.1	2.3	0.1	1.6	4.2	3.5	14997.8	143.4	198.6	20.5
Q4 2012	-3.5	0.0	-3.8	-2.3	8.9	1.8	0.1	1.4	5.6	4.1	12105.2	141.6	195.8	72.1

(continued on next page)

Table A.1. Supervisory severely adverse scenario: Domestic—*continued*

Date	Real GDP growth	Nominal GDP growth	Real disposable income growth	Nominal disposable income growth	Unemployment rate	CPI inflation rate	3-month Treasury yield	10-year Treasury yield	BBB corporate yield	Mortgage rate	Dow Jones Total Stock Market Index	House Price Index	Commercial Real Estate Price Index	Market Volatility Index (VIX)
Q1 2013	-6.1	-4.7	-6.7	-5.9	10.0	1.4	0.1	1.2	6.4	4.5	9652.6	137.9	185.8	76.6
Q2 2013	-4.4	-3.3	-4.6	-4.0	10.7	1.1	0.1	1.2	6.7	4.7	9032.8	133.6	178.2	76.4
Q3 2013	-4.2	-3.6	-3.2	-2.8	11.5	1.0	0.1	1.2	6.8	4.8	7269.1	129.0	171.8	79.4
Q4 2013	-1.2	-1.2	-1.5	-1.8	11.9	0.3	0.1	1.2	6.5	4.7	7221.7	124.7	163.1	71.7
Q1 2014	0.0	0.3	0.8	1.2	12.0	1.0	0.1	1.2	6.2	4.7	7749.3	120.6	160.4	70.6
Q2 2014	2.2	2.2	0.9	1.3	12.1	0.9	0.1	1.5	6.2	4.7	8133.9	117.2	158.8	64.5
Q3 2014	2.6	2.4	2.5	2.7	12.0	0.7	0.1	1.7	6.0	4.6	9026.1	115.0	156.3	58.6
Q4 2014	3.8	3.5	2.8	2.9	11.9	0.6	0.1	1.9	5.9	4.5	9706.7	113.6	157.6	53.0
Q1 2015	4.2	3.8	3.6	3.6	11.7	0.5	0.1	2.0	5.8	4.5	10211.0	113.2	157.1	50.1
Q2 2015	4.1	3.7	3.7	3.6	11.5	0.5	0.1	2.1	5.8	4.5	12645.7	113.6	157.4	40.9
Q3 2015	4.6	4.1	3.4	3.1	11.4	0.3	0.1	2.2	5.6	4.4	13854.4	114.4	162.7	26.3
Q4 2015	4.6	4.0	3.1	2.8	11.1	0.3	0.1	2.2	5.4	4.3	15294.9	115.5	166.0	17.1

Note: Refer to "Data Notes" on page 34 for more information on variables.

Table A.2. Supervisory severely adverse scenario: International

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate ($/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index, base = 2000 Q1)	Japan real GDP growth	Japan inflation	Japan bilateral dollar exchange rate (yen/USD)	U.K. real GDP growth	U.K. inflation	U.K. bilateral dollar exchange rate (USD/pound)
Q1 2001	3.7	1.1	0.9	3.9	1.6	105.9	2.9	0.6	125.5	5.4	0.1	1.4
Q2 2001	0.4	4.1	0.8	6.0	2.0	106.0	-1.0	-2.0	124.7	2.7	3.1	1.4
Q3 2001	0.3	1.4	0.9	4.6	1.2	106.3	-4.2	-0.6	119.2	2.2	1.0	1.5
Q4 2001	0.6	1.7	0.9	6.9	-0.2	106.7	-0.7	-1.8	131.0	1.5	0.0	1.5
Q1 2002	0.6	3.0	0.9	7.4	0.3	107.2	-0.6	-1.1	132.7	1.7	1.9	1.4
Q2 2002	2.3	2.0	1.0	9.2	0.7	104.7	4.1	0.1	119.9	3.4	0.9	1.5
Q3 2002	1.2	1.6	1.0	4.9	1.5	105.4	2.6	-0.4	121.7	3.4	1.4	1.6
Q4 2002	0.1	2.4	1.0	6.3	0.7	104.4	1.5	-0.6	118.8	3.8	1.9	1.6
Q1 2003	-0.2	3.3	1.1	6.9	3.2	105.4	-2.1	0.0	118.1	2.4	1.6	1.6
Q2 2003	0.3	0.3	1.2	2.8	1.2	103.9	5.1	0.3	119.9	4.9	0.3	1.7
Q3 2003	1.8	2.2	1.2	13.5	0.0	102.6	1.5	-0.6	111.4	5.0	1.7	1.7
Q4 2003	2.9	2.2	1.3	11.8	5.6	103.3	4.4	-0.7	107.1	4.9	1.7	1.8
Q1 2004	2.1	2.3	1.2	4.6	4.2	101.4	4.1	0.6	104.2	3.0	1.3	1.8
Q2 2004	2.2	2.4	1.2	6.3	4.0	102.7	-0.1	-0.3	109.4	1.0	1.0	1.8
Q3 2004	1.5	2.0	1.2	8.8	3.9	102.7	0.4	0.0	110.2	0.0	1.1	1.8
Q4 2004	1.4	2.5	1.4	8.0	0.7	99.0	-0.9	1.8	102.7	2.5	2.4	1.9
Q1 2005	0.8	1.5	1.3	7.9	2.8	98.7	0.8	-0.9	107.2	2.5	2.6	1.9
Q2 2005	3.0	2.2	1.2	7.3	1.7	99.0	5.4	-1.2	110.9	5.1	1.8	1.8
Q3 2005	2.4	3.2	1.2	9.8	2.5	98.6	1.3	-1.3	113.3	3.3	2.7	1.8
Q4 2005	2.6	2.5	1.2	10.7	1.8	98.1	0.9	0.7	117.9	4.4	1.4	1.7
Q1 2006	3.8	1.6	1.2	12.1	2.4	96.8	1.7	1.3	117.5	2.0	1.9	1.7
Q2 2006	4.3	2.5	1.3	8.0	3.1	96.8	1.6	-0.1	114.5	1.2	3.0	1.8
Q3 2006	2.8	2.0	1.3	8.7	1.8	96.4	-0.4	0.5	118.0	0.8	3.3	1.9
Q4 2006	4.2	1.0	1.3	10.8	4.0	94.6	5.4	-0.4	119.0	3.8	2.6	2.0
Q1 2007	3.3	2.2	1.3	14.7	3.8	94.0	4.1	-0.3	117.6	4.6	2.6	2.0
Q2 2007	1.8	2.3	1.4	10.3	4.8	92.0	0.2	0.0	123.4	5.0	1.6	2.0
Q3 2007	2.5	2.1	1.4	8.9	7.6	90.7	-1.4	0.1	115.0	4.8	0.3	2.0
Q4 2007	1.7	5.0	1.5	10.3	6.3	89.4	3.7	2.3	111.7	0.7	4.0	2.0
Q1 2008	2.1	4.2	1.6	8.6	7.9	88.0	2.7	1.3	99.9	0.3	3.7	2.0
Q2 2008	-1.4	3.1	1.6	8.1	6.4	88.6	-5.2	1.7	106.2	-3.6	5.5	2.0
Q3 2008	-2.4	3.2	1.4	3.8	2.8	91.3	-3.7	3.4	105.9	-6.9	5.9	1.8
Q4 2008	-6.6	-1.3	1.4	-0.1	-1.3	92.0	-12.4	-2.2	90.8	-8.1	0.6	1.5
Q1 2009	-10.7	-1.2	1.3	3.4	-1.2	94.0	-15.0	-3.5	99.2	-5.9	0.0	1.4
Q2 2009	-1.1	-0.1	1.4	16.1	2.5	92.1	6.3	-1.7	96.4	-0.7	1.9	1.6
Q3 2009	1.5	1.3	1.5	12.9	4.6	91.1	1.0	-1.4	89.5	1.6	3.7	1.6
Q4 2009	1.6	1.7	1.4	8.0	5.3	90.5	7.1	-1.5	93.1	1.7	3.2	1.6
Q1 2010	1.9	1.6	1.4	9.4	5.0	89.7	5.1	1.1	93.4	2.4	4.1	1.5
Q2 2010	4.2	1.7	1.2	8.7	3.5	90.8	5.1	-1.2	88.5	2.9	2.7	1.5
Q3 2010	1.5	2.0	1.4	8.8	3.8	88.2	4.7	-2.2	83.5	2.5	2.6	1.6
Q4 2010	1.4	2.7	1.3	8.2	7.9	87.2	-1.1	1.2	81.7	-1.7	4.3	1.5
Q1 2011	2.6	3.4	1.4	9.6	6.4	86.3	-8.0	0.0	82.8	2.0	6.6	1.6
Q2 2011	0.9	2.9	1.5	6.7	5.6	85.2	-2.1	-0.7	80.6	0.3	4.0	1.6
Q3 2011	0.3	1.9	1.3	6.8	5.5	87.2	9.5	0.1	77.0	2.1	4.2	1.6
Q4 2011	-1.3	3.6	1.3	6.7	2.6	87.0	-1.2	-0.7	77.0	-1.4	3.9	1.6
Q1 2012	0.0	2.4	1.3	6.1	2.9	86.1	5.2	2.3	82.4	-1.2	1.8	1.6
Q2 2012	-0.7	2.0	1.3	5.7	4.6	87.9	0.3	-0.9	79.8	-1.5	1.1	1.6
Q3 2012	-0.5	2.3	1.3	7.0	2.1	86.1	-3.5	-2.0	77.9	4.1	3.0	1.6
Q4 2012	-8.7	1.6	1.2	0.3	2.5	97.2	-1.4	-4.4	75.7	-6.5	1.6	1.6

