# 2020 Dodd-Frank Act Stress Test Severely Adverse Scenario Results

August 13, 2021

# Executive Summary

- Freddie Mac's statutory mission is to provide liquidity, stability and affordability to the U.S. housing market. Consistent with its charter, the company's business is focused exclusively on the U.S. residential mortgage market
- The company has been operating under conservatorship since September 6, 2008, under the direction of the Federal Housing Finance Agency (FHFA), as Conservator. Freddie Mac's ability to access funds from Treasury under the Senior Preferred Stock Purchase Agreement (PSPA) is critical to keeping the company solvent
- Freddie Mac is required to conduct annual stress tests to assess capital adequacy under FHFA's rule implementing the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank) stress testing requirements. The 2020 Dodd-Frank Act Stress Test (DFAST) represents the seventh year that Freddie Mac is performing the stress test
- FHFA's stress test specifications include two required scenarios (Baseline scenario and Severely Adverse scenario with and without a valuation allowance against our Deferred Tax Assets), each reflecting projections over a nine-quarter horizon (1Q20 - 1Q22). The Severely Adverse scenario includes a 28% decline in house prices, 35% drop in commercial real estate prices and a severe global market shock with our largest counterparty defaulting
- Results are not expected outcomes. They are modeled projections based on hypothetical economic conditions. Actual outcomes may be very different

# Stress Test Overview

## Background

- Dodd-Frank, as amended, requires certain financial companies with more than $250 billion in assets that are regulated by a primary federal financial regulatory agency to perform annual stress tests to assess capital adequacy
- For the GSEs, the FHFA-prescribed stress test assesses capital adequacy through the sufficiency of the remaining funding commitment under the PSPA(1)
- FHFA provided the key scenario assumptions for the 2020 Dodd-Frank annual stress test in March 2020. The nine-quarter planning horizon includes 1Q20 to 1Q22, beginning with the 12/31/2019 balance sheet information
- The 2020 stress test results were submitted to FHFA and the Federal Reserve (sent by FHFA) on May 20, 2020
- Overall stress test results were reviewed by Freddie Mac's senior management and other key stakeholders

## Key Economic Variables for the Severely Adverse Scenario as prescribed by FHFA

| ***Macroeconomic Variables*** | **2020 DFAST** | **2019 DFAST** |
|---|---|---|
| *Residential House Prices (9-Quarter Decline)* | *-28%* | *-26%* |
| *Commercial Real Estate (9-Quarter Decline)* | *-35%* | *-35%* |
| *Real Gross Domestic Product (peak-to-trough)* | *-8.3%* | *-7.8%* |
| *Unemployment Rate (Peak)* | *10%* | *10%* |
| ***Interest-Rate Variables*** | | |
| *30-yr Mortgage Rate (Peak)* | *4.4%* | *4.5%* |
| *10-yr Treasury Rate (Ending)* | *1.6%* | *1.5%* |
| *Short-term Rate (Ending)* | *0.10%* | *0.13%* |
| ***Global Market Shock*** | | |
| *Instantaneous Price Shocks on Non-agency securities* | *RMBS: up to -62%;* | *RMBS: up to -73%* |

(1) $140 billion as of December 31, 2019

# Severely Adverse Scenario Results

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| | | Cumulative Projected Financial Metrics (Q1 2020 - Q1 2022) | | | | |
|---|---|---|---|---|---|---|
| | | Results without establishing valuation allowance on deferred tax assets | | Impact of establishing valuation allowance on deferred tax assets | Results with establishing valuation allowance on deferred tax assets | |
| | | Billions of dollars | Percent of average assets[6] | | Billions of dollars | Percent of average assets[6] |
| 1 | Pre-provision net revenue[1] | 17.3 | 0.82% | | 17.3 | 0.82% |
| 2 | (Provision) benefit for credit losses | (19.4) | | | (19.4) | |
| 3 | Mark-to-market gains (losses)[2] | (1.3) | | | (1.3) | |
| 4 | Global market shock impact on trading securities and counterparty | (4.0) | | | (4.0) | |
| 5 | Net income before taxes | (7.5) | -0.35% | | (7.5) | -0.35% |
| 6 | (Provision) benefit for taxes | 1.6 | | (7.5) | (5.9) | |
| 7 | Other comprehensive income (loss)[3] | (1.2) | | | (1.2) | |
| 8 | Total comprehensive income (loss) | (7.1) | -0.34% | (7.5) | (14.6) | -0.69% |
| 9 | Credit losses[4] | (6.1) | | | (6.1) | |
| 10 | Credit losses (% of average portfolio balance)[5] | 0.27% | | | 0.27% | |

