



**2023 REPORT CYCLE  
DODD-FRANK ACT STRESS TESTS  
SUMMARY INSTRUCTIONS AND GUIDANCE**

March 7, 2023

Accompanying Order Nos.  
*2023-OR-FNMA-1 AND 2023-OR-FHLMC-1*



Federal Housing Finance Agency

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# Introduction

Section 165(i)(2) of the Dodd-Frank Act, as amended by section 401 of the Economic Growth, Regulatory Relief, and Consumer Protection Act (“EGRRCPA”) requires certain financial companies with total consolidated assets of more than \$250 billion, and which are regulated by a primary federal financial regulatory agency, to conduct periodic stress tests to determine whether the companies have the capital necessary to absorb losses as a result of severely adverse economic conditions. These statutory changes became effective on November 24, 2019. The Federal Housing Finance Agency (FHFA) is the primary federal financial regulator of Fannie Mae and Freddie Mac (the Enterprises), and the 11 Federal Home Loan Banks (Banks). These entities are collectively referred to as the regulated entities.

FHFA’s rule on Stress Testing of Regulated Entities (12 CFR 1238), along with these instructions and guidance, apply to the Enterprises because each Enterprise has total consolidated assets of more than \$250 billion. Due to their total consolidated asset amounts, function in the mortgage market, size of their retained portfolios, and their share of the mortgage securitization market, FHFA requires each Enterprise to conduct the stress test on an annual basis. Because the Banks do not meet the total consolidated asset threshold of \$250 billion, they are not subject to the stress test requirements of the rule.

The Enterprises’ capital positions, supported and restricted by the Senior Preferred Stock Purchase Agreements with the Department of the Treasury, are unique. Nonetheless, the

Enterprises incorporate capital into their business decision-making processes. FHFA expects the Enterprises to have processes and procedures for managing their businesses notwithstanding Treasury’s support.

FHFA’s stress testing rule establishes the basic requirements for each Enterprise to conduct Dodd-Frank Act Stress Tests (DFAST) and report the results. This summary instructions and guidance document supplements the rule. FHFA expects each Enterprise to follow the instructions and guidance in conducting stress tests and reporting and publishing results under the rule.

General instructions and guidance are provided relating to:

- Scenario assumptions
- Reporting and timing
- Stress test process governance
- Use of stress test results
- Incomplete data
- Evaluation of stress test results
- Correspondence related to stress tests

## Stress Test Scenarios

The stress tests are based on portfolios as of December 31, 2022. The planning horizon for the stress test is nine quarters, starting with the first quarter of 2023 and extending through the first quarter of 2025. The Enterprises are required to submit the results of stress tests based on two scenarios: Baseline and Severely Adverse. Assumptions for the variables in each scenario are contained in Appendices 2 through 6.

FHFA expects each Enterprise to use those variables that are relevant to the Enterprise's lines of business and that are consumed by the Enterprise's models. However, FHFA expects each Enterprise to apply all of the relevant global market shocks provided. Each Enterprise is expected to indicate which variables are included in its stress tests in its report to FHFA and the Federal Reserve Board of Governors (Board). FHFA also expects each Enterprise to extrapolate any of the aforementioned variables beyond the projection date as required. One year of scenario assumptions beyond the nine-quarter planning horizon will be provided and may be utilized, if needed. Historical data is provided should models require that information.

It is important to note that the scenarios and assumptions provided are not forecasts, but instead are hypothetical scenarios and assumptions to assess the financial strength of the Enterprises.

### **Global Market Shock Assumptions**

The global market assumptions provided by FHFA are to be applied to the Enterprises' trading securities, available-for-sale securities, and other fair value assets as of December 31, 2022, for the Severely Adverse scenario.

The result of the global market shock is to be taken as an instantaneous loss and reduction of capital in the first quarter of the planning horizon. The global market shock should be treated as an add-on that is exogenous to the macroeconomic and financial market environment specified in the supervisory stress scenario. The Enterprises should assume no recoveries of the losses generated by the global market shock over the nine

quarters. The capital impact of the global market shock is carried over the planning horizon.

If an Enterprise can demonstrate that its loss-estimation methodology stresses identical positions under both the global market shock and the macroeconomic scenario, the Enterprise may assume that the combined losses from such positions do not exceed the losses resulting from the greater of the global market shock losses or the macroeconomic losses.