(continued on next page)

Table A.2. Supervisory severely adverse scenario: International—*continued*

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate ($/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index, base = 2000 Q1)	Japan real GDP growth	Japan inflation	Japan bilateral dollar exchange rate (yen/USD)	U.K. real GDP growth	U.K. inflation	U.K. bilateral dollar exchange rate (USD/pound)
Q1 2013	-6.8	1.0	1.1	3.9	1.8	97.9	-4.5	-4.1	77.8	-6.6	0.7	1.6
Q2 2013	-4.3	0.4	1.1	5.9	0.5	96.9	-6.5	-5.0	78.7	-3.7	-0.6	1.6
Q3 2013	-2.3	0.2	1.1	6.9	0.0	95.1	-6.8	-4.7	78.7	-1.4	-1.0	1.6
Q4 2013	-0.8	0.2	1.1	7.5	0.1	93.0	-5.5	-3.6	78.4	0.1	-0.7	1.6
Q1 2014	0.4	0.4	1.1	7.9	0.6	91.2	-3.1	-1.9	78.2	0.9	0.0	1.6
Q2 2014	1.2	0.6	1.1	8.1	1.1	89.7	-1.1	-0.5	78.1	1.6	0.6	1.6
Q3 2014	1.7	0.8	1.1	8.3	1.4	88.5	0.3	0.3	78.2	2.1	1.0	1.6
Q4 2014	2.0	0.9	1.1	8.4	1.7	87.5	1.1	0.5	78.5	2.7	1.3	1.5
Q1 2015	2.0	1.1	1.1	8.5	1.8	86.6	1.4	0.4	79.0	3.2	1.4	1.5
Q2 2015	2.0	1.2	1.2	8.5	1.9	86.0	1.5	0.2	79.6	3.5	1.5	1.5
Q3 2015	2.0	1.3	1.2	8.6	2.0	85.5	1.6	0.1	80.3	3.6	1.6	1.5
Q4 2015	2.0	1.4	1.2	8.6	2.1	85.2	1.6	0.1	80.9	3.7	1.6	1.5

Note: Refer to "Data Notes" on page 34 for more information on variables.

Data Notes

Sources for data through 2012:Q3 (as released through 11/13/2012).

U.S. real GDP growth: Percent change in real Gross Domestic Product at an annualized rate, Bureau of Economic Analysis.

U.S. nominal GDP growth: Percent change in nominal Gross Domestic Product at an annualized rate, Bureau of Economic Analysis.

U.S. real disposable income growth: Percent change in nominal disposable personal income divided by the price index for personal consumption expenditures at an annualized rate, Bureau of Economic Analysis.

U.S. nominal disposable income growth: Percent change in nominal disposable personal income at an annualized rate, Bureau of Economic Analysis.

U.S. unemployment rate: Quarterly average of monthly data, Bureau of Labor Statistics.

U.S. CPI inflation: Percent change in the Consumer Price Index at an annualized rate, Bureau of Labor Statistics.

U.S. 3-month Treasury yield: Quarterly average of 3-month Treasury bill secondary market rate discount basis, Federal Reserve Board.

U.S. 10-year Treasury yield: Quarterly average of the yield on 10-year U.S. Treasury bonds, constructed for FRB/U.S. model by Federal Reserve staff based on the Svensson smoothed term structure model; see Lars E. O. Svensson (1995), "Estimating Forward Interest Rates with the Extended Nelson-Siegel Method," *Quarterly Review*, no. 3, Sveriges Riksbank, pp. 13–26.

U.S. BBB corporate yield: Quarterly average of the yield on 10-year BBB-rated corporate bonds, constructed for FRB/U.S. model by Federal Reserve staff using a Nelson-Siegel smoothed yield curve model; see Charles R. Nelson and Andrew F. Siegel (1987), "Parsimonious Modeling of Yield Curves," *Journal of Business*, vol. 60, pp. 473–89. Data prior to 1997 is based on the WARGA database. Data after 1997 is based on the Merrill Lynch database.

U.S. mortgage rate: Quarterly average of weekly series of Freddie Mac data.

U.S. Dow Jones Total Stock Market Index: End of quarter value, Dow Jones.

U.S. House Price Index: CoreLogic, index level, seasonally adjusted by Federal Reserve staff.

U.S. Commercial Real Estate Price Index: From Flow of Funds Accounts of the United States, Federal Reserve Board (Z.1 release); the series corresponds to the data for price indexes: Commercial Real Estate Price Index (series FL075035503.Q), divided by 1,000.

U.S. Market Volatility Index (VIX): Chicago Board Options Exchange, converted to quarterly by using the maximum value in any quarter.

Euro area real GDP growth: Staff calculations based on Statistical Office of the European Communities via Haver, extended back using ECB Area Wide Model dataset (ECB Working Paper series no. 42).

Euro area inflation: Staff calculations based on Statistical Office of the European Communities via Haver.

Developing Asia real GDP growth: Staff calculations based on Bank of Korea via Haver; Chinese National Bureau of Statistics via CEIC; Indian Central Statistical Organization via CEIC; Census and Statistics Depart-

ment of Hong Kong via CEIC; and Taiwan Directorate-General of Budget, Accounting, and Statistics via CEIC.

Developing Asia inflation: Staff calculations based on Bank of Korea via CEIC; Chinese Statistical Information and Consultancy Service via CEIC and IMF Recent Economic Developments; Labour Bureau of India via CEIC and IMF; Census and Statistics Department of Hong Kong via CEIC; and Taiwan Directorate-General of Budget, Accounting, and Statistics via CEIC.

Japan real GDP growth: Cabinet Office via Haver.

Japan inflation: Ministry of Internal Affairs and Communications via Haver.

U.K. real GDP growth: Office of National Statistics via Haver.

U.K. inflation: Office of National Statistics (uses Retail Price Index to extend series back to 1960) via Haver.

Exchange rates: Bloomberg.

Appendix B: Models to Project Net Income and Stressed Capital

This appendix describes the models used to project stressed capital ratios and pre-tax net income and its components for the 18 BHCs subject to DFAST 2013.[27] The models fall into four broad categories:

1. Models to project losses on loans held in the accrual loan portfolio.
2. Models to project other types of losses, including those from changes in fair value on loans held for sale or measured under the fair-value option, securities, trading and counterparty exposures, losses related to operational-risk events, and mortgage repurchase/put-back losses.
3. Models to project the components of PPNR (revenues and non-credit-related expenses).
4. The model to project capital ratios, given projections of pre-tax net income, assumptions for determining provisions into the ALLL, and assumed capital actions under the Dodd-Frank Act stress test rule.

A majority of the models described here were refined incrementally over the past year—in some instances, benefitting from more granular data collection through the FR Y-14 report. However, some of the models were either changed substantially or newly implemented for DFAST 2013, including the commercial real estate mortgage model, the credit card model, the modeling of losses due to operational-risk events, and the PPNR model.

[27] In connection with DFAST 2013, and in addition to the models developed and data collected by the Federal Reserve, the Federal Reserve used proprietary models or data licensed from the following providers: Andrew Davidson & Co., Inc.; BlackRock Financial Management, Inc.; Bloomberg Finance L.P.; CB Richard Ellis, Inc.; CoreLogic Solutions, LLC; Equifax Information Services LLC; Fitch Solutions, Inc.; Intex Solutions, Inc.: Investortools, Inc.; McDash Analytics, LLC, a wholly owned subsidiary of Lender Processing Services, Inc.; Markit Group; Moody's Analytics, Inc.; Morningstar Credit Ratings, LLC; Municipal Securities Rulemaking Board; and Standard & Poor's Financial Services LLC. In addition, with respect to the global market shock component of the severely adverse scenario, the Federal Reserve used proprietary data licensed from the following providers: Bank of America Corporation; Barclays Bank PLC; Bloomberg Finance L.P.; JPMorgan Chase & Co.; Markit Group; Moody's Analytics, Inc.; Standard & Poor's Financial Services LLC; and Thomson Reuters LLC.

Losses on the Accrual Loan Portfolio

More than a dozen individual models are used to project losses on loans held in the accrual loan portfolio. The individual loan types modeled can broadly be divided into wholesale loans, such as commercial and industrial (C&I) loans and commercial real estate (CRE) loans, and retail loans, including various types of residential mortgages, credit cards, student loans, auto loans, small business loans, and other consumer lending. In some cases, these major categories comprise several subcategories, each with its own loss projection model, but the models within a subcategory are similar in structure and approach. The models project losses using detailed loan portfolio data provided by the BHCs on the FR Y-14 report.

Two general approaches are taken to model losses on the accrual loan portfolio. In the first approach—an approach broadly used for DFAST 2013—the models estimate expected losses under the macroeconomic scenario; that is, they project the probability of default (PD), loss given default (LGD), and exposure at default (EAD) for each quarter of the planning horizon. Expected losses in quarter t are the product of these three components:

$$Loss_t = PD_t * LGD_t * EAD_t$$

PD is generally modeled as part of a transition process in which loans move from one payment status to another (e.g., from current to delinquent) in response to economic conditions. Default is the last possible transition and PD represents the likelihood that a loan will default during a given period. The number of payment statuses and the transition paths modeled differ by loan type.

