The Goldman Sachs Group, Inc. 2020 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

June 2020

2020 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

Cautionary Note on Forward-Looking Statements

- The 2020 Dodd-Frank Act Annual Stress Test Results Disclosure (the "Stress Test Results") presented herein contains forward-looking projections that represent estimates based on the hypothetical, severely adverse economic and market scenarios and assumptions under the Supervisory Severely Adverse scenario prescribed by the Federal Reserve Board (FRB). The Stress Test Results do not represent the firm's forecasts of actual expected gains, losses, pre-provision net revenue, net income before taxes, capital, capital actions, risk-weighted assets, or capital ratios
- The estimated results contained herein may not align with those produced by the FRB, even if similar hypothetical stress scenarios were used, due to differences in methodologies and assumptions used to produce those estimates. In addition, the results contained herein may not be comparable to results of prior stress tests conducted by the firm or the FRB due to the evolving regulatory framework, evolving macroeconomic and market environment and other factors
- For a discussion of some of the risks and important factors that could affect the firm's future business, results and financial condition, see "Risk Factors" in our Quarterly Report on Form 10-Q for the quarter ended March 31, 2020 and in our Annual Report on Form 10-K for the year ended December 31, 2019. You should also read the cautionary notes on forward-looking statements in our Form 10-Q for the period ended March 31, 2020 and Earnings Results Presentation for the First Quarter 2020
- The statements in the presentation are current only as of the date the presentation was posted to the firm's website and the firm does not undertake to update forward-looking statements to reflect the impact of subsequent events or circumstances

Table of Contents

Overview & Requirements 3

Material Risks Captured 5

Projection Methodologies 6

Supervisory Scenario Overview 9

Summary of Results 10

Key Ratio Drivers 13

2020 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

Overview & Requirements

DFAST Requirements

- The company-run U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) Stress Tests (DFAST) are conducted annually (Annual DFAST) and completed in April of each year. The Goldman Sachs Group, Inc. ("we," "us" or "our") is currently required to conduct stress tests using a set of macroeconomic scenarios (Supervisory Baseline and Supervisory Severely Adverse) developed by the Board of Governors of the Federal Reserve System (FRB)
- In addition, as part of our capital plan submitted to the FRB in connection with its annual Comprehensive Capital Analysis and Review (CCAR), we are also required to assess our capital adequacy under internally developed Baseline and Severely Adverse scenarios
- We are required to calculate our 2020 Annual DFAST in accordance with the regulations of the FRB (Capital Framework). These regulations are largely based on the Basel Committee on Banking Supervision's capital framework for strengthening international capital standards (Basel III) and also implement certain provisions of the Dodd-Frank Act. The capital requirements are expressed as risk-based capital and leverage ratios that compare measures of regulatory capital to risk-weighted assets (RWAs), average assets and off-balance sheet exposures
- We are required to calculate, for all quarters of the planning horizon:
  - Risk-based Common Equity Tier 1 (CET1) capital, Tier 1 capital and Total capital ratios in accordance with the Standardized approach and market risk rules set out in the Capital Framework (together, the Standardized Capital Rules)
  - Tier 1 leverage ratio, using the Capital Framework definition of Tier 1 capital in the numerator and adjusted total assets (which includes adjustments for certain capital deductions) in the denominator
  - Supplementary leverage ratio (SLR), which takes Tier 1 capital in the numerator and a measure of leverage exposure consisting of total assets and certain off-balance sheet exposures in the denominator (which include a measure of derivatives, securities financing transactions, commitments and guarantees) less certain balance sheet deductions
- The planning horizon for the 2020 Annual DFAST is the first quarter of 2020 through the first quarter of 2022