### **Counterparty Default Scenario Component**

The counterparty default scenario component of the global market shock should be treated as an add-on to the macroeconomic and financial market scenario specified in the Severely Adverse scenario. The counterparty default scenario component involves an instantaneous and unexpected default of one of the following:

- an Enterprise's largest counterparty across the Enterprise's secured and unsecured lending, securities lending, repurchase/reverse repurchase agreements (collectively Securities Financing Transactions or SFTs), unsecured overnight deposits, and derivative exposures, as well as the potential losses and effects on capital associated with such a default;
- an Enterprise's largest counterparty across the Enterprise's single-family mortgage insurance providers and the potential losses and effects on capital associated with such a default; or



- an Enterprise's largest counterparty across the Enterprise's providers of multifamily credit enhancements and the potential losses and effects on capital associated with such a default.
- an Enterprise's largest counterparty across the Enterprise's CRT reinsurance counterparties and the potential losses and effects on capital associated with such a default.
- an Enterprise's largest counterparty across the Enterprise's non-bank servicers and the potential losses and effects on capital associated with such a default.

The Enterprise should identify its largest counterparty as the counterparty that represents the largest total net stressed loss if the counterparty defaulted on its obligations. Net stressed losses for SFT counterparties are calculated after applying the instantaneous market shock to any non-cash SFT assets (securities/collateral) posted or received, and for derivatives, to the value of the trade position and non-cash collateral exchanged.<sup>1</sup>

The as-of date for the counterparty default scenario component is December 31, 2022 – the same date as the global market shock.

All estimated losses from the counterparty default scenario component should be assumed to occur instantaneously and should be reported in the initial quarter of the planning horizon.

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<sup>1</sup> In selecting its largest counterparty, an Enterprise will not consider certain sovereign entities (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) or designated central clearing counterparties.

More detailed instructions for implementing certain assumptions follow:

### **House Prices**

The House Price Index assumptions provided by FHFA describe the path of national house prices. Each Enterprise should extrapolate the national house price path beyond the projection date as needed.

Each Enterprise should also translate the national house price path in each scenario to regional house price paths as appropriate for each Enterprise's models and should interpolate the house price paths to accommodate the frequency of data required by their models.

### **Missing Variables**

Each Enterprise should use its internal assumptions for variables that its models consume but that FHFA does not provide.

### **Balance Sheet Evolution**

Each Enterprise should use its internal assumptions to roll its balance sheets forward through the nine-quarter projection period. The assumptions should reflect reasonable expectations for future business and should conform to the Enterprise's internal strategic plan. The Enterprise should ensure that the size and composition of its book of business during the stress test is consistent with the goals in FHFA's Conservatorship Scorecard.

### **Capital Actions**

The Enterprises should comply with the terms of the Senior Preferred Stock Purchase Agreements, as amended, to determine the level of dividends to pay over the planning horizon.

## **Operational Risk Losses**

Operational risk losses are losses that arise from external events or from inadequate internal processes, people, or systems. The Enterprises should estimate operational risk losses for each scenario and submit the results to FHFA.

## **Changes in Accounting Standards**

The Financial Accounting Standards Board (FASB) periodically makes revisions to U.S. Generally Accepted Accounting Principles (U.S. GAAP). These changes affect an entity's financial reporting upon adoption by the entity. The FASB has made major revisions to accounting standards associated with recognition and measurement of financial instruments, revenue recognition, leases, credit losses, derivatives, and hedging. The effective dates for these standards ranged from fiscal years beginning after December 15, 2017, to fiscal years beginning after December 15, 2022.

An Enterprise should not reflect the adoption of new accounting standards in its projections unless the entity has already adopted the accounting standard for financial reporting purposes.

With regard to Accounting Standards Update No. 2016-13, Financial Instruments – Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments (CECL), the Enterprises should include the effect of CECL.

## **Reporting Format and Timing**

The Enterprises must submit results of the Baseline and Severely Adverse scenarios to FHFA and the Board on or before May 20, 2023, and must publicly disclose a summary of the results of only the Severely Adverse scenario between August 1 and August 15.

The results of an Enterprise's analysis for each scenario should encompass all potential losses and other impacts to net income and capital that the Enterprise might experience under the scenarios. In all cases, each Enterprise should substantiate that its results are consistent with the specified macroeconomic and financial environment and that the components of its results are internally consistent within each scenario.

The Enterprises are required to report the results using the DFAST templates provided in Appendix 1.

The Enterprises are also required to submit qualitative information describing the methodologies, including any simplifying or other assumptions used to produce the estimates, as well as any other information necessary to fully support the reasonableness of the stress test results.

Each Enterprise must submit its results and any supporting information to FHFA through a secure site. The Enterprises must use the secure server.

## Stress Test Governance

The board of directors of each Enterprise or a designated committee thereof is responsible for reviewing and approving policies and procedures established to comply with the rule. Each board of directors should also receive and review the results of the stress tests for compliance with the rule and established policies and procedures. Senior management of each Enterprise is responsible for establishing and testing controls. Senior management and each member of the board of directors are to receive a summary of the stress test results.