LGD is typically defined as a percentage of EAD and is based on historical data. For some loan types,

LGD is modeled as a function of borrower, collateral, or loan characteristics and the macroeconomic variables from the severely adverse scenario. For other loan types, it is assumed to be a fixed percentage for all loans in a category. Finally, the approach to EAD varies by loan type and depends on whether the outstanding loan amount can change between the current period and the period in which the loan defaults (e.g., for lines of credit).

In the second approach, the models capture the historical behavior of net charge-offs relative to changes in macroeconomic and financial market variables and loan portfolio characteristics.

The loss models primarily focus on losses arising from loans in the accrual loan portfolio as of September 30, 2012. The loss projections also incorporate losses on loans originated or purchased after the planning horizon begins. These incremental loan balances are calculated based on the BHCs' own projections of loan balances over the planning horizon under the severely adverse scenario. These balances are assumed to have the same risk characteristics as those of the loan portfolio as of September 30, 2012, with the exception of loan age in the retail portfolios, where seasoning is incorporated. This is a simple, but generally conservative, assumption.

Loss projections generated by the models are adjusted to take account of purchase accounting treatment, which recognizes discounts on impaired loans acquired during mergers, and any other write-downs already taken on loans held in the accrual loan portfolio. This latter adjustment ensures that losses related to these loans are not double-counted in the projections.

Wholesale Lending: Corporate Loans

Losses stemming from default on corporate loans are projected at the loan level using an expected-loss modeling framework. Corporate loans consist of a number of different categories of loans, as defined by the FR Y-9C. The largest group of these loans include C&I loans, which are generally defined as loans with more than $1 million in committed balances and are "graded" using a BHC's corporate loan rating process.[28]

The PD for a C&I loan is projected over the planning horizon by first calculating the loan's PD at the beginning of the planning horizon and then projecting it forward using an estimated equation that relates historical changes in PD to changes in the macroeconomic environment. The PD as of September 30, 2012, is calculated for every C&I loan in a BHC's portfolio using detailed, loan-level information submitted by the BHC. For publicly traded borrowers, a borrower-specific PD, based on the expected default frequency, is used. For other borrowers, the PD is estimated based on the BHC's internal credit rating, which is converted to a standardized rating scale. Loans that are 90 days past due, in non-accrual status, or that have an ASC 310-10 reserve as of September 30, 2012 are assigned a PD of 100 percent.

Quarterly changes in the PD after the third quarter of 2012 are projected over the planning horizon using a series of equations that relate historical changes in the average PD as a function of changes in macroeconomic variables, including changes in real GDP, the unemployment rate, and the spread on BBB-rated corporate bonds. The equations are estimated separately by borrower industries, credit quality categories, and countries.

The LGD for a C&I loan at the beginning of the planning horizon is determined by the line of business, seniority of lien (if secured), country, and ASC 310-10 reserve, if applicable. The LGD is then projected forward by relating the change in the LGD to changes in the PD. In the model, the PD is used as a proxy for economic conditions, and, by construct, increases in PD generally lead to higher LGDs.

The EAD for closed-end C&I loans is assumed to equal the loan's outstanding balance. The EAD for C&I revolving lines of credit equals the sum of the funded balance and a portion of the unfunded commitment, which reflects the amount that is likely to be drawn down by the borrower in the event of default. This drawdown amount was estimated based on the historical drawdown experience for defaulted U.S. syndicated loans that are in the Shared National Credit (SNC) database.[29] The EAD for standby letters of credit and trade finance credit are conservatively assumed to equal the total commitment.

[28] All definitions of loan categories and default in this appendix are definitions used for the purposes of the supervisory stress test models and do not necessarily align with general industry definitions or classifications.

[29] SNCs have commitments of greater than $20 million and are held by three or more regulated participating entities. See www.federalreserve.gov/bankinforeg/snc.htm for additional information about SNCs.

Other corporate loans that are similar in some respects to C&I loans are modeled using the same framework. These loans include owner-occupied commercial real estate loans, capital equipment leases, loans to depositories, and other loans.[30] Projected losses for these loans are disclosed in the other loans category.

Wholesale Lending: Commercial Real Estate Mortgages

CRE mortgages are loans collateralized by domestic and international multifamily or non-farm, non-residential properties, and construction and land development loans (C&LD), as defined by the FR Y-9C. Losses stemming from default on CRE mortgages are projected at the loan level using an expected-loss modeling framework.

The PD model for CRE mortgages is a hazard model of the probability that a loan transitions from current to default status, given the characteristics of the loan as well as macroeconomic variables, such as house prices and CRE vacancy rates, at both the geographic market and national level. Once defaulted, the model assumes the loan does not re-perform; the effect of re-performance on the estimated loan loss is captured in the LGD model. A CRE mortgage loan is considered in default if it is 90 days past due, in non-accrual status, has an ASC 310-10 reserve, or had a very low internal credit rating at the most recent time its maturity was extended. The effect of seasoning and loan maturity on the PD is estimated to be different for income-producing and C&LD loans, and is estimated separately for each loan type using historical FR Y-14 data. However, the effect of other loan characteristics and the macroeconomic variables is assumed to be the same for income-producing properties and C&LD loans and is estimated using a single model for both types of loans using historical CMBS data.

The LGD for CRE mortgages is estimated using Y-14 data on ASC 310-10 reserves. The model first estimates the probability that a defaulted loan will have losses as a function of loan characteristics and macroeconomic variables, and then, using loans with losses, estimates the loss on the CRE mortgage, as a function of the expected probability of loss, characteristics of the loan, and macroeconomic variables. Finally, the EAD for CRE mortgages is assumed to equal the loan's outstanding balance for amortizing loans and the full committed balance for C&LD loans.

Retail Lending: Residential Mortgages

Residential mortgages held in BHC portfolios include first and junior liens, either closed-end loans or revolving credits, that are secured by one- to-four-family residential real estate as defined by the FR Y-9C. Losses stemming from default on residential mortgages are projected at the loan level using an expected-loss modeling framework.[31]

The PD model for first-lien residential mortgages estimates the probability that a loan transitions to different payment statuses, including current, delinquent, default, and paid off. Separate PD models are estimated for three types of closed-end, first-lien mortgages: fixed-rate, adjustable-rate, and option adjustable-rate mortgages. The PD model specification varies somewhat by loan type, but in general, each model estimates the probability that a loan transitions from one payment state to another (e.g., from current to delinquent or from delinquent to default) over a single quarter, given the characteristics of the loan, borrower, and underlying property as well as macroeconomic variables such as local house prices, the statewide unemployment rate, and interest rates.[32] Origination vintage effects are also included in part to capture unobserved characteristics of loan quality. The historical data used to estimate this model are industry-wide, loan-level data from many banks and mortgage loan originators. These estimated PD models are used to simulate default associated with the severely adverse scenario for each loan reported by each BHC. Loans that are 180 days or more past due as of September 30, 2012, are considered in default and are assigned a PD of 100 percent.

The LGD for residential mortgages is estimated using two models. One model estimates the amount of time that elapses between default and real estate owned (REO) disposition (timeline model), while the other relates characteristics of the defaulted loan, such as

[30] The corporate loan category also includes loans that are dissimilar from typical corporate loans, such as securities lending and farmland loans, which are generally a small share of BHC portfolios. For these loans, a conservative and uniform loss rate based on analysis of historical data was assigned.

[31] To predict losses on new originations over the planning horizon, newly originated loans are assumed to have the same risk characteristics as the existing portfolio, with the exception of the loan age, LTV, and delinquency status.

[32] The effects of loan modification and evolving modification practices are captured in the probability that a delinquent loan transitions back to current status (re-performing loans).

the property value at default, to one component of losses net of recoveries—the proceeds from the sale of the property net of foreclosure expenses (loss model).[33] These net proceeds are calculated from historical data on loan balances, servicer advances, and losses from defaulted loans in private-label mortgage-backed securities (RMBS). These RMBS data are also used to estimate the LGD loss model separately for prime jumbo loans, subprime, and alt-A loans.[34]

Finally, using the elapsed time between default and REO disposition estimated in the timeline model, total estimated losses are allocated into credit losses on the defaulted loans, which are fully written down at the time of default, or net losses arising from the eventual sale of the underlying property (other real estate owned—or OREO—expenses), which flow through PPNR. House price changes from the time of default to foreclosure completion (REO acquisition) are captured in LGD, while house price changes after foreclosure completion and before sale of the property are captured in OREO expenses. The LGD for loans already in default as of September 30, 2012, includes further home price declines through the point of foreclosure.

Home equity loans (HELs) are junior-lien, closed-end loans, and home equity lines of credit (HELOCs) are revolving open-end loans extended under lines of credit, both secured by one- to four-family residential real estate as defined by the FR Y-9C. Losses stemming from default on HELs and HELOCs are projected at the loan level in an expected loss framework that is similar to first-lien mortgages, with a few differences. In the PD model for HELs and HELOCs, the delinquency state is defined as ever delinquent, to simplify the competing risk-model structure. The model also assumes that second-lien HELs and HELOCs that are current as of September 30, 2012, but are behind a seriously delinquent first-lien will all default within the planning horizon. The LGD for HEL and HELOCs is estimated using data from private-label mortgage-backed securities, using the same models used for closed-end first-lien, but the estimated total mortgage losses for properties with a defaulted HEL or HELOC are allocated based on the lien position. Finally, for HELOCs, EAD is conservatively assumed to equal the credit limit.