[1] Includes net interest income, security impairments, operational risk losses, foreclosed property income (expense), and other non-interest income/expenses

[2] Includes fair value gains (losses) on derivative and trading securities, and other gains (losses) on investment securities

[3] Includes global market shock impact on available-for-sale securities

[4] Credit losses are defined as charge-offs, net plus foreclosed property expenses

[5] Average portfolio balance over the nine-quarter planning horizon

[6] Average total assets over the nine-quarter planning horizon

*Stress test results are not expected outcomes. They are modeled projections based on hypothetical economic conditions prescribed by FHFA. Actual outcomes may be very different. The severely adverse scenario results do not reflect any COVID-19 related impact.*

# Appendix:
# Stress Test Assumptions and Methodologies

# Stress Test Components

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| **Pre-Provision Net Revenue (PPNR)** | Business revenues (e.g., net interest income and guarantee fees), cost and benefits of credit risk transfer transactions, and operating expenses (e.g., administrative expenses, operational risk losses, foreclosed property expense) |
| **Loan Loss Provision** | Provision related to SF business, reflecting estimated credit losses including impacts of troubled debt restructurings (TDRs), and credit provision related to MF business |
| **Mark-to-Market Gains (Losses)** | Mark-to-market gains (losses) related to changes in fair value of derivatives, certain loans, and trading securities, and other gains (losses) on investment securities not included in global market shock |
| **Global Market Shock (net of tax)** | Instantaneous global shocks of OAS (option adjusted spread) and non-agency MBS prices applied to certain loans and trading and Available-For-Sale (AFS) securities as well as the estimated impact of a default of the company's largest counterparty. Includes tax benefit on AFS securities that the company intends to hold to recovery |

# Pre-Provision Net Revenue (PPNR)

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| **Description** | ▪ PPNR reflects business revenues and expenses<br>▪ Includes projections of net interest income, non-interest income, cost and benefits of credit risk transfer transactions, foreclosed property expenses, operational risk losses (the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events) and other non-interest expense for the existing book of business and new business during the nine-quarter horizon<br>▪ Material risks covered include interest-rate risk, credit risk for non-agency MBS, credit risk for the SF portfolio as it relates to credit risk transfer recoveries and foreclosed property expense, and operational risk |
| **Methodologies** | ▪ Uses internal business assumptions for business volume, retained portfolio size, guarantee fees, risk-sharing transactions (credit risk transfer recovery benefit is primarily based on provision expense), debt funding mix, and spreads to LIBOR for assets and debt<br>▪ Projects cash flows using a third-party model, incorporating internal business assumptions and FHFA-provided scenario interest-rate paths<br>▪ Estimates forward prices on trading and AFS securities using a third-party model for non-agency MBS, and an internal model for agency MBS<br>▪ Operational risk severely adverse stress loss is calculated with Basel II Basic Indicator Approach (BIA), by applying a factor to average annual gross income over a three-year period, excluding any years with negative gross income |

# Provision for Credit Losses

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| **Description** | ▪ SF provision for credit losses reflects estimated credit losses, including costs from payment reductions on modifications and costs due to reimbursement of servicer advances of property taxes and insurance. Credit loss amounts reflect mortgage insurance recoveries adjusted for the prescribed counterparty haircuts<br>▪ Captures SF mortgage credit risk, which is the largest component of Freddie Mac's stress test losses<br>▪ MF Loan Loss Provision represents the credit provision recognized over the nine-quarter planning horizon pertaining to our MF business |
| **Methodologies** | ▪ With CECL adoption, provision for credit losses reflects lifetime estimates for the portfolio, rather than incurred loss amount based on facts and circumstances as of each balance sheet date with no forecast of future economic changes.<br>▪ Single-Family:<br>    ▪ Leveraged Moody's CCAR HPA scenarios at the MSA level, which aggregates to FHFA-provided national level HPA. The translated MSA-level house-price projections are then used in Freddie Mac's internal models and stress test processes<br>    ▪ Estimated scenario credit loss and reserves using internal credit loss forecasting model and key house-price and interest-rate inputs from FHFA<br>    ▪ Loans are assumed to perform in a similar way as in the most recent economic cycle that covers the housing market crisis and recovery, controlling for loan characteristics<br>    ▪ Loss projections reflect haircuts provided by FHFA to mortgage insurance payment obligations<br>    ▪ Credit risk transfer benefit for the consolidated SF portfolio is recognized as a separate asset under GAAP and included in PPNR along with the credit risk transfer costs and foreclosed property expense<br>▪ Multifamily:<br>    ▪ MF Loan Loss Provision employs a third-party model using a single path statistical model built on the Probability of Default (PD) / Loss Given Default (LGD) framework that calculates lifetime undiscounted net credit loss based on: (1) loan characteristics of the forecasted portfolio balances and activities, and (2) market macroeconomic forecasts provided by FHFA and supplemented with Moody's CCAR scenarios<br>    ▪ MF loan level credit losses are aggregated in accordance with securitization structures to reflect credit protection from subordination. The MF Loan Loss Reserve balance is reduced by credit protection received via security subordination |