## Use of Stress Test Results

The rule requires that each Enterprise take the results of the annual stress test into account in making changes as appropriate to its capital structure (including the level and composition of capital), exposures, concentrations, risk positions, plans for recovery and resolution, or plans to improve overall risk management. Consultation with FHFA staff is expected in making any such changes. As the Enterprises are under FHFA conservatorship, any post-assessment actions would require FHFA's prior approval.

Results should include effects on capital, as required under the DFAST rule. Specifically, and in accordance with the rule, each

Enterprise must calculate how each of the following is affected during each quarter of the stress test planning horizon, for each scenario:

- Aggregate losses, pre-provision net revenues, and capital positions over the planning horizon.
- Capital levels and capital ratios (including regulatory capital and net worth) and any other capital ratios, as specified by FHFA.

## Incomplete Data

The Enterprises are required to report all data elements in the attached FHFA DFAST templates. Failure to submit complete data to FHFA in a timely manner may result in remedy or penalty authorized under the Federal Housing Enterprises Financial Safety and Soundness Act of 1992, as amended (12 U.S.C. 4501 et seq.) (Safety and Soundness Act).

## Evaluation of Stress Test Results

FHFA will review each Enterprise's assumptions for reasonableness and consistency with the assumptions used by the other Enterprise. FHFA may require an Enterprise to adjust its assumptions or resubmit its results where FHFA deems the stress test results, assumptions, or processes are unacceptable.

## Appendix 1: FHFA DFAST Reporting Templates - Enterprises

### Scenario Templates Cover Sheet

Each regulated entity is expected to provide input data for all the tabs in this spreadsheet.

**Institution Name:**

**Date of Data Submission:**

**Institution Contact Name:**

**Institution Contact Phone Number:**

**Institution Contact Email Address:**



## Supplied Scenario Variables

*(Please indicate which scenarios were used in your model by checking the appropriate box:)*

### Domestic Variables

- Real GDP Growth
- Nominal GDP Growth
- Real Disposable Income Growth
- Nominal Disposable Income Growth
- Unemployment Rate
- CPI Inflation Rate
- 3-month Treasury Yield
- 5-year Treasury Yield
- 10-year Treasury Yield
- BBB Corporate Yield
- Mortgage Rate
- Prime Rate
- Dow Jones Total Stock Market Index
- House Price Index
- Commercial Real Estate Price Index
- Market Volatility Index (VIX)
- Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS), Asset-based Securities (ABS), Commercial Mortgage-backed Securities (CMBS) and other collateral
- Agency Securities Option-Adjusted Spreads (OAS)
- Municipal Securities
- Counterparty Default Risk

### International Variables

- 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)

**For variables not used, please provide a brief explanation below as to why it was not used:**

Variable Name	Explanation
---------------	-------------

- 1
- 2
- 3
- 4
- 5

## Scenario Variables Beyond Those Supplied

---

### *Baseline Scenario (additional variables used beyond those supplied)*

---

Variable Number	Variable Name	Variable Definition
<b>1</b>		
<b>2</b>		
<b>3</b>		
<b>4</b>		
<b>5</b>		

---

### *Severely Adverse Scenario (additional variables used beyond those supplied)*

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Variable Number	Variable Name	Variable Definition
<b>1</b>		
<b>2</b>		
<b>3</b>		
<b>4</b>		
<b>5</b>		

## Baseline

### Spread Assumptions

Category	Benchmark	Spread to Benchmark									
		Actual			Projected						
		4Q 2022	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Example: Advance	3-Month LIBOR	10.0	10.0	10.0	10.0	15.0	15.0	15.0	15.0	15.0	15.0

### Variables Used Beyond Those Supplied

Variable Name	Actual			Projected						
	4Q 2022	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9

### Forward Curve

Maturity	Actual			Projected						
	4Q 2022	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
3-Month Treasury	4.0	4.7	4.8	4.6	4.4	4.0	3.7	3.3	3.1	3.0
6-Month										
1 year										
2 year										
5 year Treasury	4.1	4.0	4.0	3.9	3.7	3.6	3.5	3.4	3.3	3.2
10 year Treasury	3.9	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.3	3.3
15 year										
30 year										

### House Price Index

*(NOTE: For printing purposes dates only goes to Oct-23. However, the underlying excel spreadsheet collects 30 years of data.)*

Region	Actual			Projected							
	4Q 2022	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23
Region 1											
Region 2											
.											
.											
.											
.											
.											