2020 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

Overview & Requirements

Global Market Shock & Large Counterparty Default

- Firms with significant trading activity, such as us, must include in their company-run stress tests under the Supervisory Severely Adverse scenario a component that assesses potential losses associated with trading positions, private equity positions and counterparty exposures (Global Market Shock (GMS)). Additionally, firms subject to the GMS must apply the shock as of a specified point in time, which results in an instantaneous loss and a reduction in capital at the start of the planning horizon
- In addition, firms such as us with substantial trading or processing and custodian operations are required to incorporate a counterparty default scenario component into their Supervisory Severely Adverse stress scenario. Firms subject to the counterparty default scenario component are required to estimate and report the potential losses and related effects on capital associated with the instantaneous and unexpected default of the counterparty that would generate the largest losses across its derivatives and securities financing transactions, including securities lending and repurchase or reverse repurchase agreement activities

DFAST Capital Actions

- Results incorporate capital action assumptions, as prescribed by the FRB's DFAST rules, including actual capital actions for the first quarter of 2020, and for each of the remaining quarters in the planning horizon, common stock dividends equal to the quarterly average dollar amount of common stock dividends that were paid in the second quarter of 2019 through the first quarter of 2020
- Also included are payments on any other instrument that is eligible for inclusion in the numerator of a regulatory capital ratio such as the scheduled dividend, interest or principal due on such instrument

Stress Capital Buffer (SCB)

- In March 2020, the FRB released the SCB final rule, and it will begin to apply on October 1, 2020. In accordance with the final rule, our Standardized capital ratio requirements will include the SCB, which will be measured as the difference between the starting and lowest projected CET1 capital ratio in the Supervisory Severely Adverse scenario, as calculated by the FRB, plus four quarters of planned common stock dividends, subject to a 2.5% floor. Under the rule, stress leverage requirements, as calculated by the FRB, have been eliminated

2020 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

Material Risks Captured

Risk Type	Risk Type Explanation	Incorporation into Supervisory Scenarios
Market Risk	Losses in the value of inventory, investments, loans and other financial assets and liabilities accounted for at fair value due to changes in market conditions	▪ In the first quarter, we apply the GMS to certain fair value positions ▪ Over the course of the macroeconomic scenario, we further stress positions based on prescribed changes in macroeconomic variables and asset values and we further estimate losses for trading incremental default risk
Credit Risk	Losses due to the default or deterioration in credit quality of a counterparty (e.g., an over-the-counter (OTC) derivatives counterparty or a borrower) or an issuer of securities or other instruments we hold	▪ In the first quarter, we apply the GMS, which includes counterparty credit losses (i.e., from credit valuation adjustments (CVA) and other counterparty credit losses). We also apply the large counterparty default scenario, which includes counterparty credit losses due to defaults on OTC derivatives and securities financing transactions ▪ Over the course of the macroeconomic scenario, we project CVA and other counterparty credit losses. We also incorporate credit risk to projections for changes in provisions, loan losses and defaults on our loans and lending commitments
Operational Risk	Adverse outcomes resulting from inadequate or failed internal processes, people, systems or external events	▪ Over the course of the macroeconomic scenario, losses, including litigation-related losses, are estimated based on our historical operational risk experience, relevant internal factors, including operational risk and control self-assessment results, scenario analysis and recent industry matters, and the assumed conditions of the Severely Adverse scenario
Liquidity Risk	Risk that we will be unable to fund ourselves or meet our liquidity needs in the event of firm-specific, broader industry or market liquidity stress events	▪ Over the the course of the macroeconomic scenario, we project potential liquidity outflows (e.g., draw on unfunded commitments and secured and unsecured financing roll-offs without replacement) and the impact of these outflows on our liquidity position and balance sheet ▪ We also project increased funding costs

Projection Methodologies

Pre-Provision Net Revenues (PPNR) - Revenues

- When projecting revenues we utilize multiple approaches including models based on regression analyses, repricing inventory due to the projected changes in asset values, and management's judgment. Each of the four segments below has a unique combination of business activities that respond differently under various macroeconomic scenarios
- We incorporate the impact of industry performance during historical stressed periods to help guide management's judgment

