2024 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

June 2024

Goldman Sachs

2024 Annual Dodd-Frank Act Company-Run Stress Test Disclosure

Cautionary Note on Forward-Looking Statements

- The 2024 Dodd-Frank Act Annual Stress Test 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 where the same hypothetical stress scenario is 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, among other factors, changes in applicable hypothetical stress scenarios, methodological changes, changes in applicable assumptions and changes in the firm's business and exposures

- 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 Annual Report on Form 10-K for the year ended December 31, 2023. You should also read the cautionary notes on forward-looking statements in our Quarterly Report on Form 10-Q for the quarter ended March 31, 2024

- 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

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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 and completed in April of each year. The Goldman Sachs Group, Inc. (we, us, or our) and Goldman Sachs Bank USA are currently required to conduct stress tests using a set of macroeconomic scenarios (Supervisory Baseline and Supervisory Severely Adverse) developed by the 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 2024 DFAST in accordance with the regulations of the FRB (Capital Framework). These regulations are largely based on the Basel Committee on Banking Supervision's 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 the following results, excluding the impact of material business plan changes, for all quarters of the planning horizon:

  - 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 average adjusted total assets (which includes adjustments for certain capital deductions) in the denominator

  - Supplementary leverage ratio (SLR), which includes the Capital Framework definition of Tier 1 capital in the numerator and a measure of leverage exposure consisting of average adjusted total assets and certain off-balance sheet and other 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 2024 DFAST is the first quarter of 2024 through the first quarter of 2026

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Overview & Requirements

Global Market Shock & Large Counterparty Default

▪ Firms with significant trading activity, such as us, must include in their DFAST Supervisory Severely Adverse scenario a Global Market Shock (GMS) that assesses potential losses associated with trading positions, private equity positions and counterparty exposures. 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

▪ Firms with substantial trading or processing and custodian operations, such as us, are also 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 agreement activities

Capital Actions

▪ Results incorporate capital action assumptions as prescribed by the FRB's DFAST rules, which assume no dividends on instruments that qualify as CET1 capital, no redemptions or repurchases of any capital instrument that is eligible for inclusion in the numerator of a regulatory capital ratio, and no issuances of common stock or preferred stock

▪ The FRB's DFAST rules also assume payments are made on instruments that qualify as additional Tier 1 capital or Tier 2 capital equal to the stated dividend, interest, or principal due on such instrument

Stress Capital Buffer (SCB)

▪ SCB is 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 as a percentage of RWAs, subject to a 2.5% floor. This disclosure does not include detail on the SCB, which will be released by the FRB by the end of August

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Material Risks Captured

Risk Type	Explanation	Incorporation into Supervisory Scenarios
Market Risk	Adverse impact to our earnings due to changes in market conditions. Our assets and liabilities that give rise to market risk primarily include positions held for market making for our clients and for our investing and financing activities, and these positions change based on client demands and our investment opportunities	▪ 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 estimate losses for trading incremental default risk ▪ Categories of market risk include interest rate risk, equity price risk, currency rate risk and commodity price 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 from external events	▪ 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	▪ We project potential liquidity outflows (e.g., draws 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 the cost of funding from debt and deposits

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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 three segments below has a unique combination of business activities that respond differently under various macroeconomic scenarios

- We also incorporate the impact of industry performance during historical stressed periods to help guide management's judgment

Segment	Description
Global Banking & Markets (GBM)	GBM provides a broad range of advisory and underwriting services to a diverse group of clients. Services include 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. GBM also facilitates client transactions and makes markets in fixed income, equity, currency and commodity products. In addition, GBM makes markets in, and clears client transactions on major stock, options and futures exchanges worldwide and provides prime financing, portfolio financing and other type of equity financing. GBM also lends to corporate clients, provides commodity financing through structured transactions, financing through securities purchases under agreements to resell, and makes equity and debt investments related to GBM activities
Asset & Wealth Management (AWM)	AWM manages assets and offers investment products across all major asset classes to a diverse set of institutional and individual clients. AWM provides investing and wealth advisory solutions, including financial planning and counseling, and executing brokerage transactions for wealth management clients. AWM issues loans to wealth management clients and accepts deposits through its consumer banking digital platform, Marcus by Goldman Sachs, and through its private bank. AWM also makes equity investments, invests in debt instruments, engages in lending activities and provides financing for real estate and other assets
Platform Solutions (PS)	PS issues credit cards through partnership arrangements, accepts deposits from Apple Card customers and provides transaction banking and other services, including cash management services, such as deposit-taking and payment solutions for corporate and institutional clients

PPNR - Operating Expenses

- Operating expense projections include:

  - Compensation and benefits expense, which includes salaries, 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, net of provisions for credit losses, 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 transaction based expenses, which reflect changes in levels of business activity, market development costs and professional fees

  - 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 FRB instruction, our calculation of provisions incorporates our implementation of the Current Expected Credit Loss (CECL) standard. The FRB's calculations will not incorporate this methodology or its impact on provisions in 2024 DFAST