## Severely Adverse

### Spread Assumptions

Category	Benchmark	Spread to Benchmark									
		Actual				Projected					
		4Q 2022	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Example: Advance	3-Month LIBOR	10.0	10.0	10.0	10.0	15.0	15.0	15.0	15.0	15.0	15.0

### Variables Used Beyond Those Supplied

Variable Name	Actual				Projected					
	4Q 2022	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9

### Forward Curve

Maturity	Actual				Projected					
	4Q 2022	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
3-Month Treasury	4.0	1.7	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
6-Month										
1 year										
2 year										
5 year Treasury	4.1	1.2	0.9	0.8	0.8	0.9	0.9	1.0	1.0	1.0
10 year Treasury	3.9	1.1	0.8	0.8	0.8	0.9	1.0	1.1	1.2	1.3
15 year										
30 year										

### House Price Index

*(NOTE: For printing purposes dates only go to Oct-23. However, the underlying excel spreadsheet collects 30 years of data.)*

Region	Actual				Projected						
	4Q 2022	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23
Region 1											
Region 2											
.											
.											
.											
.											
.											

### **Stress Test Template Instructions**

1. All numbers should be reported in millions
2. Reported numbers should reflect the 12/31/2022 start date.

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

<b>Income Statement (BASELINE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1 Net interest income (excluding management and guaranty fee income)											
2 Management and guaranty fee income <sup>1</sup>											
<b>3 Total net interest income</b>											
4 Other income <sup>2</sup>											
<b>5 Total revenue</b>											
6 REO (foreclosed property expense)											
7 Operational risk losses											
8 Administrative expenses											
9 Other expenses											
<b>10 Pre-provision net revenue</b>											
11 (Provision) benefit for credit losses											
12 Derivatives gains (losses)											
13 Trading gains (losses)											
14 Other gains (losses) <sup>3</sup>											
15 Global market shock impact on trading securities and held-for-sale loans											
16 Counterparty default losses											
<b>17 Pre-Tax income (loss)</b>											
18 (Provision) benefit for federal income taxes											
19 Extraordinary gains (losses), net of tax effect											
<b>20 Net income (loss)</b>											
21 Global market shock impact on available-for-sale securities											
22 Other comprehensive income											
<b>23 Comprehensive income (loss)</b>											

<sup>1</sup> Includes guaranty fees received for managing credit risk on mortgage loans of consolidated trusts/PCs, amortization income and TCCA fees.

<sup>2</sup> If applicable includes SOP 03-3 gains/losses, net.

<sup>3</sup> If applicable includes Security Impairments



## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

<b><u>Capital Roll Forward (BASELINE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
<b>CAPITAL</b>											
1 Beginning capital											
2 Senior preferred Treasury draw (prior period)											
3 Net income (loss)											
4 Less: Dividends											
5 Change in AOCI											
6 Change in non-controlling/minority interest											
7 Other											
<b>8 Ending capital (deficit)</b>											
9 Beginning PSPA funding commitment available											
10 Treasury draw required											
<b>11 Remaining PSPA funding commitment available</b>											
<b>OTHER</b>											
12 Deferred tax assets, net of allowance											
<b>13 Total Assets</b>											

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

(\$s in millions)

<b>Capital Summary (BASELINE)</b>	Most Recent									
	Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>BALANCE SHEET ITEMS</b>										
1 Senior preferred stock										
2 Junior preferred stock										
3 Common equity										
4 Retained earnings										
5 Accumulated other comprehensive income										
6 Treasury stock										
<b>7 Net worth</b>										
8 Loan loss reserves										
<b>STATUTORY CAPITAL</b>										
9 Core capital (statutory)										
10 Total capital (statutory) = (9 + 8)										
<b>ASSETS</b>										
11 On-balance sheet exposures (Line 6 from ATA Detail tab)										
12 Off-balance sheet exposures (Line 10 from ATA Detail tab)										
13 Adjusted total assets (ATA) (Line 11 from ATA Detail tab)										
14 Risk-weighted assets (RWAs)										
15 Risk density (RWAs/ATA)										
16 3-percent of ATA (Jan 2021 PSPA Exit Requirement)										
<b>ERCF RISK-BASED CAPITAL REQUIREMENTS</b>										
17 Common equity Tier 1 (CET1)										
18 Additional Tier 1 capital (AT1)										
19 Tier 1 capital										
20 Tier 2 capital										
<b>21 RBC Minimum Requirement = (19 + 20)</b>										
22 Stress capital buffer										
23 Stability capital buffer										
24 Countercyclical buffer										
25 Prescribed capital conservation buffer amount (PCCBA) = (22 + 23 + 24)										
<b>26 Total Capital Requirement (RBC Minimum Requirement + PCCBA = 21 + 25)</b>										
<b>LEVERAGE CAPITAL REQUIREMENTS</b>										
27 Leverage capital requirement										
28 Prescribed leverage buffer amount (PLBA)										
<b>29 Total Leverage Requirement and PLBA = (27 + 28)</b>										
<b>30 BINDING CAPITAL REQUIREMENT</b>										
<b>AVAILABLE CAPITAL</b>										
31 CET1 capital										
32 Additional Tier 1 capital										
33 Tier 2 capital										
<b>34 Total capital = (31 + 32 + 33)</b>										