Retail Lending: Credit Cards

Credit cards include both general purpose and private-label credit cards, as well as charge cards, as defined by the FR Y-9C. Credit card loans extended to individuals are included in retail credit cards, while credit cards loans extended to businesses and corporations are included in other retail lending and are modeled separately. Losses stemming from defaults on credit cards are projected at the loan level using an expected-loss modeling framework.

The PD model for credit cards estimates the probability that a loan transitions from delinquency status to default status, given the characteristics of the account and borrower as well as macroeconomic variables such as unemployment. When an account defaults, it is assumed to be closed and does not return to current status. Credit card loans are considered in default when they are 120 days past due. Because the relationship between the PD and its determinants can vary with the initial status of the account, separate transition models are estimated for accounts that are current and active, current and inactive accounts, and delinquent accounts. In addition, because this relationship can also vary with time horizons, separate transition models are estimated for short-, medium-, and long-term horizons. The historical data used to estimate this model are industry-wide, loan-level data from many banks, and separate models were estimated for bank cards and charge cards. The PD model is used to forecast the PD for each loan reported by each BHC in the Y-14M report.

The LGD for credit cards is assumed to be a fixed percentage and is calculated separately for bank cards and charge cards based on historical industry data on LGD during the most recent economic downturn. The EAD for credit cards equals the sum of the amount outstanding on the account and a portion of the credit line, which reflects the amount that is likely to be drawn down by the borrower between the beginning of the planning horizon and the time of default. This drawdown amount is estimated as a function of account and borrower characteristics. Because this relationship can vary with the initial status of the account and time to default, separate models are estimated for current and delinquent

[33] Other components of losses net of recoveries are calculated directly from available data. Private mortgage insurance is not incorporated into the LGD models. Industry data suggest that insurance coverage on portfolio loans is infrequent and cancellation or nullification of guarantees was a common occurrence during the recent downturn.

[34] The differences between characteristics of mortgages in RMBS and mortgages in bank portfolios, such as loan-to-value ratio (LTV), are controlled for by including various risk characteristics in the LGD model, such as original LTV ratio, credit score, and credit quality segment (prime, alt-A, and subprime).

accounts and for accounts with short-, medium-, and long-term transition to default. For accounts that are current, separate models were also estimated for different credit-line-size segments.

Retail Lending: Auto

Auto loans are consumer loans extended for the purpose of purchasing new and used automobiles and light motor vehicles as defined by the FR Y-9C. Losses stemming from default in auto retail loan portfolios are projected at the portfolio segment level using an expected loss framework.

The PD model for auto loans estimates the probability that a loan transitions from either a current or delinquent status to default status, given the characteristics of the loan and borrower as well as macroeconomic variables such as house prices and the unemployment rate (which, in some cases, are interacted with loan and borrower characteristics to allow for greater sensitivity to stressful conditions in high-risk segments). Default on auto loans is defined based on either the payment status (120 days past due), actions of the borrower (bankruptcy), or the lender (repossession). Because the relationship between the PD and its determinants can vary with the initial status of the account, separate transition models are estimated for accounts that are current and delinquent accounts. The historical data used to estimate this model are loan-level, credit bureau data.

The LGD for auto loans is estimated given the characteristics of the loan as well as macroeconomic variables. The historical data used to estimate this model are pooled, segment-level data provided by the BHCs on the FR Y-14Q. The EAD for auto loans is based on the typical pattern of amortization of loans that ultimately defaulted in historical credit bureau data. The estimated EAD model captures the average amortization by loan age for current and delinquent loans over nine quarters.

Retail Lending: Other Retail Lending

Other retail lending includes the small business loan portfolio, the other consumer loan portfolio, the student loan portfolio, the business and corporate credit card portfolio, and international retail portfolio. Losses due to default on other retail lending are forecast by modeling net charge-off rates as a function of portfolio risk characteristics and macroeconomic variables, then using this model to predict future charge-offs consistent with the macroeconomic variables provided in the severely adverse scenario.[35] The predicted net charge-off rate is applied to balance projections provided by the BHCs to estimate projected losses. Default is defined as 90 days or more past due for domestic and international other consumer loans and 120 days or more past due for student loans, small business loans, corporate cards, and international retail portfolios. The net charge-off rate is modeled in a system of equations that also includes the delinquency rate and the default rate. In general, each rate is modeled in an autoregressive specification that also includes the rate in the previous delinquency state, characteristics of the underlying loans, macroeconomic variables and, in some cases, seasonal factors. The models are specified to implicitly capture roll-rate dynamics. In some cases, the characteristics of the underlying loans, such as dummy variables for each segment of credit score at origination, are also interacted with the macroeconomic variables to capture differences in sensitivities across risk segments to changes in the macroeconomic environment. Each retail product type is modeled separately and, for each product type, economic theory and the institutional characteristics of the product guide the inclusion and lag structure of the macroeconomic variables in the model.

Because of data limitations and the relatively small size of these portfolios, the net charge-off rate for each loan type is modeled using industry-wide, monthly data at the segment level. For most portfolios, these data are collected on the FR Y-14Q Retail schedule, which segments each portfolio by characteristics such as borrower credit score; loan vintage; type of facility (e.g., installment versus revolving); and, for international portfolios, geographic region.[36]

Charge-off rates are projected by applying the estimated system of equations to each segment of the BHC's loan portfolio as of September 30, 2012. The portfolio level charge-off rate equals the dollar-weighted average of the segment-level charge-off rates.[37] These projected charge-off rates are applied

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[35] An exception is made for the government-guaranteed portion of BHCs' student loan portfolios, to which an assumed monthly PD of 1.5 percent and LGD of 3 percent is applied.

[36] Business and corporate credit card portfolio data, which previously were collected on the FR Y-14Q Retail schedule, are now collected at the loan-level on the FR Y-14M Credit Card schedule and subsequently aggregated to the segment level.

[37] The dollar weights used are based on the distribution reported during the last observation period. This method assumes that the distribution of loans across risk segments, other than delin-

to the balance projections supplied by the BHC to calculate portfolio losses.

Loan-Loss Provisions for the Accrual Loan Portfolio

Losses on the accrual loan portfolio flow into net income through provisions for loan and lease losses. Provisions for loan and lease losses equal projected loan losses for the quarter plus the amount needed for the ALLL to be at an appropriate level at the end of the quarter, which is a function of projected future loan losses. The appropriate level of ALLL at the end of a given quarter is generally assumed to be the amount needed to cover projected loan losses over the next four quarters.[38] Because this calculation of ALLL is based on projected losses under the severely adverse scenario, it may differ from a BHC's actual level of ALLL at the beginning of the planning horizon, which is based on the BHC's assessment of future losses in the current economic environment. Any difference between these two measures of ALLL is smoothed into the provisions projection over the nine quarters of the planning horizon. Because projected loan losses include off-balance sheet commitments, the BHC's allowance at the beginning of the planning horizon for credit losses on off-balance sheet exposures (as reported on the FR Y-9C) is subtracted from the provisions projection in equal amounts each quarter.

Other Losses

Loans Held for Sale or Measured under the Fair-Value Option

Certain loans are not accounted for on an accrual basis. Loans to which the fair-value option (FVO) is applied are valued as mark-to-market assets; loans under the held-for-sale (HFS) and some loans under the held-for-investment (HFI) accounting classifications are carried at the lower of cost or market value. FVO, HFS, and HFI loan portfolios are identified by the BHCs and reported on the FR Y-14. Losses related to FVO, HFS, and HFI loans are recognized in the income statement at the time of the devaluation.

For the six BHCs subject to the global market shock, changes in the value of these loans are calculated using the price shocks applied to similar loans in other mark-to-market positions on the BHCs' balance sheets (e.g., trading account positions). For the remaining BHCs, losses on FVO, HFS, and HFI loans are not projected separately, and any gains or losses on these loans are captured in PPNR as part of non-interest income. The PPNR model is described later in this paper (see page 46).

For the six BHCs subject to the global market shock, losses on C&I loans held under FVO, HFS, and HFI accounting standards are estimated by applying the percent change in the secondary market prices for corporate loans during the second half of 2008 to current outstanding and committed loan balances. The loss rates applied to C&I loans vary with the credit rating reported by the BHCs and with the amount funded. Loss rates for investment-grade loans with more than half of their credit line used are based on historical price changes for investment grade loans, while loss rates for investment-grade loans with less than half of their credit line used are based on changes in CDS spreads. Loss rates for all non-investment grade loan facilities, regardless of the percent funded, are based on price changes for loans with the same credit rating.

Losses on CRE and retail loans held under FVO, HFS, and HFI accounting standards are estimated in a similar way. The loss rate applied to these loans are taken from the global market shock and vary by major type of loan (e.g., residential mortgages, student loans, credit cards, and the major categories of CRE loans) and by loan vintage (year of origination). Losses on all major residential and other retail asset types (including student loans and credit cards) are estimated applying a percent change in value based on the loan type and vintage to the carrying value of FVO and HFS exposures provided by the firms. Because retail FVO and HFS loans are generally of relatively high credit quality, the changes in value are based on the global market shock for AAA-rated positions in the non-agency residential whole loans, credit card asset-backed securities (ABS), auto ABS, and student loan ABS portfolios. No losses are assumed for residential mortgage loans under forward contract with the government-sponsored enterprises (GSEs).

quency status segments, remains constant over the projection period.

