

Bank of America
2018 Dodd-Frank Act Mid-Cycle Stress Test Results
BHC Severely Adverse Scenario
October 18, 2018

Bank of America 

Bank of America Merrill Lynch U.S. Bank of America
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Important Presentation Information

The 2018 Dodd-Frank Act Mid-Cycle Stress Test Results Disclosure (the “Stress Test Results”) included herein has not been prepared under accounting principles generally accepted in the United States of America (“GAAP”). The Stress Test Results present certain projected financial measures for Bank of America Corporation (“Bank of America”, “BAC”, or “the Company”) under the hypothetical economic and market scenario and assumptions described herein. The Stress Test Results are not forecasts of actual financial results for BAC. Investors in securities issued by Bank of America should not rely on the Stress Test Results as being indicative of expected future results.

Bank of America’s financial information, prepared under GAAP, is available in reports filed with the Securities and Exchange Commission, including its Annual Report on Form 10-K for the year ended December 31, 2017.

Amounts presented are rounded to the nearest significant digit, as indicated or stated. Immaterial differences arising from the effect of rounding are not adjusted.

Bank of America's Capital Planning Process

The Company's capital planning process is a robust, proactive, forward-looking capital management exercise that identifies and measures risks and translates them into granular estimates of potential losses to assess capital adequacy over a planning horizon considering different economic and market environments. Centrally, a committee comprised of senior management from a range of finance and risk backgrounds is responsible for oversight, review, and challenge of certain aspects of the process. The process is fully integrated with the Company's financial and risk management routines and is subject to well-established internal controls and governance. The Company establishes the following requirements for the capital planning process:

- Identify, measure and assess all material risks;
- Translate risk measures into estimates of potential losses over a range of scenarios and environments, including stress scenarios, and assess capital needs for risks not fully captured in stress testing results through a qualitative risk assessment;
- Define available capital resources and estimate sources and uses of capital over the same scenarios and environments;
- Aggregate the sources and uses of capital and assess capital adequacy relative to applicable Capital Targets, Post-Stress Capital Goals, Internal Capital Triggers, and the Payout Ratio Trigger;
- Establish and maintain a comprehensive capital policy and robust capital planning practices, including development and maintenance of a capital contingency plan;
- Develop and maintain internal controls and monitoring; and
- Establish and maintain effective oversight and governance to ensure the integrity of the capital planning process.

As a key component of the capital planning process, the Company-wide stress test brings together estimates of losses and capital resources to assess the capital needed to support BAC's business activities, risk profile and strategic plan, and to provide sufficient capital for the Company to remain safe and sound under adverse economic and market conditions.

Assumptions

- This document provides internal projections for BAC under the stressed macroeconomic and market conditions in the Bank Holding Company (“BHC”) Severely Adverse scenario.
- The BHC Severely Adverse scenario is characterized by a deep recession in the U.S. and a significant decline in global economic activity, and assumes the following key macroeconomic variables over a nine-quarter horizon:
 - Maximum quarterly (annualized) rate of real gross domestic product (“RGDP”) decline of 9%
 - Peak unemployment rate of 10%
 - Maximum home price index (“HPI”) decline of 30%
 - Maximum equity market decline of 60%
 - Trough U.S. 10-year Treasury yield of 1.73%
 - Trough U.S. 3-Month Treasury rate of 0.45%
- Severe instantaneous global market shocks are also applied to the trading book, private equity positions and counterparty exposures.
- Results presented herein include capital actions as specified under the Dodd-Frank Wall Street Reform and Consumer Protection Act (“DFA”) stress testing rules. Specified capital action assumptions for BAC are itemized on page 18.
- Results comply with methodologies and instructions provided by the FRB for the 2018 Comprehensive Capital Analysis and Review and Dodd-Frank Act Stress Test.
- Results presented are estimates and may not reflect the actual impacts to Bank of America if such a hypothetical scenario were to occur. Importantly, in certain instances, methodologies required by the FRB differ from Bank of America’s internal practices; therefore, results may not reflect actions Bank of America would likely employ under such stressed conditions.
- The stress test is applied to on- and off-balance sheet exposures as of June 30, 2018.
- Capital, risk-weighted assets (“RWA”) and capital ratios are calculated under the Basel 3 Standardized (“B3S”) approach.
- Income statement categories in this document conform to the FRB’s definition of Pre-Provision Net Revenue (“PPNR”), and classifications of revenue and expense items may differ from reporting under Bank of America’s public financial disclosures and preparation of financial statements under GAAP.