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

(\$s in millions)

<b>Adjusted Total Assets Detail (BASELINE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
ON-BALANCE SHEET EXPOSURES										
1	On-balance sheet assets									
2	Less: on-balance sheet assets for derivatives and repo-style transactions									
3	Plus: Allowance for Credit Losses									
4	Adjusted on-balance sheet assets									
5	Less: Amounts deducted from CET1 and additional Tier 1 Capital									
<b>6</b>	<b>Total on-balance sheet exposures</b>									
OFF-BALANCE SHEET EXPOSURES										
7	Total derivatives exposures									
8	Total exposures for repo-style transactions									
9	Other-off balance sheet exposures									
<b>10</b>	<b>Total off-balance sheet exposures (7 + 8 + 9)</b>									
<b>11</b>	<b>Adjusted Total Assets (6 + 10)</b>									

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

<b><u>Portfolio Balances (BASELINE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
RETAINED PORTFOLIO										
Agency securities										
1 Single-family										
2 Multifamily										
Non-Agency securities										
3 Private Label Securities (PLS)										
4 Commercial Mortgage-backed Securities (CMBS)										
5 Other <sup>1</sup>										
Whole loans										
6 Single-family										
7 Multifamily										
<b>8 Total retained portfolio</b>										
<b>9 Single-family guaranty book of business</b>										

<sup>1</sup> Other includes mortgage revenue bonds and other.

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

**Credit Overview - Quarterly (BASELINE)**  
**(includes single-family and multifamily)**

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
<b>TOTAL PORTFOLIO</b>											
CREDIT EXPENSES (\$s in millions)											
1	Foreclosed property expense (REO)										
2	Net charge-offs										
3	Credit losses										
4	(Provision) benefit for credit losses										
<b>5</b>	<b>Credit Expenses<sup>1</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
6	Beginning loan loss reserve										
7	Net charge-offs										
8	Provision (benefit) for loan losses										
9	Other										
<b>10</b>	<b>Ending Loan Loss Reserve</b>										
11	Unpaid Principal Balance (\$s in millions)										

<sup>1</sup> Amount depicts the summation of foreclosed property expense and provision for credit losses.

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

<b>Single-Family Credit Overview - Quarterly (BASELINE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
<b>TOTAL PORTFOLIO</b>											
CREDIT EXPENSES (\$s in millions)											
1	Foreclosed property expense (REO)										
2	Net charge-offs										
3	Credit losses										
4	(Provision) benefit for credit losses										
<b>5</b>	<b>Credit Expenses<sup>1</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
6	Beginning loan loss reserve										
7	Net charge-offs										
8	Provision (benefit) for loan losses/guaranty losses										
9	Other										
<b>10</b>	<b>Ending Loan Loss Reserve</b>										
11	Unpaid Principal Balance (\$s in millions)										
<b>CURRENT BOOK (as of 12/31/22)</b>											
CREDIT EXPENSES (\$s in millions)											
12	Foreclosed property expense (REO)										
13	Net charge-offs										
14	Credit losses										
15	(Provision) benefit for credit losses										
<b>16</b>	<b>Credit Expenses<sup>1</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
17	Beginning loan loss reserve										
18	Net charge-offs										
19	Provision (benefit) for loan losses/guaranty losses										
20	Other										
<b>21</b>	<b>Ending Loan Loss Reserve - Current Book</b>										
22	Unpaid Principal Balance (\$s in millions)										
<b>NEW BUSINESS</b>											
CREDIT EXPENSES (\$s in millions)											
23	Foreclosed property expense (REO)										
24	Net charge-offs										
25	Credit losses										
26	(Provision) benefit for credit losses										
<b>27</b>	<b>Credit Expenses<sup>1</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
28	Beginning loan loss reserve										
29	Net charge-offs										
30	Provision (benefit) for loan losses/guaranty losses										
31	Other										
<b>32</b>	<b>Ending Loan Loss Reserve - New Business</b>										
33	Unpaid Principal Balance (\$s in millions)										

<sup>1</sup> Amount depicts the summation of foreclosed property expense, provision for credit losses, and SOP 03-3 losses.