# Other Components

## Mark-to-Market Gains (Losses) (MTM)

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| **Description** | ▪ Reflects mark-to-market gains (losses) from changes in fair value of derivatives and MF held-for sale loans, and other gain (losses) on investment securities not included in global market shock due to changes in interest rates<br>▪ Material risk covered includes interest rate risk<br>▪ We consider hedge accounting in our results |
| **Methodologies** | ▪ Applies FHFA-specified interest rate shocks to estimated changes in fair value of derivatives, loans and securities |

## Global Market Shock (GMS)

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| **Description** | ▪ The GMS is an instantaneous shock on Freddie Mac's assets and debt valued at fair value in the first quarter that is not recovered during the nine-quarter forecast horizon. This shock is treated as an add-on that is exogenous to the macroeconomic and financial market environment specified in the stress test scenario<br>▪ The GMS captures market risks related to changes in OAS, as well as price shocks to non-agency MBS<br>▪ Also includes the estimated impact of a default of the company's largest counterparty |
| **Methodologies** | ▪ Applies FHFA-specified shocks of OAS to Freddie Mac's agency loans and security holdings<br>▪ Applies FHFA-specified price shocks to Freddie Mac's non-agency MBS holdings, aggregated by product-type, credit rating, and issuance year<br>▪ Includes tax benefit on AFS securities that the company has both the intent and ability to hold to recovery. Reflects the company's accounting policy, experience of the 2008 financial crisis, and projections of sufficient PSPA funding, which supports the company's ability to hold AFS securities to recovery |

# Description of Key Drivers

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| **Mortgage Credit Risk** | ▪ Mortgage credit risk is the risk that a borrower fails to make timely payments on a mortgage owned or guaranteed by Freddie Mac<br>▪ SF credit risk varies significantly by book year. Since 2008, Freddie Mac has enhanced its credit and underwriting policies and purchased fewer loans with higher risk characteristics, which has contributed to improvements in the credit quality of the SF guarantee business. The borrower's equity in the property (expressed as the loan-to-value ratio) is a key input to the estimated losses. Actual house price growth reduces potential future losses<br>▪ MF credit risk is substantially reduced as a result of the K-deal securitization program, where Freddie Mac guarantees only the most senior tranches of K-deals, resulting in a significant portion of credit risk being transferred to the investors in subordinated tranches |
| **Market Risk Including Interest Rate and Spread Risk** | ▪ Market risk is the economic risk associated with adverse changes in interest rates, volatility, and spreads<br>▪ Freddie Mac's GAAP financials are exposed to interest rate risk. The company employs hedge accounting to mitigate interest rate risk<br>▪ The retained portfolio is exposed to spread risk, related to adverse changes in the spread between security prices in related market sectors |
| **Counterparty Credit Risk** | ▪ Counterparty credit risk is the risk that an institutional counterparty is unable to meet its contractual obligations to Freddie Mac. The company's counterparty credit exposures include, but are not limited to, counterparties to derivative and repurchase agreement transactions and mortgage insurers (MIs) |
| **Operational Risk** | ▪ Operational risk is the risk of direct or indirect loss resulting from inadequate or failed internal processes, people, systems, or from external events. Operational risk is inherent in the company's business activities and can manifest itself in various ways, including accounting or operational errors, business interruptions, fraud and technology failures |