Segment	Description
Investment Banking (IB)	Provides a broad range of investment banking services, including strategic advisory assignments with respect to mergers and acquisitions, divestitures, corporate defense activities, restructurings and spin-offs, and equity and debt underwriting of public offerings and private placements. IB also provides lending to corporate clients, including middle-market lending, relationship lending and acquisition financing
Global Markets (GM)	Facilitates client transactions and makes markets in fixed income, equity, currency and commodity products with institutional clients. GM also makes markets in and clears institutional client transactions on major stock, options and futures exchanges worldwide and provides prime brokerage and other equities financing activities. GM also provides financing to clients through repurchase agreements, as well as through structured credit, warehouse and asset-backed lending
Asset Management (AM)	Manages assets and offers investment products across all major asset classes to a diverse set of institutional clients and a network of third-party distributors. AM makes equity investments, which include alternative investing activities related to public and private equity investments in corporate, real estate and infrastructure assets, as well as investments through consolidated investment entities, substantially all of which are engaged in real estate investment activities. AM also invests in corporate debt and provides financing for real estate
Consumer & Wealth Management (C&WM)	Provides investing and wealth advisory solutions, including financial planning and counseling, executing brokerage transactions and managing assets for individuals in its wealth management business. C&WM also provides loans and accepts deposits, as well as issues credit cards to consumers

Projection Methodologies

PPNR - Operating Expenses

- Operating expense projections include:
  - Compensation and benefits expense, which includes salaries, estimated year-end discretionary compensation, amortization of equity awards and other items, such as benefits. Discretionary compensation is significantly impacted by, among other factors, the level of net revenues, overall financial performance, prevailing labor markets, business mix, the structure of our share-based compensation programs and the external environment
  - Expenses that vary based on the overall operating environment, such as brokerage, clearing, exchange and distribution fees, which reflect changes in levels of business activity, and market development costs
  - Expenses that relate to our global footprint and overall headcount levels, such as depreciation and amortization, occupancy, and communication and technology costs
  - Operational risk losses, including litigation reserves (and corresponding legal fees), as well as any projected impairments of non-financial assets

Provisions for Loan Losses

- Provisions for loan losses are projected over the planning horizon using a comprehensive, model-based approach for both wholesale and consumer lending activities. The wholesale model estimates losses based on projections of the probability of default, loss given default and exposure at default, which is segmented by industry classification and region for loans and lending commitments accounted for at amortized cost. The consumer lending model estimates losses based on projected growth and changes in borrower credit quality
- As required by the FRB's instructions, our calculation of provisions incorporates our implementation of the Current Expected Credit Loss (CECL) standard. The FRB's calculations will not incorporate this standard or its impact on provisions until the 2022 CCAR stress testing cycle

Projection Methodologies

Trading & Counterparty Losses

- Trading and counterparty losses include mark-to-market losses, trading incremental default risk losses on positions held at fair value and changes in CVA and other counterparty credit losses as a result of the GMS, as well as the impact of the counterparty default scenario. Subsequent trading incremental default risk losses over the course of the macroeconomic scenario are also included. We use our existing stress testing and risk management infrastructure to calculate the impact of the GMS and to quantify the impact of the counterparty default scenario

Other Losses

- Other losses primarily include projected changes over the course of the macroeconomic scenario in the fair value of non-trading loans and lending commitments, which are held for sale or accounted for under the fair value option, as well as their associated hedges, which are not subject to the GMS pursuant to the FRB's instructions

Balance Sheet

- Balance sheet projections are based on the macroeconomic environment and incorporate input from businesses on growth assumptions, planned activity, changes to carrying values as a result of marking our inventory to market, and management’s judgment as to how we manage our balance sheet, funding and liquidity over the course of the macroeconomic scenario

Capital and RWAs

- Capital projections incorporate projected net earnings, capital deductions and other changes in equity, which include the impact of actual capital actions from the first quarter of 2020 and assumed capital actions required by the DFAST rules. Projected RWAs reflect the impact of the macroeconomic environment, such as changes in volatilities and credit spreads. Additionally, projected RWAs and capital deductions are also impacted by the projected size and composition of our balance sheet over the course of the macroeconomic scenario