**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

**Single-Family Credit Overview - Quarterly (BASELINE)**

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
SERIOUSLY DELINQUENT LOAN ACTIVITY (count in '000s)										
1	Beginning seriously delinquent loans									
2	Seriously delinquent inflows - new SDQ									
3	Seriously delinquent inflows - cured									
4	Seriously delinquent cured by modification									
5	Seriously delinquent - cured									
6	Seriously delinquent to default									
7	Seriously delinquent to payoff									
<b>8</b>	<b>Ending Seriously Delinquent Loans</b>									
9	Ending seriously delinquent rate (%)									
10	Aggregate UPB of seriously delinquent loans (\$s in millions)									

11 Loan modifications (count in 000s)

(\$s in millions)

**PRIVATE MORTGAGE INSURERS - OVERVIEW**  
(Nine Quarter Cumulative Totals)

	Arch Mortgage Insurance Company	Essent Guaranty, Inc.	Genworth Mortgage Insurance Corporation	Mortgage Guaranty Insurance Corporation	PMI Mortgage Insurance Co.	Radian Guaranty Inc.	Republic Mortgage Insurance Company	Triad Guaranty Insurance Corporation	United Guaranty Residential Insurance Co.	Other
12	Expected Gross Claims to MI Companies <sup>1</sup>									
13	Less: Reinsurance Proceeds									
14	Subtotal (net of reinsurance)									
15	Less: Haircut Amount									
<b>16</b>	<b>Expected Net Claims from MI Companies<sup>1</sup></b>									
17	Gross MI Benefit included in ending Loan Loss Reserves <sup>2</sup>									
18	Less: Haircut Amount <sup>3</sup>									
19	Net MI Benefit included in ending Loan Loss Reserves <sup>2</sup>									
<b>20</b>	<b>Total Net MI Benefit</b>									

<sup>1</sup> Represents amount related to loans that default during the nine-quarter projection period.

<sup>2</sup> Represents amount of MI benefit included in loan loss reserves at the end of the nine-quarter projection period.

<sup>3</sup> Represents amount of Gross MI benefit included in loan loss reserves at the end of the nine-quarter projection period is reduced due to MI Haircut.

NOTE: Seriously delinquent loans are 90 days or more delinquent, or in the process of foreclosure.

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

**Single-Family Credit Summary (BASELINE)**

**Delinquency Status - CURRENT BOOK**

(\$s in millions)

Delinquency Status as of 12/31/22	LLR		UPB		Nine Quarter Cumulative Totals	
	Beginning	Ending	Beginning	Ending	Charge-Offs	Provision (Benefit) for Credit Losses
<b>MODIFIED LOANS</b>						
1 Current						
2 Less than 90 days delinquent						
3 Seriously delinquent (90 days or more delinquent or in the process of foreclosure)						
<b>4 Total</b>						
<b>NON-MODIFIED LOANS</b>						
5 Current						
6 Less than 90 days delinquent						
7 Seriously delinquent (90 days or more delinquent or in the process of foreclosure)						
<b>8 Total</b>						
<b>9 TOTAL</b>						

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family Credit Summary (BASELINE)

#### Mark-to-Market Loan-to-Value - CURRENT BOOK

(\$s in millions)

		LLR		UPB		Nine Quarter Cumulative Totals	
LTV as of 12/31/22		Beginning	Ending	Beginning	Ending	Charge-Offs	Provision (Benefit) for Credit Losses
1	<60%						
2	60% - 80%						
3	>80% - 100%						
4	>100%						
<b>5</b>	<b>Total</b>						

# Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

## Single-Family Credit Summary (BASELINE)

### Vintage Status

(\$s in millions)		LLR		UPB		Nine Quarter Cumulative Totals	
Loan Origination Year	Beginning	Ending	Beginning	Ending	Charge-Offs	Provision (Benefit) for Credit Losses	
1	2004 and prior						
2	2005						
3	2006						
4	2007						
5	2008						
6	2009						
7	2010						
8	2011						
9	2012						
10	2013						
11	2014						
12	2015						
13	2016						
14	2017						
15	2018						
16	2019						
17	2020						
18	2021						
19	2022						
20	2023						
21	2024						
22	2025 1Q						
<b>23</b>	<b>TOTAL</b>						

Note: For loan origination years 2023, 2024 and 2025 Q1 beginning UPB should be forecasted acquisitions during the year

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family Credit Summary (BASELINE)