Scenario Description

The BHC Severely Adverse scenario has its origins in a quantitative, model-based approach grounded in historical data and relationships with the intent to produce a scenario that is stressed relative to an external consensus baseline based on the most recent Blue Chip Economic Indicators survey. The BHC Severely Adverse scenario also incorporates adjustments to apply increased levels of stress corresponding to BAC's specific risk sensitivities and potential vulnerabilities.

This scenario features a shrinking U.S. economy which falls into a deep recession followed by a gradual recovery. A global recession is also featured in the scenario. The scenario captures labor market and GDP contractions that are notably similar to past severe economic downturns, particularly the 2008-09 recession. Similar to that episode, it is also assumed that the associated financial disruption includes a housing crisis wherein continuous declines in housing prices moderate slowly over the forecast horizon as unemployment remains elevated.

In the U.S., the BHC Severely Adverse scenario is characterized by a cumulative decline in real GDP of 6.3% and an unemployment rate rising to 10%, increasing 5.9 percentage points over the projected horizon. In addition, housing prices decline 30% over the horizon. The scenario's international component includes a recession across Europe (with a 6.5% cumulative decline in Eurozone real GDP), eroding confidence as continued prospects of a 'hard' United Kingdom exit from the European Union and significant stress in developing Asia and emerging market economies.

Other severe outcomes that are incorporated into the scenario are sharply elevated equity market volatility and an S&P 500 decline of 60% within the first three quarters of the forecast horizon. Libor spreads to fed funds widen significantly, and corporate bond and mortgage spreads reflect high levels of credit market disruption and default risk. While short term rates decline rapidly, the decline in long-term rates is less pronounced due to investor aversion to long-term fixed income assets.

This scenario also includes a severe hypothetical financial market disruption compressed into a single day using shocks informed by idiosyncratic risk concentrations and points of weakness to stress the June 29, 2018 trading and counterparty portfolios. See "Market and Counterparty Risk Methodologies" on page 13.