2020 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

Supervisory Scenario Overview

- The Supervisory Severely Adverse scenario is characterized by a severe global recession accompanied by a period of heightened stress in commercial real estate and corporate debt markets
- This is a hypothetical scenario designed to assess the strength of banking organizations and their resilience to unfavorable economic conditions and does not represent a forecast of the FRB
- Further information about the Supervisory Severely Adverse scenario is available on the FRB's website http://www.federalreserve.gov

Overview of Supervisory Severely Adverse Scenario	
Unemployment, GDP and CPI	▪ The U.S. unemployment rate climbs to a peak of 10% in 3Q21 ▪ Real GDP falls about 8½ percent from its pre-recession peak, reaching a trough in 3Q21 ▪ The decline in activity is accompanied by a lower headline CPI inflation rate, which falls to an annual rate of about 1.25% after 1Q20, before gradually rising to average 1.75% in 2022
Interest Rates	▪ The interest rate for 3-month Treasury bills immediately falls near zero and remains at that level through the end of the scenario ▪ The 10-year Treasury yield immediately falls to 0.75% during 1Q20 and rises gradually thereafter to 2.25% by the end of the stress-test period. The result is a gradual steepening of the yield curve over most of the stress-test period
Credit Markets	▪ Financial conditions in corporate and real estate lending markets are stressed severely ▪ The spread between yields on investment-grade corporate bonds and yields on long-term Treasury securities widens to 5.5 percentage points by 3Q20, an increase of 4 percentage points relative to 4Q19 ▪ The spread between mortgage rates and 10-year Treasury yields widens to 3.5 percentage points over the same period
Equities and Volatility	▪ Asset prices drop sharply in this scenario ▪ Equity prices fall 50% through the end of 2020, accompanied by a rise in the VIX, which reaches a peak of 70
Currencies	▪ The USD appreciates against the EUR, GBP and the currencies of developing Asia, but depreciates modestly against the JPY because of flight-to-safety capital flows

2020 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

Summary of Results

Table 1: Capital Ratios, Actual 4Q19 and Projected 1Q20 - 1Q22 under the Supervisory Severely Adverse Scenario

Regulatory Ratio[1]	Actual 4Q19	Projected Stress Capital Ratios[2]	
		Ending	Minimum[3]
CET 1 ratio (%)	13.3	7.4	6.9
Tier 1 capital ratio (%)	15.2	9.3	8.9
Total capital ratio (%)	17.8	11.7	11.7
Tier 1 leverage ratio (%)	8.7	5.6	5.3
Supplementary leverage ratio (%)	6.2	3.9	3.7

1. *For the supervisory stress tests, the FRB will use the capital action assumptions set forth in the Stress Capital Buffer (SCB) rule, making FRB results less comparable to firm calculated results*
2. *The projection of stress capital ratios includes the impact of the 3-year CECL day 1 transition relief provided for in the 2019 final rule (12 CFR § 217.301(c)), but excludes the relief provided for by the 2020 interim final rule CECL (12 CFR § 217.301(d)). For purposes of the SLR ratio, the calculation of total leverage exposure does not exclude certain exposures provided for in the 2020 interim final rule SLR (12 CFR § 217.303). The projection of stress capital ratios does not include the net operating loss (NOL) carryback benefit provided for in the Coronavirus Aid, Relief and Economic Security Act (CARES Act)*
3. *The lowest calculated capital ratios (minimum) from the first quarter of 2020 through the first quarter of 2022 are presented*

Table 2: RWAs, Actual 4Q19 and Projected 1Q22 under the Supervisory Severely Adverse Scenario

Risk Weighted Assets	Actual 4Q19	Projected 1Q22
RWAs ($ in billions)	563.6	571.4

2020 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

Summary of Results

Table 3: Projected PPNR, Losses and Net Loss Before Taxes through 1Q22 under the Supervisory Severely Adverse Scenario

Item	$ in billions	Percentage of Average Assets (%)
PPNR[1]	7.6	0.8
Other Revenue	—	
Less:		
Provision for Loan Losses	9.2	
Realized Losses/(Gains) on Securities	—	
Trading and Counterparty Losses[2]	22.0	
Other Loss/(Gains)[3]	5.1	
Equals:		
Net Loss Before Taxes	(28.7)	(3.0)