Credit Score - CURRENT BOOK

(\$s in millions)		LLR		UPB		Nine Quarter Cumulative Totals	
	Credit Score as of 12/31/22	Beginning	Ending	Beginning	Ending	Charge-Offs	Provision (Benefit) for Credit Losses
1	<=620						
2	>620 - 680						
3	>680 - 740						
4	>740+						
<b>5</b>	<b>Total</b>						

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

### Single-Family - 9 Quarter Cumulative Credit Losses (BASELINE)

#### CURRENT BOOK

		Loan-To-Value											
		<30	30 - 60	61 - 70	71 - 75	76 - 80	81 - 85	86 - 90	91 - 95	96 - 100	101 - 110	111 - 120	>120
<b>Credit Score</b>	<620												
	620 - 640												
	641 - 660												
	661 - 680												
	681 - 700												
	701 - 720												
	721 - 740												
	741 - 760												
	761 - 780												
	>780												

Credit losses represent the summation of net charge-offs and foreclosed property expenses (REO).

Use LTV and credit score as of December 31, 2022.



## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

### Single-Family - Loan Loss Reserves (BASELINE)

#### CURRENT BOOK

Loan Loss Reserves as of 12/31/22

		Loan-To-Value											
		<30	30 - 60	61 - 70	71 - 75	76 - 80	81 - 85	86 - 90	91 - 95	96 - 100	101 - 110	111 - 120	>120
Credit Score	<620												
	620 - 640												
	641 - 660												
	661 - 680												
	681 - 700												
	701 - 720												
	721 - 740												
	741 - 760												
	761 - 780												
	>780												

Use LTV and credit score as of December 31, 2022

Loan Loss Reserves at 3/31/25 (end of nine quarters)

		Loan-To-Value											
		<30	30 - 60	61 - 70	71 - 75	76 - 80	81 - 85	86 - 90	91 - 95	96 - 100	101 - 110	111 - 120	>120
Credit Score	<620												
	620 - 640												
	641 - 660												
	661 - 680												
	681 - 700												
	701 - 720												
	721 - 740												
	741 - 760												
	761 - 780												
	>780												

Use LTV and credit score as of December 31, 2022

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family Credit Summary (BASELINE) Vintage and MTMLTV Status - CURRENT BOOK

(\$s in millions)

Loan Status at 12/31/22		Loan Loss Reserves				
		Beginning	Cumulative (Charge-offs) Recoveries	Provision (Benefit) for Credit Losses	Other	Ending
2004 and prior	<=80%					
	80% - 100%					
	>100%					
2005 - 2008	<=80%					
	80% - 100%					
	>100%					
2009 and Later	<=80%					
	80% - 100%					
	>100%					

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family Credit Summary (BASELINE) Vintage and Delinquency Status - CURRENT BOOK

(\$s in millions)

Loan Status at 12/31/22			Loan Loss Reserves			
			Beginning	Cumulative (Charge-offs) Recoveries	Provision (Benefit) for Credit Losses	Other
2004 and prior	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				
2005 - 2008	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				
2009 and Later	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family Credit Summary (BASELINE) MTMLTV and Delinquency Status - CURRENT BOOK

(\$s in millions)

Loan Status at 12/31/22			Loan Loss Reserves			
			Beginning	Cumulative (Charge-offs) Recoveries	Provision (Benefit) for Credit Losses	Other
<=80%	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				
80% - 100%	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				
>100%	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

<b>Multifamily - Income Statement (BASELINE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1 Net interest income <sup>1</sup>											
2 Management and guaranty fee income											
3 Other non-interest income											
<b>4 Total revenue</b>											
5 REO (foreclosed property exp.)											
6 Other expenses <sup>2</sup>											
<b>7 Pre-provision net revenue</b>											
8 (Provision) benefit for credit losses											
9 Derivatives gains (losses)											
10 Gains (losses) on loans											
11 Other fair value gains (losses)											
12 Global market shock impact on trading securities and held-for-sale loans											
<b>13 Pre-Tax income (loss)</b>											
14 Provision (benefit) for federal income taxes											
15 Extraordinary gains (losses), net of tax effect											
<b>16 Net income (loss)</b>											
17 Global market shock impact on available-for-sale securities											
18 Other comprehensive income											
<b>19 Comprehensive income (loss)</b>											

<sup>1</sup> Includes net interest income on multifamily whole loans, GSE multifamily MBS held in the retained portfolio, CMBS, and multifamily MRBs.

<sup>2</sup> Includes operational risk losses, administrative expenses, gains from partnership investments.