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Projection Methodologies

Trading & Counterparty Losses

▪ Trading & 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

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, and 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

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Supervisory Severely Adverse 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 3Q25 • Real GDP declines 8.5% from the 4Q23 to its trough in 1Q25 • The decline in activity is accompanied by a lower Consumer Price Index (CPI) inflation, which quickly falls to an annual rate of about 1.3% in 3Q24 and gradually increases above 1.6% by the end of the scenario
Interest Rates	• Interest rates decline across regions, short-term rates fall significantly to near zero by 3Q24 and remain there for the remainder of the scenario. Rates do not become negative • Long-term rates fall to 0.8% by 2Q24, rising to 1.5% by the end of the scenario
Credit Markets	• Credit spreads widen across regions and ratings • The spread between yields on investment-grade corporate bonds and yields on long-term treasury securities widens to 5.8 ppts by 3Q24, an increase of 4.1 ppts relative to 4Q23
Equities and Volatility	• Equity prices decline across regions, with U.S. equities dropping 55% through 4Q24 • Volatilities increase, with the VIX reaching 70 in 2Q24, then declining to near 32
Currencies	• The USD appreciates against the EUR and GBP, but depreciates slightly against the JPY

The Goldman Sachs Group, Inc. Results

Goldman Sachs

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Summary of Results for The Goldman Sachs Group, Inc.

Table 1: Capital Ratios, Actual 4Q23 and Projected 1Q24 - 1Q26 under the Supervisory Severely Adverse Scenario

Regulatory Ratio	Actual 4Q23	Projected Stress Capital Ratios	
		Ending	**Minimum**[1]
CET1 capital ratio (%)	14.4	10.2	10.0
Tier 1 capital ratio (%)	15.9	11.7	11.5
Total capital ratio (%)	18.1	13.6	13.6
Tier 1 leverage ratio (%)	7.0	5.8	5.7
Supplementary leverage ratio (%)	5.5	4.5	4.4

1. *The lowest calculated capital ratios (minimum) from the first quarter of 2024 through the first quarter of 2026 are presented*

Table 2: RWAs, Actual 4Q23 and Projected 1Q26 under the Supervisory Severely Adverse Scenario

Risk Weighted Assets	Actual 4Q23	Projected 1Q26
RWAs ($ in billions)	692.7	726.9

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Summary of Results for The Goldman Sachs Group, Inc.

Table 3: Projected PPNR, Losses and Net Loss Before Taxes, 1Q24 - 1Q26 under the Supervisory Severely Adverse Scenario

Item	$ in billions	Percentage of Average Assets (%)
PPNR[1]	14.6	1.0
equals:		
Net Interest Income	11.4	0.8
Non-Interest Income	68.4	4.6
less:		
Non-Interest Expense	65.2	4.4
Other Revenue	—	
less:		
Provision for Loan Losses	17.9	
Realized Losses/(Gains) on Securities	—	
Trading & Counterparty Losses[2]	20.0	
Other Losses/(Gains)[3]	2.2	
equals:		
Net Loss Before Taxes	(25.5)	(1.7)

1. PPNR includes net revenues and operating expenses (including operational risk events and other real estate owned costs)

2. Trading & Counterparty Losses includes 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 includes 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

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Summary of Results for The Goldman Sachs Group, Inc.

Table 4: Projected Loan Losses, by Type of Loan, 1Q24 - 1Q26 under the Supervisory Severely Adverse Scenario

| Loan Type	$ in billions	Portfolio Loss Rates %
Loan Losses[1,2]	18.2	8.2
First Lien Mortgages, Domestic	0.1	2.2
Junior Liens and HELOCs, Domestic	—	—
Commercial and Industrial	6.7	17.2
Commercial Real Estate, Domestic	1.4	14.5
Credit Cards	3.9	23.8
Other Consumer	0.2	2.0
Other Loans	5.9	3.9

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
2. Losses are calculated based on the exposure at default, which includes both outstanding balances and any additional drawdown of the credit lines that occurs prior to default, while loss rates are calculated as a percentage of average outstanding balances over the projection horizon

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Key Ratio Drivers for The Goldman Sachs Group, Inc.

Graph 1: Key Drivers of CET1 under the Supervisory Severely Adverse Scenario[1,2]