[38] For loan types modeled in a charge-off framework, the appropriate level of ALLL was adjusted to reflect the difference in timing between the recognition of expected losses and that of charge-offs.

Securities in the Available-for-Sale and Held-to-Maturity Portfolios

Losses on securities held in the available-for-sale (AFS) or held-to-maturity (HTM) portfolios are projected other-than-temporary impairment (OTTI) over the planning horizon. OTTI projections incorporate other-than-temporary differences between amortized cost and fair market value due to credit impairment, but not differences reflecting changes in liquidity or market conditions.

Some of the AFS/HTM securities, including U.S. Treasury and U.S. government agency obligations and U.S. government agency mortgage-backed securities (MBS), are assumed not to be at risk for the kind of credit impairment that results in OTTI charges. The remaining securities can be grouped into two basic categories: securitizations, where the value of the security depends on the value of an underlying pool of collateral, and direct obligations such as corporate or sovereign bonds, where the value of the security depends primarily on the credit quality of the issuer.[39]

In all, 10 separate models are used to project OTTI, reflecting differences in the basic structure of the securities (securitized versus direct obligation) and differences in underlying collateral and obligor type. Overall, the OTTI projections involve CUSIP-level analysis of more than 70,000 individual positions at the 18 BHCs.

For securitized obligations, credit and prepayment models estimate delinquency, default, severity, and prepayment vectors on the underlying pool of collateral under the supervisory scenarios. In most cases, these projections incorporate relatively detailed information on the underlying collateral characteristics for each individual security, derived from commercial databases that contain loan-level collateral and security structure information. Delinquency, default, severity, and prepayment vectors are projected either using econometric models developed by the Federal Reserve or third-party models designed to project these estimates in stressed economic environments. The models used vary with the type of underlying collateral, but generally estimate the relationship between the collateral's performance vectors and economic variables, such as the unemployment rate and house prices. These vectors are then applied to a cash flow engine that captures the specific structure of each security (e.g., tranche, subordination, and payment rules) to calculate the intrinsic value (present value of the cash flows) for that security. If the projected intrinsic value is less than the value at which the security is being carried on the BHC's balance sheet (amortized cost), then the security is considered to be other than temporarily impaired, and OTTI is calculated as the difference between amortized cost and intrinsic value.

For direct obligations, the basic approach is to assess the PD or severe credit deterioration for each security issuer or group of security issuers over the planning horizon. PD is either modeled directly or inferred by modeling changes in expected default frequencies or credit default swap (CDS) spreads for the bonds in question. A security is considered other than temporarily impaired if the projected value of the PD or CDS spread crossed a predetermined threshold level—generally the level consistent with a CCC/Caa rating—at any point during the planning horizon. LGD on these securities is based on historical data on bond recovery rates. OTTI is calculated as the difference between the bond's amortized cost and its projected value under the supervisory scenarios.

No OTTI charges are assigned to securities acquired by the BHCs after September 30, 2012, ("incremental balances") because these are assumed to be purchased at already discounted prices. This assumption is also consistent with historical data showing that the composition of the AFS and HTM portfolios tends to shift toward U.S. Treasury and agency obligations in times of economic stress, suggesting that incremental AFS/HTM balances are less likely to be at risk of generating OTTI charges.

Trading and Counterparty Credit Risk

Total potential mark-to-market losses stemming from trading positions under a stressed market environment can be broken into two primary types. The first type of loss arises from a decrease in the market value of trading positions, regardless of the BHC's counterparties. The second type is the counterparty credit risk associated with changes in counterparty exposures and with deterioration of counterparties' creditworthiness under stressed market conditions, which adversely affects the riskiness of positively valued trading positions. The models used to project losses on trading positions under the global market shock account for both sources of potential losses,

[39] Equities are also held in the AFS portfolios, although in small amounts. Losses on these positions are calculated by applying market value shocks based on the equity price changes in the supervisory scenarios.

incorporate the accounting treatment of these positions, and generally rely on information provided by firms on estimated sensitivities of their exposures to specific risk factor shocks. Because positions in the trading account are mark-to-market on a daily basis, the approach used to generate loss projections on trading positions is intended to capture the market-value effect of the global market shock.

Losses on trading positions, such as equities, FX, interest rates, commodities, credit products, private equity, and other fair-value assets, arising from the global market shock are calculated using the BHCs' own estimates of the sensitivity of the value of these positions to changes in a wide range of market rates, prices, spreads, and volatilities. Trading losses are calculated by multiplying these sensitivities by the risk factor changes included in the global market shock developed by the Federal Reserve. These shocks are assumed to be instantaneous and no additional hedging, recovery in value, or changes in positions are incorporated into the loss calculation.

Counterparty credit losses capture the effect of the global market shock on counterparty exposures and on credit valuation adjustments (CVA) and incremental default risk (IDR) of the six BHCs with large trading positions. CVAs are adjustments above and beyond the mark-to-market valuation of the BHCs' trading portfolios that capture changes in the risk that a counterparty to derivatives transaction or other trading position will default on its obligations. Using detailed data provided by the six trading BHCs on the FR Y-14A Counterparty schedule, each trading firm's baseline and stressed CVA for each counterparty or ratings band is calculated as a function of unstressed and stressed values of exposure, PD, and LGD. CVA losses equal the difference between the baseline and the stressed CVAs.

In addition to CVA and mark-to-market losses on trading positions, default risk in the trading book is captured through incremental default risk (IDR). IDR estimates the potential additional loss stemming from the default of individual counterparties in excess of the CVA-related losses associated with the defaulting counterparties or obligors. IDR complements CVA in the stress tests by estimating the losses from jump-to-default in the tail of the distribution of defaults, where the tail percentile is calibrated using the corporate bond spread in the severely adverse scenario.

The IDR models estimate losses from jump-to-default for various exposure types, including single-name, index and index-tranche, securitizations, and counterparty credit, at different levels of granularity depending on exposure type. The loss estimates are based on simulation models of obligor-level defaults. The IDR loss models rely on position and exposure data provided by the firms. IDR losses occur over nine-quarters. For IDR on collateralized counterparty credit positions, the projections assume a margin period of risk after the initial market shock during which no collateral is received in response to margin calls, and default risk is elevated to reflect the funding stress from collateral calls.

Losses on trading and counterparty positions as a result of a global market shock were estimated only for the six BHCs with large trading operations since trading operations determine risk and performance to a larger extent at these firms than at any other BHCs participating in DFAST 2013. In addition, the Federal Reserve's projections of PPNR for all 18 BHCs incorporate the effect of the supervisory scenarios on the revenues generated by day-to-day trading activities, such as market-making for customers and clients.

Losses Related to Operational-Risk Events

Losses related to operational-risk events are a component of PPNR and include losses stemming from events such as fraud, employee lawsuits, or computer system or other operating disruptions. Operational-risk loss estimates are an average of losses estimated using three approaches: a panel regression model, a loss distribution approach (LDA), and a historical simulation approach. In all three models, projections of operational-risk-related losses for the 18 BHCs are modeled for each of seven operational-risk categories identified in the Federal Reserve's advanced approaches rule.[40] All three models are based on historical operational-loss data submitted by the BHCs on the FR Y-14Q.

In the panel regression model, projections of losses related to operational-risk events are the product of

[40] The seven operational-loss event type categories identified in the Federal Reserve's advanced approaches rule are internal fraud; external fraud; employment practices and workplace safety; clients, products, and business practices; damage to physical assets; business disruption and system failures; and execution, delivery, and process management. See 12 CFR part 225, appendix G, section 2.

two primary components: loss frequency and loss severity. The expected loss frequency is the estimated number of operational-loss events in the severely adverse scenario, while loss severity is the estimated loss per event in each category. Loss frequency is modeled as a function of macroeconomic variables and BHC-specific characteristics. The model is estimated using FR Y-14Q data on operational-loss events as reported by BHCs. Macroeconomic variables, such as the real GDP growth rate, stock market return and volatility, credit spread, and the unemployment rate, are included directly in the panel regression model and/or used to project certain firm-specific characteristics. Loss is projected as a product of projected loss frequency from the panel regression model and loss severity, which equals the historical dollar loss per event in each operational-risk category. Total losses related to operational-risk events equal losses summed across operational-risk categories. Because the relationship between the frequency of operational-risk events and macroeconomic conditions varies across the categories, separate models were estimated for each category.[41]

In the LDA model, expected losses related to operational-risk conditional on the macroeconomic scenarios are proxied by the losses at different percentiles of simulated, annualized loss distributions. The loss frequency is assumed to follow a Poisson distribution, in which the estimated intensity parameter of the Poisson distribution is specific to each event type and BHC. A loss severity distribution is also fit to each event type for each BHC.[42] The distribution of aggregate annual losses is simulated, and the macroeconomic scenario is implicitly incorporated in the results through the percentile choice, which was based on analysis of historical loss data for all BHCs taken together. The approach used to choose the percentile for each scenario essentially targets the total loss forecast for all BHCs and allows the LDA approach to split this loss among the individual BHCs and event types. Loss forecasts for an individual BHC are the sum of the BHCs' loss estimates for each event type.

In the third approach—the historical simulation approach—the distribution of aggregate annual losses are simulated by repeatedly drawing the annual event frequency from the same distribution used in the LDA, but the severity of those events was drawn from historical realized loss data rather than an estimated loss severity distribution. Losses from the same percentile of the distribution as in the LDA are used to approximate the severely adverse scenario.