Macroeconomic Variables

BHC Severely Adverse Scenario

	Date	Real GDP Growth ²	Nominal GDP Growth ²	U.S. Unemployment	Home Price Index ³	S&P 500	U.S. Treasury 10-Year Yield	Core CPI ⁴	Baa - UST 30Y Spread
Actuals ¹	Q2 2014	4.6%	7.0%	6.2%	164.3	1,960	2.62%	1.9%	1.37%
	Q3 2014	5.2%	7.1%	6.1%	166.1	1,972	2.50%	1.8%	1.47%
	Q4 2014	2.0%	2.6%	5.7%	168.2	2,059	2.29%	1.7%	1.77%
	Q1 2015	3.2%	3.2%	5.6%	170.1	2,068	1.98%	1.7%	1.95%
	Q2 2015	2.7%	5.0%	5.4%	172.0	2,063	2.16%	1.8%	1.95%
	Q3 2015	1.6%	3.0%	5.1%	174.2	1,920	2.24%	1.8%	2.28%
	Q4 2015	0.5%	1.3%	5.0%	176.9	2,044	2.19%	2.0%	2.46%
	Q1 2016	0.6%	0.8%	4.9%	178.7	2,060	1.94%	2.2%	2.59%
	Q2 2016	2.2%	4.7%	4.9%	180.6	2,099	1.77%	2.2%	2.09%
	Q3 2016	2.8%	4.2%	4.9%	183.3	2,168	1.56%	2.2%	1.98%
	Q4 2016	1.8%	3.8%	4.7%	186.3	2,239	2.10%	2.2%	1.82%
	Q1 2017	1.2%	3.3%	4.7%	189.4	2,363	2.45%	2.1%	1.62%
	Q2 2017	3.1%	4.1%	4.3%	191.2	2,423	2.27%	1.8%	1.60%
	Q3 2017	3.2%	5.3%	4.3%	194.3	2,519	2.24%	1.7%	1.51%
	Q4 2017	2.9%	5.3%	4.1%	198.0	2,674	2.37%	1.7%	1.45%
	Q1 2018	2.0%	4.2%	4.1%	201.3	2,641	2.75%	1.9%	1.44%
Q2 2018	3.9%	6.1%	3.9%	204.0	2,718	2.92%	2.3%	1.70%	
Hypothetical	Q3 2018	-9.0%	-8.2%	5.4%	190.6	1,567	2.74%	2.1%	4.45%
	Q4 2018	-5.6%	-5.1%	6.4%	178.1	1,111	2.51%	1.7%	5.19%
	Q1 2019	-3.9%	-3.9%	7.4%	167.7	1,087	2.33%	1.1%	5.38%
	Q2 2019	-2.5%	-2.6%	8.3%	160.2	1,208	2.16%	0.6%	5.50%
	Q3 2019	-2.5%	-2.6%	9.0%	154.8	1,352	1.97%	0.4%	5.51%
	Q4 2019	-0.7%	-0.8%	9.8%	150.6	1,507	1.82%	0.2%	5.35%
	Q1 2020	-1.0%	-1.3%	10.0%	147.3	1,656	1.75%	0.2%	5.06%
	Q2 2020	-0.2%	-0.3%	10.0%	144.4	1,784	1.73%	0.1%	4.68%
	Q3 2020	1.0%	1.2%	9.9%	142.2	1,877	1.75%	0.2%	4.22%
	Q4 2020	1.6%	1.9%	9.7%	141.3	1,942	1.81%	0.2%	3.70%
	Q1 2021	1.4%	1.8%	9.5%	140.4	1,983	1.91%	0.3%	3.10%
Q2 2021	1.5%	2.1%	9.3%	139.9	2,016	2.04%	0.4%	2.47%	
Q3 2021	2.2%	3.0%	9.1%	140.0	2,066	2.15%	0.6%	1.82%	

¹ Due to the cycle timeline and data publication dates, certain variables labeled as actual do not reflect realized values.

² Expressed as quarterly annualized growth rates.

³ Internally-derived index.

⁴ Expressed as year-over-year growth rate.

BHC Severely Adverse – BAC Results

- A \$46.3B cumulative pre-tax loss is projected over the specified nine-quarter horizon under the BHC Severely Adverse scenario.
- Significant items include loan and lease losses (\$39.9B), incremental build in allowance for loan and lease losses through provision expense (\$9.6B), trading and counterparty losses (\$18.0B), goodwill impairments (\$13.7B, which is capital neutral) and other losses (\$7.1B), partially offset by \$42.4B of PPNR.
- The hypothetical pre-tax losses in the scenario generate deferred tax assets (representing future deductions) that are generally disallowed for regulatory capital.
- RWA decline over the planning horizon as increases in market risk and counterparty exposures are more than offset by reductions in credit RWA as a result of reduced loan levels.
- Under B3S, the estimated lowest stress ratios over the nine-quarter horizon for Common Equity Tier 1 Capital, Tier 1 Capital, Total Capital, Tier 1 Leverage and Supplementary Leverage Ratio are 7.8%, 9.3%, 12.1%, 6.4% and 5.1%, respectively.
- BAC maintains capital above required regulatory minimum ratios in the BHC Severely Adverse scenario. The required regulatory minimum ratios for Common Equity Tier 1 Capital, Tier 1 Capital, Total Capital, Tier 1 Leverage and Supplementary Leverage Ratio are 4.5%, 6.0%, 8.0%, 4.0% and 3.0%, respectively.