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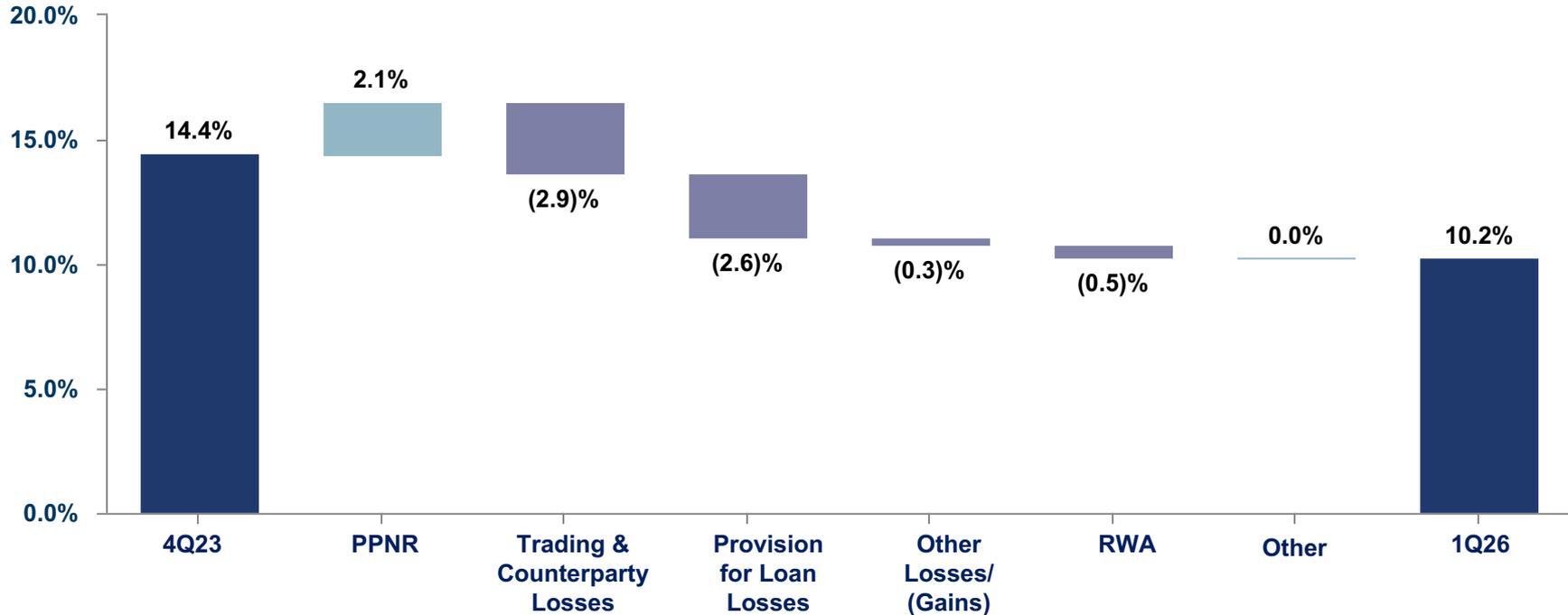
1. PPNR, Trading & Counterparty Losses, Provision for Loan Losses, and Other Losses/(Gains) are on a pre-tax basis. The impact of taxes as well as certain other items, such as Other Comprehensive Income, regulatory capital deductions, and preferred dividend distributions, are included in "Other"

2. Results assume no dividends paid on instruments that qualify as CET1 capital, no redemptions or repurchases of any capital instrument that is eligible for inclusion in the numerator of a regulatory capital ratio, and no issuances of common stock or preferred stock; results include payments on instruments that qualify as additional Tier 1 capital or Tier 2 capital as prescribed by the FRB's DFAST rules

Goldman Sachs Bank USA Results

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Summary of Results for Goldman Sachs Bank USA

Table 1: Capital Ratios, Actual 4Q23 and Projected 1Q24 - 1Q26 under the Supervisory Severely Adverse Scenario

Regulatory Ratio	Actual 4Q23	Projected Stress Capital Ratios	
		Ending	Minimum[1]
CET1 capital ratio (%)	14.1	11.7	11.3
Tier 1 capital ratio (%)	14.1	11.7	11.3
Total capital ratio (%)	15.8	12.6	12.3
Tier 1 leverage ratio (%)	10.3	9.2	9.1
Supplementary leverage ratio (%)	7.4	6.7	6.7

1. The lowest calculated capital ratios (minimum) from the first quarter of 2024 through the first quarter of 2026 are presented

Table 2: RWAs, Actual 4Q23 and Projected 1Q26 under the Supervisory Severely Adverse Scenario

Risk Weighted Assets	Actual 4Q23	Projected 1Q26
RWAs ($ in billions)	380.8	426.7

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Summary of Results for Goldman Sachs Bank USA

Goldman Sachs

Table 3: Projected PPNR, Losses and Net Loss Before Taxes, 1Q24 - 1Q26 under the Supervisory Severely Adverse Scenario

Item	$ in billions	Percentage of Average Assets (%)
PPNR[1]	**13.5**	**2.2**
equals:		
Net Interest Income	**12.6**	**2.0**
Non-Interest Income	**14.3**	**2.3**
less:		
Non-Interest Expense	**13.4**	**2.1**
Other Revenue	—	
less:		
Provision for Loan Losses	**14.7**	
Realized Losses/(Gains) on Securities	—	
Trading & Counterparty Losses[2]	**1.5**	
Other Losses/(Gains)[3]	**1.8**	
equals:		
Net Loss Before Taxes	**(4.5)**	**(0.7)**

1. *PPNR includes net revenues and operating expenses (including operational risk events)*

2. *Trading & Counterparty Losses includes 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. Subsequent trading incremental default risk losses over the course of the macroeconomic scenario are also included*

3. *Other Losses/(Gains) primarily includes 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*