Mortgage Repurchase Losses

Mortgage repurchase expenses are a component of PPNR and are related to litigation, or to demands by mortgage investors to repurchase loans deemed to have breached representations and warranties, or to loans insured by the U.S. government for which coverage could be denied if loan defects are identified. Mortgage repurchase losses for loans sold with representations and warranties liability are estimated in two parts. The first part is to estimate credit losses for all loans sold by a BHC that have outstanding representations and warranties liability, including loans sold as whole loans, into private-label securities (PLS) or to a GSE (Fannie Mae and Freddie Mac) or loans insured by the government. This part takes into account both losses recognized to date and future losses projected over the remaining lifetime of the loans. The second part is to estimate the share of this credit loss that may be ultimately put back to the selling BHC (whether through contractual repurchase, a settlement agreement, or litigation loss).

Future credit loss rates for mortgages (e.g., grouped by vintage and investor type) are projected using industry-wide data and models that incorporate the house price assumptions in the severely adverse scenario.[43] These industry-wide credit loss rates for the GSEs are first adjusted to reflect the relative credit performance of loans sold by each BHC and then are applied to the outstanding balances of the corresponding groups of loans reported by each BHC. These estimates are based on data provided by the BHCs, which are collected on the FR Y-14A and include vintage-level data on original and current unpaid balances, current delinquency status, and losses recognized to date, among other measures. Losses recognized to date on mortgages sold into

[41] Operational-risk losses due to damage to physical assets, and business disruption and system failure are not expected to be dependent on the macroeconomic environment, and therefore were set equal to each BHC's average annual operational-risk loss in that category. External fraud was modeled using each BHC's average quarterly losses during the period from the beginning of the financial crisis in the third quarter of 2007 through the end of the recession in the fourth quarter of 2009.

[42] Multiple candidate specifications for the distribution were fit to the data, and the final specification was chosen based on a number of criteria, including a measure of goodness-of-fit.

[43] The data used to model credit losses for government-insured loans and loans sold to GSEs were loans randomly selected from an industry database. The data used to model credit losses for loans sold into private-label securities and as whole loans were loans in proxy deals chosen based on the dealer, issuer, and originator information contained in the database.

private-label securities (PLS) and as whole loans are estimated by applying historical credit loss rates by vintage to the unpaid principal balance of the run-off portfolio.

The share of past and future credit losses likely to be ultimately put back to the selling BHCs (the "put-back rate") is estimated separately for each investor type and considers both investor behavior to date and the procedural mechanics of pursuing repurchase claims. For whole loans and loans sold into PLS, the estimated put-back rate is based on information from recent settlement activities in the banking industry and incorporates adjustments for supervisory assessments of BHC-specific put-back risk. For government-insured loans, the estimated put-back rate is also based on information from recent settlement activities. Finally, for loans sold to Fannie Mae and Freddie Mac, the estimated put-back rate is based on historical information on the repurchases of loans sold to Fannie Mae or Freddie Mac, with consideration given to the relative seasoning of each vintage and the time interval between default and demand.

The initial estimate of mortgage repurchase losses equals the estimated put-back rate applied to the corresponding credit losses for all loans sold by a BHC that have outstanding representations and warranties liability. This initial estimate is adjusted to account for various other factors.

First, because this methodology does not distinguish between originated loans and purchased loans, repurchase losses stemming from PLS are adjusted to avoid double-counting of put-back exposure related to whole loans sold to another CCAR BHC and are subsequently included in a PLS deal. Second, prior to incorporating estimated mortgage repurchase losses into a BHC's PPNR, estimated losses are reduced by the BHC's reported starting period amount of reserves for put-back losses.[44] Finally, the projection assumes that a majority—but not all—of the mortgage repurchase losses projected using these techniques are realized over the planning horizon, with the losses divided equally across quarters and incorporated into the PPNR projections. This assumption attempts to balance the recognition that the resolution of repurchase issues could be a lengthy process against the desire to ensure that the severely adverse scenario projections incorporate a conservative assessment of the losses to which the BHCs could be exposed over the planning horizon.

[44] These netted expenses include repurchase reserves as of the third quarter of 2012 and litigation reserves as of the third quarter of 2012 that the BHC identified as being held specifically for put-back issues.

Pre-Provision Net Revenue

PPNR is forecast using a series of autoregressive models that relate the components of a BHC's revenues and non-credit-related expenses, expressed as a share of relevant asset or liability balances, to BHC characteristics, and to macroeconomic variables.

These models are estimated using historical, merger-adjusted, panel data from the FR Y-9C. Separate models are estimated for 17 different components of PPNR, including five components of interest income, three components of interest expense, five components of noninterest non-trading income, three components of non-interest expenses, and trading revenue. When choosing the level of detail at which to model the components of PPNR, consideration is given both to the BHCs' business models and the ability to accurately model small components of revenue. Movements in PPNR stemming from operational-risk events, mortgage repurchases, or OREO, are modeled in separate frameworks, described earlier in this document. The PPNR model estimates and projections are adjusted where appropriate to avoid double-counting movements associated with these items.

The model specification varies somewhat by PPNR component. But in general, each component is related to characteristics of the BHCs, including, in some cases, total assets, asset composition, funding sources, and liabilities. In some PPNR components, these measures of BHC portfolio and business activity do not adequately capture the significant variation across BHCs, so BHC-specific controls are included in the models for these components. Macroeconomic variables used to project PPNR include yields on Treasury securities, corporate bond yields, mortgage rates, real GDP, and stock market price movements and volatility. The specific macroeconomic variables differ across equations based on statistical predictive power and economic interpretation.

Because forecasts of PPNR from trading activities are intended to include the effect of the relevant macroeconomic variables and to exclude the effect of the global market shock, net trading revenue is modeled

using a median regression approach to effectively lessen the influence of extreme movements in trading revenue associated with the recent financial crisis.

Equity Capital and Regulatory Capital

The final modeling step translates the projections of revenues, expenses, losses, and provisions from the models described above into estimates of equity and regulatory capital for each BHC under the severely adverse scenario. The projected components of pre-tax net income are summed, and a consistent tax rate across all BHCs is applied to calculate after-tax net income over the projection period. Projected after-tax net income, combined with the capital action assumptions prescribed in the Dodd-Frank Act stress test rules, are used to project quarter-by-quarter changes in equity capital.[45]

The change in equity capital equals projected after-tax net income minus capital distributions (dividends and any other actions that disperse equity), plus any employee compensation-related issuance or other corporate actions that increase equity, plus other comprehensive income and other equity adjustments that are consistent with the Dodd-Frank Act stress test rules.

Projected changes in equity capital in turn determine changes in regulatory capital measures. These regulatory capital measures are consistent with current U.S. regulatory capital rules that limit or eliminate the recognition of certain intangible assets and unrealized gains and losses in tier 1 capital. For example, consistent with regulatory capital rules, only a limited amount of deferred tax assets is allowable in projected regulatory capital. Regulatory capital measures do not include unrealized gains and losses, but incorporate the cumulative effect of some other comprehensive income items, as projected by the BHCs, and apply the limits specified in the current U.S. regulatory capital rules.[46]

Regulatory capital projections were not adjusted to account for any differences between projected and actual performance of the BHCs during the time the supervisory stress test results were being produced in the fourth quarter of 2012 and the first quarter of 2013.

Capital ratios are calculated using average total assets and risk-weighted assets based on projections made by the BHCs under the severely adverse scenario. BHCs were required to project market risk-weighted assets over the planning horizon based on the market-risk capital rules that came into effect on January 1, 2013, for purposes of identifying positions subject to the market-risk rule and projecting the RWA amount of these positions.[47] The BHC-provided projections were adjusted to account for differences between BHC and Federal Reserve projections of certain balance sheet items, such as the ALLL, servicing assets, and deferred tax assets.

[45] The Federal Reserve used the following capital action assumptions in projecting post-stress capital levels and ratios: (1) for the fourth quarter of 2012, each company's actual capital actions as of the end of that quarter; (2) for each quarter from the first quarter of 2013 through the end of 2014, each company's projections of capital included: (i) common stock dividends equal to the quarterly average dollar amount of common stock dividends that the company paid in the previous year (that is, from first through the fourth quarter of 2012); (ii) payments on any other instrument that is eligible for inclusion in the numerator of a regulatory capital ratio equal to the stated dividend, interest, or principal due on such instrument during the quarter; and (iii) an assumption of no redemption, repurchase, or issuance of any capital instrument that is eligible for inclusion in the numerator of a regulatory capital ratio, except for common stock issuances associated with expensed employee compensation. These assumptions are consistent with the capital action assumptions companies are required to use in their Dodd-Frank Act company-run stress tests. See 12 CFR 252.146(b)(2).

[46] See generally 12 CFR part 225, appendix A.

[47] See 12 CFR part 225, appendix E

Appendix C: BHC-Specific Results

Tables begin on next page.

Table C.1. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
Ally Financial Inc.

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	7.3	1.5	1.5
Tier 1 capital ratio (%)	13.6	11.0	11.0
Total risk-based capital ratio (%)	14.6	12.6	12.6
Tier 1 leverage ratio (%)	11.3	9.4	9.4

Note: The post-stress capital ratios presented in the table are based on an assumption that Ally remains subject to contingent liabilities associated with Residential Capital, LLC ("ResCap"). On May 14, 2012, ResCap and certain of its subsidiaries filed for relief under Chapter 11 of the Bankruptcy Code in the United States Bankruptcy Court for the Southern District of New York. As of March 6, 2013, the outcome of the ResCap bankruptcy remained pending.