BHC Severely Adverse t BAC Income Statement and Loan and Lease Losses

Net Income Before Taxes \$ in billions	Cumulative Hypothetical Results 9 Quarters	% of Average Assets
Pre-Provision Net Revenue ¹	\$42.4	2.0%
Less:		
Provision for Loan and Lease Losses	49.5	
Realized Losses on Securities (AFS/HTM)	0.4	
Trading and Counterparty Losses ²	18.0	
Goodwill Impairment	13.7	
Other Losses ³	7.1	
Net Income Before Taxes	(\$46.3)	-2.2%

Memo Items

Other Comprehensive Income ⁵	(\$2.1)	
Other Effects on Capital	<i>Actual Balance at 6/30/18</i>	<i>Hypothetical Stressed Balance at 9/30/20</i>
Accumulated Other Comprehensive Income ("AOCI") Included in Capital	(\$12.0)	(\$15.2)

Loan and Lease Losses \$ in billions	Cumulative Hypothetical Results 9 Quarters	Portfolio Loss Rates Over 9 Quarters
Estimated Loan Losses ⁶	\$39.9	4.6%
First Lien Mortgages, Domestic ⁷	3.1	1.5%
Junior Liens and HELOCs, Domestic ⁷	2.8	5.5%
Commercial and Industrial	11.2	4.9%
Commercial Real Estate	4.7	6.9%
Credit Cards	12.5	13.5%
Other Consumer	1.0	1.5%
Other Loans	4.5	2.8%

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¹ PPNR includes losses from operational risk events, mortgage repurchase expenses, legal expenses and OREO costs. PPNR in this disclosure does not include projected changes in the fair value of loans held for sale and loans held for investment measured under the fair value option. PPNR presented in this view reflects income statement impacts of capital actions for BAC as required under DFA stress testing rules as specified on slide 18.

² Trading and counterparty includes mark-to-market losses, credit valuation adjustments, trading incremental default losses, funding valuation adjustment losses, and counterparty default and contagion.

³ Other losses include the projected change in the fair value of loans held for sale and loans held for investment measured under the fair value option.

⁴ Calculated by dividing nine-quarter cumulative revenue or earnings by the average of the quarter ending balances over the specified nine-quarter horizon.

⁵ Other comprehensive income includes net unrealized losses/gains on (i) available-for-sale securities, (ii) foreign currency translation adjustments, (iii) cash flow hedges, (iv) debit valuation adjustments, and (v) net actuarial losses and prior service costs related to defined benefit pension and other postretirement employee benefit plans.

⁶ Commercial and industrial loans include small and medium enterprise loans and corporate cards. Other loans include international real estate loans.

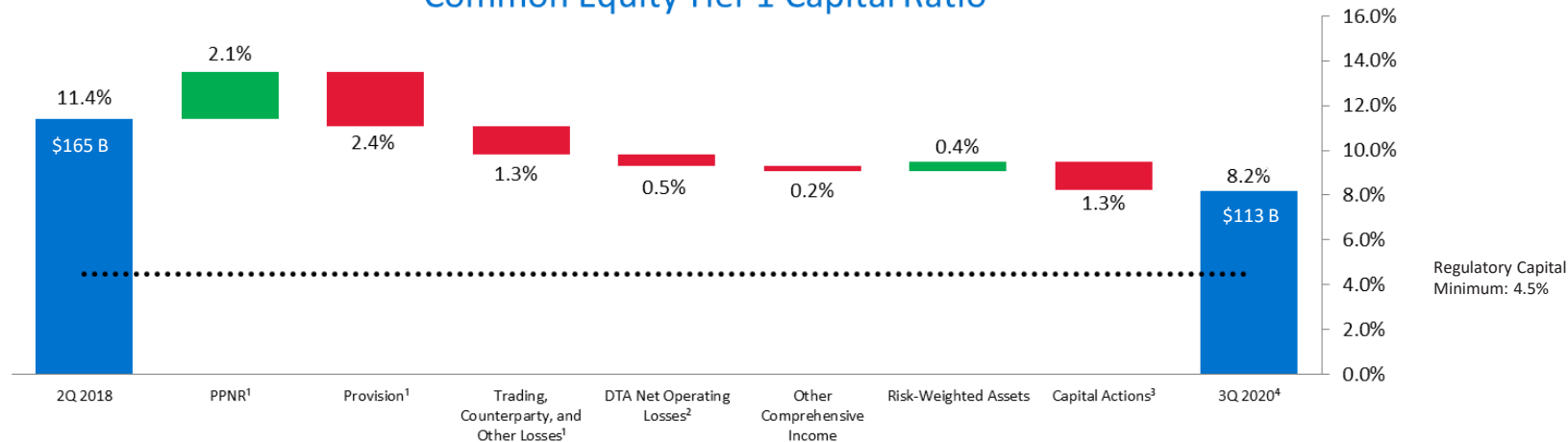
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⁸ Calculated by dividing the nine-quarter cumulative loan and lease losses by the average of the accrual loan and lease balances for each portfolio over the same time period.