1. *PPNR includes net revenues and operating expenses (including operational risk events and other real estate owned costs)*
2. *Trading and counterparty losses include mark-to-market losses, trading incremental default risk losses on positions held at fair value and changes in CVA and other counterparty credit losses, as a result of the GMS and the impact of the counterparty default scenario. Subsequent trading incremental default risk losses over the course of the macroeconomic scenario are also included*
3. *Other losses/(gains) primarily include projected changes over the course of the macroeconomic scenario in the fair value of non-trading loans and lending commitments, which are held for sale or accounted for under the fair value option, as well as their associated hedges, which are not subject to the GMS pursuant to the FRB's instructions*

2020 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

Summary of Results

Table 4: Projected Loan Losses, by Type of Loan, 1Q20 - 1Q22 under the Supervisory Severely Adverse Scenario

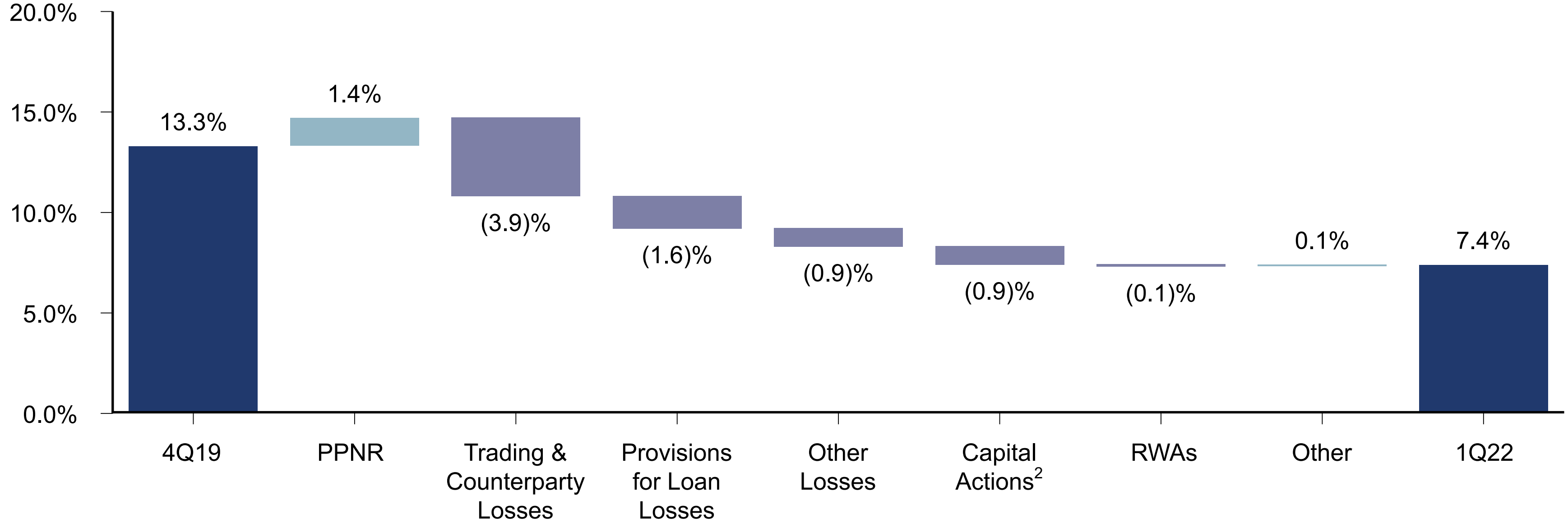
Loan Type	$ in billions	Portfolio Loss Rates %
Loan Losses[1]	8.9	7.6
First Lien Mortgages, Domestic	0.0	6.1
Junior Liens and HELOCs, Domestic	—	—
Commercial and Industrial	3.2	9.1
Commercial Real Estate, Domestic	0.6	9.3
Credit Cards	0.8	16.6
Other Consumer	1.3	18.8
Other Loans	3.0	4.7