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	-3.7	-2.8
Other revenue[3]	0.3	
less		
Provisions	5.1	
Realized losses/gains on securities (AFS/HTM)	0.7	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.0	
equals		
Net income before taxes	-9.3	-7.1

1 Average assets are nine-quarter average assets.
2 Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.
3 Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.
4 Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.
5 Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	4.5	5.2
First-lien mortgages, domestic	0.3	6.0
Junior liens and HELOCs, domestic	0.2	9.3
Commercial and industrial	1.4	5.2
Commercial real estate, domestic	0.1	6.5
Credit cards	0.0	0.0
Other consumer	2.4	4.9
Other loans	0.0	1.8

1 Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.2. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
American Express Company

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	12.7	11.3	11.1
Tier 1 capital ratio (%)	12.7	11.3	11.1
Total risk-based capital ratio (%)	14.7	13.4	13.2
Tier 1 leverage ratio (%)	10.7	9.5	8.9

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	15.4	11.0
Other revenue[3]	0.0	
less		
Provisions	14.2	
Realized losses/gains on securities (AFS/HTM)	0.0	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.4	
equals		
Net income before taxes	0.8	0.6

1 Average assets are nine-quarter average assets.
2 Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.
3 Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.
4 Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.
5 Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	10.7	11.2
First-lien mortgages, domestic	0.0	0.0
Junior liens and HELOCs, domestic	0.0	0.0
Commercial and industrial	2.6	9.4
Commercial real estate, domestic	0.0	0.0
Credit cards	8.0	12.0
Other consumer	0.0	0.0
Other loans	0.0	4.5

1 Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.3. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
Bank of America Corporation

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	11.4	6.9	6.8
Tier 1 capital ratio (%)	13.6	8.5	8.5
Total risk-based capital ratio (%)	17.2	11.6	11.6
Tier 1 leverage ratio (%)	7.8	5.4	5.4

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	24.1	1.3
Other revenue[3]	1.0	
less		
Provisions	49.7	
Realized losses/gains on securities (AFS/HTM)	0.5	
Trading and counterparty losses[4]	14.1	
Other losses/gains[5]	12.5	
equals		
Net income before taxes	-51.8	-2.7

[1] Average assets are nine-quarter average assets.

[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.

[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.

[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	57.5	6.9
First-lien mortgages, domestic	15.3	5.9
Junior liens and HELOCs, domestic	9.4	10.0
Commercial and industrial	8.5	5.1
Commercial real estate, domestic	4.7	8.6
Credit cards	15.3	16.2
Other consumer	3.0	4.3
Other loans	1.3	1.3

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.4. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
The Bank of New York Mellon Corporation

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	13.3	15.9	13.2
Tier 1 capital ratio (%)	15.3	17.1	14.8
Total risk-based capital ratio (%)	16.9	17.9	16.0
Tier 1 leverage ratio (%)	5.6	5.9	5.1

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	6.8	2.1
Other revenue[3]	0.0	
less		
Provisions	1.1	
Realized losses/gains on securities (AFS/HTM)	0.2	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.0	
equals		
Net income before taxes	5.5	1.6

[1] Average assets are nine-quarter average assets.

[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.

[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.

[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	1.2	2.7
First-lien mortgages, domestic	0.4	6.7
Junior liens and HELOCs, domestic	0.0	12.8
Commercial and industrial	0.1	3.5
Commercial real estate, domestic	0.1	7.7
Credit cards	0.0	0.0
Other consumer	0.0	0.5
Other loans	0.5	1.7

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.5. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
BB&T Corporation

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	9.5	9.4	9.4
Tier 1 capital ratio (%)	10.9	11.2	11.2
Total risk-based capital ratio (%)	14.0	13.4	13.4
Tier 1 leverage ratio (%)	7.9	8.3	7.9

Note: The actual and post-stress capital ratios presented in the table are based on information that BB&T provided to the Federal Reserve in regulatory reports on or before February 6, 2013. The information that BB&T provided to the Federal Reserve includes information regarding BB&T's risk-weighted assets. On March 4, 2013, BB&T disclosed publicly that it had reevaluated its process related to calculating risk-weighted assets and determined that certain adjustments, primarily related to the presentation of certain unfunded lending commitments, were required in order to conform to regulatory guidance. These adjustments resulted in an increase to risk-weighted assets and a decrease in BB&T's risk-based capital ratios and are not reflected in this table.

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	7.1	4.1
Other revenue[3]	0.0	
less		
Provisions	6.4	
Realized losses/gains on securities (AFS/HTM)	0.1	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.1	
equals		
Net income before taxes	0.6	0.3

1 Average assets are nine-quarter average assets.
2 Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.
3 Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.
4 Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.
5 Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	5.9	5.5
First-lien mortgages, domestic	0.9	2.8
Junior liens and HELOCs, domestic	0.4	6.1
Commercial and industrial	1.1	7.2
Commercial real estate, domestic	2.1	7.1
Credit cards	0.3	16.6
Other consumer	0.9	7.0
Other loans	0.3	3.0

1 Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.6. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
Capital One Financial Corporation

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	10.7	7.4	7.4
Tier 1 capital ratio (%)	12.7	7.8	7.8
Total risk-based capital ratio (%)	15.0	10.1	10.1
Tier 1 leverage ratio (%)	9.9	5.7	5.7

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	18.7	6.7
Other revenue[3]	0.0	
less		
Provisions	26.4	
Realized losses/gains on securities (AFS/HTM)	0.3	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.0	
equals		
Net income before taxes	-8.0	-2.9

[1] Average assets are nine-quarter average assets.
[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.
[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.
[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.
[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	23.6	13.2
First-lien mortgages, domestic	1.4	3.8
Junior liens and HELOCs, domestic	0.5	21.1
Commercial and industrial	1.5	8.9
Commercial real estate, domestic	0.9	4.8
Credit cards	16.4	22.2
Other consumer	2.7	11.8
Other loans	0.1	1.8

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.7. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
Citigroup Inc.

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	12.7	8.9	8.3
Tier 1 capital ratio (%)	13.9	9.8	9.3
Total risk-based capital ratio (%)	17.1	12.9	12.5
Tier 1 leverage ratio (%)	7.4	5.6	5.3

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	44.0	2.5
Other revenue[3]	0.0	
less		
Provisions	49.4	
Realized losses/gains on securities (AFS/HTM)	4.4	
Trading and counterparty losses[4]	15.9	
Other losses/gains[5]	2.7	
equals		
Net income before taxes	-28.6	-1.6

[1] Average assets are nine-quarter average assets.
[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.
[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.
[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.
[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	54.6	9.2
First-lien mortgages, domestic	8.8	9.4
Junior liens and HELOCs, domestic	4.5	13.4
Commercial and industrial	7.8	6.0
Commercial real estate, domestic	0.8	11.3
Credit cards	23.3	17.9
Other consumer	6.5	16.5
Other loans	2.9	1.8

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.8. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
Fifth Third Bancorp

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	9.7	8.6	8.6
Tier 1 capital ratio (%)	10.8	9.3	9.3
Total risk-based capital ratio (%)	14.8	12.4	12.4
Tier 1 leverage ratio (%)	10.1	8.8	8.8

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	4.9	4.2
Other revenue[3]	0.0	
less		
Provisions	5.1	
Realized losses/gains on securities (AFS/HTM)	0.1	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.0	
equals		
Net income before taxes	-0.3	-0.2

1 Average assets are nine-quarter average assets.
2 Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.
3 Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.
4 Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.
5 Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	5.3	6.3
First-lien mortgages, domestic	0.7	5.4
Junior liens and HELOCs, domestic	0.9	10.4
Commercial and industrial	1.9	6.3
Commercial real estate, domestic	0.8	7.7
Credit cards	0.4	21.6
Other consumer	0.5	3.6
Other loans	0.2	2.4

1 Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.9. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
The Goldman Sachs Group, Inc.

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	13.1	8.2	5.8
Tier 1 capital ratio (%)	15.0	10.8	8.4
Total risk-based capital ratio (%)	18.1	13.8	11.3
Tier 1 leverage ratio (%)	7.2	6.2	3.9

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	14.4	1.7
Other revenue[3]	0.0	
less		
Provisions	2.6	
Realized losses/gains on securities (AFS/HTM)	0.2	
Trading and counterparty losses[4]	24.9	
Other losses/gains[5]	7.1	
equals		
Net income before taxes	-20.5	-2.4

[1] Average assets are nine-quarter average assets.

[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.

[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.

[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	2.0	5.2
First-lien mortgages, domestic	0.0	7.7
Junior liens and HELOCs, domestic	0.0	9.8
Commercial and industrial	1.4	49.8
Commercial real estate, domestic	0.1	8.2
Credit cards	0.0	0.0
Other consumer	0.0	2.8
Other loans	0.6	1.6

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.10. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
JPMorgan Chase & Co.

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	10.4	6.8	6.3
Tier 1 capital ratio (%)	11.9	7.9	7.4
Total risk-based capital ratio (%)	14.7	10.3	9.9
Tier 1 leverage ratio (%)	7.1	4.7	4.7

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	45.0	2.0
Other revenue[3]	0.0	
less		
Provisions	51.3	
Realized losses/gains on securities (AFS/HTM)	0.9	
Trading and counterparty losses[4]	23.5	
Other losses/gains[5]	1.6	
equals		
Net income before taxes	-32.3	-1.4

[1] Average assets are nine-quarter average assets.