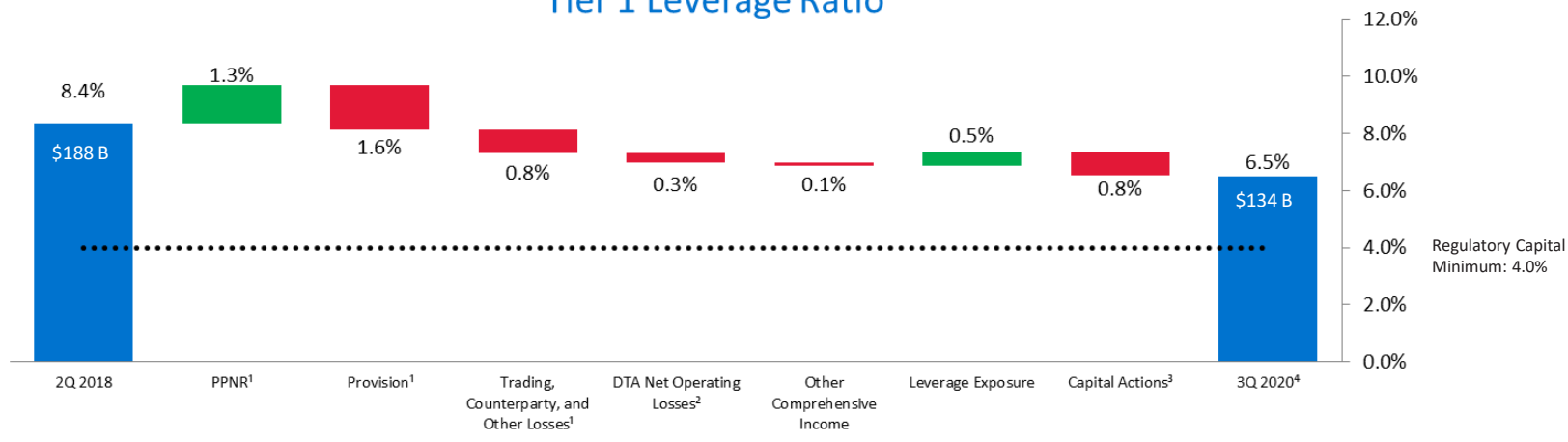
BHC Severely Adverse – BAC Regulatory Capital Ratio Drivers

The key drivers of Bank of America’s DFAST pro forma CET1 and Tier 1 Leverage ratios are shown in the tables below. These two ratios are presented as they are the binding constraints from a risk-based and leverage ratio perspective in dollar terms, respectively.

Common Equity Tier 1 Capital Ratio



Tier 1 Leverage Ratio



¹ Items presented above reflected net of tax, as applicable.

² DTA Net Operating Losses represent additional tax loss and credit carryforward balances that relate to losses experienced in the scenario. These assets are disallowed for regulatory capital.

³ Capital actions are reflective of DFA rules. See “Capital Action Assumptions for Bank Holding Companies” on page 18.

⁴ Other adjustments to capital are included for items such as: (i) intangibles, (ii) fair value option and other miscellaneous adjustments as applicable for the respective ratio and are immaterial (less than 0.1%).