1. *Loan losses and the average loan balances used to calculate portfolio loss rates excludes loans and lending commitments held for sale or accounted for under the fair value option*

2020 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

Key Ratio Drivers

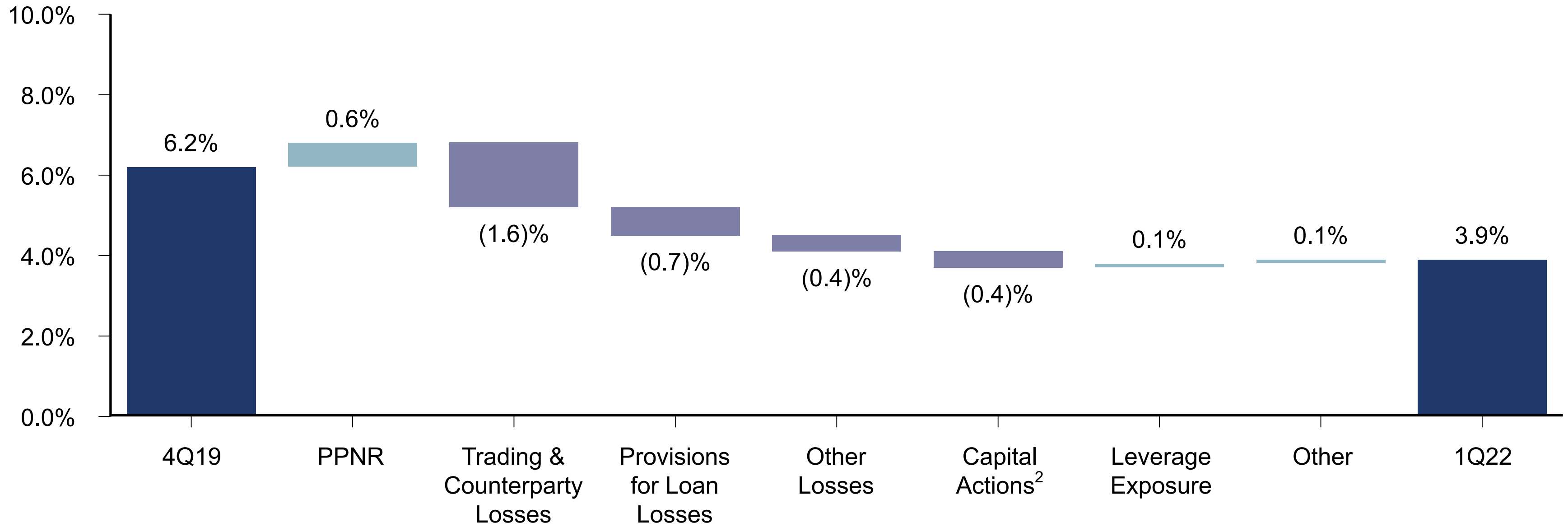
Graph 1: Key Drivers of CET 1 under the Supervisory Severely Adverse Scenario[1]



1. *PPNR, Trading & Counterparty Losses, Provisions for Loan Losses and Other Losses are on a pre-tax basis*
2. *Includes actual capital actions for the first quarter of 2020, and for each of the remaining quarters in the planning horizon, common stock dividends equal to the quarterly average dollar amount of common stock dividends that were paid in the second quarter of 2019 through the first quarter of 2020, as prescribed by the FRB's DFAST rules*

Key Ratio Drivers

Graph 2: Key Drivers of SLR under the Supervisory Severely Adverse Scenario[1]



1. *PPNR, Trading & Counterparty Losses, Provisions for Loan Losses and Other Losses are on a pre-tax basis*
2. *Includes actual capital actions for the first quarter of 2020, and for each of the remaining quarters in the planning horizon, common stock dividends equal to the quarterly average dollar amount of common stock dividends that were paid in the second quarter of 2019 through the first quarter of 2020, as prescribed by the FRB's DFAST rules*