[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.

[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.

[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	53.9	7.7
First-lien mortgages, domestic	11.3	8.8
Junior liens and HELOCs, domestic	6.7	8.8
Commercial and industrial	11.1	8.5
Commercial real estate, domestic	5.2	7.3
Credit cards	14.8	14.4
Other consumer	2.3	3.9
Other loans	2.6	1.9

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.11. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
KeyCorp

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	11.3	8.0	8.0
Tier 1 capital ratio (%)	12.1	8.6	8.6
Total risk-based capital ratio (%)	15.2	11.2	11.2
Tier 1 leverage ratio (%)	11.4	8.1	8.1

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	2.5	3.0
Other revenue[3]	0.0	
less		
Provisions	4.3	
Realized losses/gains on securities (AFS/HTM)	0.0	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.6	
equals		
Net income before taxes	-2.4	-2.8

[1] Average assets are nine-quarter average assets.

[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.

[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.

[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	3.9	7.3
First-lien mortgages, domestic	0.4	10.3
Junior liens and HELOCs, domestic	1.1	12.6
Commercial and industrial	1.0	5.8
Commercial real estate, domestic	0.6	7.2
Credit cards	0.1	19.1
Other consumer	0.4	8.8
Other loans	0.3	2.8

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.12. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
Morgan Stanley

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	13.9	6.4	5.7
Tier 1 capital ratio (%)	16.9	8.2	7.5
Total risk-based capital ratio (%)	17.0	9.4	8.7
Tier 1 leverage ratio (%)	7.2	5.1	4.5

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	1.2	0.2
Other revenue[3]	0.0	
less		
Provisions	2.3	
Realized losses/gains on securities (AFS/HTM)	0.0	
Trading and counterparty losses[4]	11.7	
Other losses/gains[5]	6.7	
equals		
Net income before taxes	-19.4	-2.9

[1] Average assets are nine-quarter average assets.

[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.

[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.

[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	1.6	3.1
First-lien mortgages, domestic	0.1	0.6
Junior liens and HELOCs, domestic	0.0	9.5
Commercial and industrial	1.2	7.8
Commercial real estate, domestic	0.0	10.2
Credit cards	0.0	0.0
Other consumer	0.1	1.4
Other loans	0.1	0.8

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.13. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
The PNC Financial Services Group, Inc.

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	9.5	8.7	8.7
Tier 1 capital ratio (%)	11.7	10.8	10.8
Total risk-based capital ratio (%)	14.5	13.4	13.4
Tier 1 leverage ratio (%)	10.4	8.7	8.7

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	9.8	3.2
Other revenue[3]	-0.1	
less		
Provisions	9.8	
Realized losses/gains on securities (AFS/HTM)	0.8	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.4	
equals		
Net income before taxes	-1.4	-0.5

[1] Average assets are nine-quarter average assets.

[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.

[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.

[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	10.0	5.8
First-lien mortgages, domestic	1.4	6.1
Junior liens and HELOCs, domestic	1.6	6.3
Commercial and industrial	3.4	6.4
Commercial real estate, domestic	2.0	7.3
Credit cards	0.6	15.5
Other consumer	0.7	3.5
Other loans	0.3	1.6

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.14. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
Regions Financial Corporation

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	10.5	7.5	7.5
Tier 1 capital ratio (%)	11.5	8.5	8.5
Total risk-based capital ratio (%)	15.0	11.7	11.7
Tier 1 leverage ratio (%)	9.1	6.8	6.8

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	3.1	2.6
Other revenue[3]	0.0	
less		
Provisions	5.2	
Realized losses/gains on securities (AFS/HTM)	0.1	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.0	
equals		
Net income before taxes	-2.2	-1.9

[1] Average assets are nine-quarter average assets.
[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.
[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.
[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.
[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	5.4	7.6
First-lien mortgages, domestic	1.1	8.2
Junior liens and HELOCs, domestic	0.8	8.5
Commercial and industrial	1.2	6.7
Commercial real estate, domestic	1.7	9.7
Credit cards	0.2	18.0
Other consumer	0.3	6.8
Other loans	0.2	2.2

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.15. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
State Street Corporation

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	17.8	13.0	12.8
Tier 1 capital ratio (%)	19.8	14.5	14.4
Total risk-based capital ratio (%)	21.3	16.6	16.2
Tier 1 leverage ratio (%)	7.6	7.1	6.6

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	3.0	1.5
Other revenue[3]	0.0	
less		
Provisions	0.4	
Realized losses/gains on securities (AFS/HTM)	0.4	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.7	
equals		
Net income before taxes	1.5	0.8

[1] Average assets are nine-quarter average assets.

[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.

[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.

[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	0.3	2.0
First-lien mortgages, domestic	0.0	0.0
Junior liens and HELOCs, domestic	0.0	0.0
Commercial and industrial	0.0	0.0
Commercial real estate, domestic	0.1	18.3
Credit cards	0.0	0.0
Other consumer	0.0	0.0
Other loans	0.2	1.5

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.16. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
SunTrust Banks, Inc.

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	9.8	7.3	7.3
Tier 1 capital ratio (%)	10.6	8.2	8.2
Total risk-based capital ratio (%)	13.0	10.4	10.4
Tier 1 leverage ratio (%)	8.5	6.5	6.5

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	4.6	2.8
Other revenue[3]	0.0	
less		
Provisions	7.9	
Realized losses/gains on securities (AFS/HTM)	0.0	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.7	
equals		
Net income before taxes	-4.1	-2.5

1 Average assets are nine-quarter average assets.
2 Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.
3 Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.
4 Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.
5 Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	7.4	6.4
First-lien mortgages, domestic	1.7	6.5
Junior liens and HELOCs, domestic	1.7	11.4
Commercial and industrial	2.1	6.2
Commercial real estate, domestic	1.1	9.7
Credit cards	0.1	15.0
Other consumer	0.5	2.6
Other loans	0.2	2.2

1 Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.17. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
U.S. Bancorp

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	9.0	8.3	8.3
Tier 1 capital ratio (%)	10.9	10.3	10.3
Total risk-based capital ratio (%)	13.3	12.3	12.3
Tier 1 leverage ratio (%)	9.2	8.7	8.7

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	21.2	6.2
Other revenue[3]	0.1	
less		
Provisions	17.2	
Realized losses/gains on securities (AFS/HTM)	0.2	
Trading and counterparty losses[4]	0.0	
Other losses/gains[5]	0.3	
equals		
Net income before taxes	3.6	1.1

[1] Average assets are nine-quarter average assets.

[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.

[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.

[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.

[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	15.1	7.1
First-lien mortgages, domestic	1.3	2.8
Junior liens and HELOCs, domestic	1.0	6.1
Commercial and industrial	4.3	9.5
Commercial real estate, domestic	3.0	8.0
Credit cards	3.2	17.3
Other consumer	1.6	5.4
Other loans	0.7	3.8

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.

Table C.18. Dodd-Frank Act stress testing 2013
Projected stressed capital ratios, losses, revenues, net income before taxes, and loan losses, by type of loan
Federal Reserve estimates in the severely adverse scenario
Wells Fargo & Company

The capital ratios are calculated using capital action assumptions provided within the Dodd-Frank Act stress testing rule. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratio presented is for the period Q4 2012 to Q4 2014.

Projected capital ratios through Q4 2014 under the severely adverse scenario

	Actual	Stressed capital ratios	
	Q3 2012	Q4 2014	Minimum
Tier 1 common ratio (%)	9.9	7.0	7.0
Tier 1 capital ratio (%)	11.5	8.7	8.7
Total risk-based capital ratio (%)	14.5	11.4	11.2
Tier 1 leverage ratio (%)	9.4	7.0	7.0

Projected losses, revenue, and net income before taxes through Q4 2014 under the severely adverse scenario

	Billions of dollars	Percent of average assets[1]
Pre-provision net revenue[2]	45.9	3.3
Other revenue[3]	0.0	
less		
Provisions	58.8	
Realized losses/gains on securities (AFS/HTM)	3.9	
Trading and counterparty losses[4]	6.9	
Other losses/gains[5]	2.0	
equals		
Net income before taxes	-25.7	-1.9

[1] Average assets are nine-quarter average assets.
[2] Pre-provision net revenue includes losses from operational-risk events, mortgage put-back expenses, and OREO costs.
[3] Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.
[4] Trading and counterparty losses includes mark-to-market losses, changes in credit valuation adjustments, and incremental default losses.
[5] Other losses/gains includes projected change in fair value of loans held for sale and loans held for investment measured under the fair-value option, and goodwill impairment losses.

Projected loan losses, by type of loan, for Q4 2012–Q4 2014 under the severely adverse scenario

	Billions of dollars	Portfolio loss rates (%)
Loan losses[1]	53.8	7.1
First-lien mortgages, domestic	15.3	7.1
Junior liens and HELOCs, domestic	8.4	9.3
Commercial and industrial	9.9	6.6
Commercial real estate, domestic	9.6	8.6
Credit cards	4.4	17.7
Other consumer	5.0	5.9
Other loans	1.2	1.6

[1] Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans held for investment under the fair-value option, and are calculated over nine quarters.