Stress Test Methodologies

Credit Risk Methodologies

Credit Risk

The risk of loss arising from a borrower's or counterparty's future inability or failure to repay its contractual obligations is analyzed by product in the stress testing process. Each product is assessed for charge-offs and allowance using the relevant loss forecasting methodologies over a specified horizon. Quantitative and qualitative driven results are analyzed and adjustments may be made related to historical experience, portfolio characteristics and subject matter expertise. Credit risk and losses related to borrower default are projected in the income statement through provision for loan and lease losses.

Commercial Asset Quality

- The commercial portfolio includes commercial credit exposure across products including Commercial and Industrial (“C&I”) and Commercial Real Estate (“CRE”).
- Stress testing uses the same general approach and inputs as the baseline forecast. The C&I approach captures losses through stressed obligor ratings, increased defaults and elevated loss given default; the CRE approach captures losses through changes in value, income, and repayment streams of the underlying CRE collateral.
- The level of stress is determined by incorporating a variety of macroeconomic variables, including, but not limited to, RGDP, equity market prices, corporate bond spreads, unemployment rates, HPI and the commercial real estate price index (“CREPI”).

Consumer Asset Quality

- The main consumer portfolios include Home Loans (First Mortgage and Home Equity), Card Services (U.S. Card and Business Card) and Consumer Vehicle Lending.
- Consumer products use loan level probability of default and loss given default models, which include relevant loan level characteristics such as FICO and loan-to-value ratio, plus macroeconomic assumptions relevant to each product such as HPI, unemployment rates and interest rates.

Market and Counterparty Risk Methodologies

Market and Counterparty Risk

Global market shocks for the BHC Severely Adverse scenario are informed by an analysis of material exposures and concentrations in the portfolios. Hypothetical stress losses for the BHC Severely Adverse scenario are calculated by applying global market shocks to the relevant counterparty exposures, private equity positions, and on- and off-balance sheet positions in the trading portfolios.

Instantaneous Shocks / Trading and Counterparty Losses

- Instantaneous global market shocks across the portfolio risk factors (including interest rates, currencies, equities, commodities and credit) are applied to company-wide trading, private equity and counterparty exposures as of June 29, 2018, to estimate the impact to earnings.
- Additional default risk beyond the market risk shocks in the trading portfolio is considered through an issuer incremental default risk calculation.
- Stress testing of the counterparty risk exposure is designed to assess the losses from the counterparty portfolio to changes in both market and credit risk conditions. The impact is measured by the change in mark-to-market value of the credit and funding valuation adjustments after applying the stress scenario shocks. Additionally, the direct impact of a default of a large counterparty and its contagion effect post the application of these shocks are included.
- The trading and counterparty scenario P&L impact is included in the first quarter of the forecast period without recovery assumed in the remaining quarters.

Interest Rate Risk Methodologies

Interest Rate Risk

Interest rate risk represents the most significant market risk exposure to the banking book balance sheet and is measured as the exposure of the Company's earnings and capital to movements in interest rates. Client-facing activities, primarily lending and deposit-taking, create interest rate sensitive positions on the balance sheet.

Net Interest Income

- The Company's consolidated net interest income trajectory is reflected in the scenario as it relates to the interest income from loans, debt securities and other interest-earning assets in addition to the interest expense related to deposits, borrowings and other interest-bearing liabilities. This incorporates balance sheet assumptions such as loan and deposit balance movements and pricing, changes in funding mix, product re-pricing and maturity characteristics.
- The scenario captures the potential interest rate stresses to the consolidated balance sheet, net interest income and other activities that are sensitive to changes in interest rate levels and yield curves. For example, the scenario incorporates changes to interest rates that are applied across exposures and business activities, resulting in impacts to prepayments on mortgage-related assets and net interest income, among other items.

Capital

- In addition to net interest income, the other comprehensive income impact to the Asset-Liability Management available for sale ("AFS") securities portfolio and the valuation impact to the mortgage servicing rights portfolio are considered when evaluating interest rate risk. These items and the impact to the Company's DTA can affect the Company's capital ratios under Basel 3.

Operational Risk Methodologies

Operational Risk

The risk of loss resulting from inadequate or failed internal processes, people, systems or external events including external fraud is considered in each stress test. These risks are independently assessed for our businesses and operational loss event categories both for legal (e.g., litigation) and non-legal operational risks.

- Operational losses are included in the projections for each business and result in a reduction in PPNR. Four approaches are used – scenario analysis, projections based on the underlying economics of the business, statistical regression models, and simple historical averages – to arrive at stress losses under various scenarios.
- Non-legal and legal losses are expected to increase across most of the businesses in stress scenarios given pressure on execution, a heightened litigation and regulatory environment, and potential business disruption. Fraud is also expected to increase in most businesses.
- Litigation expense is analyzed across the company in aggregate and on a case-by-case basis for significant matters. It is included as an increase to projected operational risk losses in the stress scenario, reflected as a reduction in PPNR.

Risk-Weighted Assets Methodologies

Credit Risk RWA

- Traditional Banking Book RWA projections are based on projected balance sheet exposures and the applicable risk weights as prescribed under the Basel 3 Standardized approach. The projections capture credit migration to non-performing assets, increases in past-due exposures and changes in Organization for Economic Co-operation and Development (“OECD”) country risk classifications.
- Securitization RWA projections are based on projected securitization exposures and applicable risk weights under the Simplified Supervisory Formula Approach (“SSFA”). The projections of the risk weights consider the impact of the stress scenario based on relevant scenario variables.

Counterparty Risk RWA

- Counterparty RWA projections are based on the projected underlying exposures given the stressed market conditions and credit risk migration and the applicable risk weights. The risk weights capture downgrades in OECD country risk classifications.

Market Risk RWA

- Market Risk RWA projections are based on models and approaches that link the RWA components (VaR / SVaR, Incremental Risk Charge, Comprehensive Risk Measure, Securitization Non-correlation and Standardized Specific Risk) directly or indirectly to the market variables such as changes in credit spreads and volatilities in the stress scenario. The RWA projections also incorporate the projected size of the trading portfolio and changes in OECD country risk classifications where appropriate.

Other Methodologies

Pre-Provision Net Revenue

- Net interest income is derived using macroeconomic variables to forecast asset and liability balances and related interest income and expense over the specified nine-quarter horizon.
- Noninterest income and noninterest expense are determined on a business-by-business basis over the specified nine-quarter horizon using the macroeconomic variables that are relevant to each business. Stress losses related to operational risk events, including mortgage representation and warranties and legal costs, are included within PPNR.

Provision for Loan and Lease Losses

- Charge-off projections are derived from the loss forecasting processes described under Credit Risk Methodologies.
- The allowance for loan and lease losses, and related reserve build or release, is projected for each quarter over the specified nine-quarter horizon by assessing the adequacy of the reserve under the macroeconomic conditions in the scenario.

Other Losses

- AFS and held to maturity (“HTM”) securities are assessed for other-than-temporary impairment, which may result in realized losses over the specified nine-quarter horizon under the macroeconomic assumptions in the scenario.
- Goodwill impairment is assessed by reporting unit using the hypothetical stressed income statement results.
- Other losses excluding goodwill are primarily related to loans held under the fair value option and loans held for sale where projections are based on the macroeconomic assumptions in the scenario without reference to the global market shock.

Required Capital Action Assumptions for Bank Holding Companies

BAC capital action assumptions conform to the Dodd-Frank Act stress test rule, and incorporate the following assumptions regarding capital actions over the planning horizon:

- For the initial quarter of the planning horizon, the BHC must take into account its actual capital actions taken throughout the quarter.
- For each of the second through ninth quarters of the planning horizon, the BHC must include in the projections of capital
 - common stock dividends equal to the quarterly average dollar amount of common stock dividends that the company paid in the previous year (that is, the initial quarter of the planning horizon and the preceding three calendar quarters) plus common stock dividends attributable to issuances related to expensed employee compensation;
 - 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;
 - an assumption of no redemption or repurchase of any capital instrument that is eligible for inclusion in the numerator of a regulatory capital ratio; and
 - an assumption of no issuances of common stock or preferred stock, except for issuances related to expensed employee compensation.

Bank of America



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