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

<b>Multifamily Credit Overview - Quarterly (BASELINE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
<b>TOTAL PORTFOLIO</b>											
CREDIT EXPENSES (\$s in millions)											
1	Foreclosed property expense (REO)										
2	Net charge-offs										
3	Credit losses										
4	(Provision) benefit for credit losses										
<b>5</b>	<b>Credit Expenses <sup>1</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
6	Beginning loan loss reserve										
7	Net charge-offs										
8	Provision (benefit) for loan losses										
9	Other										
<b>10</b>	<b>Ending Loan Loss Reserve</b>										
11	Unpaid Principal Balance (\$s in millions)										

<sup>1</sup> Amount depicts the summation of foreclosed property expense and provision for credit losses.

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

<b><u>Multifamily Key Metrics (BASELINE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
(\$s in millions)											
1 Total multifamily market volume (industry)											
2 Enterprise market share percentage											
3 New acquisition volume											
4 Liquidation volume <sup>1</sup>											
5 Securitization volume											
6 Effective guaranty fee rate <sup>2</sup> (bps)											
7 Guaranty portfolio balance											
8 Loans and securities held in portfolio											

<sup>1</sup> Includes property sales and other run-off/prepayments.

<sup>2</sup> Guaranty fee income divided by weighted average portfolio balance.

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

<b>Credit Risk Transfers - Quarterly (BASELINE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
	(\$s in millions)										
<b>Single-Family</b>											
CAS/STACR (Non-REMIC/Non-Trust)											
1 Interest Expense											
2 Fair Value Gain (Loss)											
3 Other Expenses											
4 Benefits											
CAS/STACR (REMIC/Trust)											
5 Interest Expense											
6 Other Expenses											
7 Benefits											
CIRT/ACIS											
8 Premium Expense											
9 Other Expenses											
10 Benefits											
OTHER											
11 Fair Value Gain (Loss)											
12 Other Expenses											
13 Benefits											
<b>14 Total Single-Family Income (Loss)</b>											
<b>Multifamily</b>											
Capital Markets - Non-Trust <sup>1</sup>											
15 Interest Expense											
16 Fair Value Gain (Loss)											
17 Other Expenses											
18 Benefits											
Capital Markets - Trust <sup>1</sup>											
19 Interest Expense											
20 Other Expenses											
21 Benefits											
Insurance/Reinsurance											
22 Premium Expense											
23 Other Expenses											
24 Benefits											
25 Other											
26 Credit Expense											
27 Other Expenses											
28 Benefits											
<b>29 Total Multifamily Income (Loss)</b>											
<b>30 Total Income (Loss)</b>											
<b>NEW CRT ISSUANCES</b>											
31 New SF Reinsurance Transactions (Risk-In-Force)											
32 New SF Capital Markets Transactions (Risk-In-Force)											
33 New MF Reinsurance Transactions (Risk-In-Force)											
34 New MF Capital Markets Transactions (Risk-In-Force)											
35 SF Other New Transactions (Risk-In Force)											
36 MF Other New Transactions (Risk-In Force)											
<b>37 Reference Pool Related to New CRT Issuances (Quarter)</b>											
38 Total Outstanding Reference Pool at End of Quarter											

1. Multifamily Capital Markets transactions exclude K-Deals and similar transactions.



## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

<b>Income Statement (SEVERELY ADVERSE)</b> <b>(without establishing DTA VA)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1 Net interest income (excluding management and guaranty fee income)											
2 Management and guaranty fee income <sup>1</sup>											
<b>3 Total net interest income</b>											
4 Other income <sup>2</sup>											
<b>5 Total revenue</b>											
6 REO (foreclosed property expense)											
7 Operational risk losses											
8 Administrative expenses											
9 Other expenses											
<b>10 Pre-provision net revenue</b>											
11 (Provision) benefit for credit losses											
12 Derivatives gains (losses)											
13 Trading gains (losses)											
14 Other gains (losses) <sup>3</sup>											
15 Global market shock impact on trading securities and held-for-sale loans											
16 Counterparty default losses											
<b>17 Pre-Tax income (loss)</b>											
18 (Provision) benefit for federal income taxes											
19 Extraordinary gains (losses), net of tax effect											
<b>20 Net income (loss)</b>											
21 Global market shock impact on available-for-sale securities											
22 Other comprehensive income											
<b>23 Comprehensive income (loss)</b>											

<sup>1</sup> Includes guaranty fees received for managing credit risk on mortgage loans of consolidated trusts/PCs, amortization income and TCCA fees.

<sup>2</sup> If applicable includes SOP 03-3 gains/losses, net.

<sup>3</sup> If applicable includes Security Impairments

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

<b>Income Statement (SEVERELY ADVERSE) (with establishing DTA VA)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1 Net interest income (excluding management and guaranty fee income)											
2 Management and guaranty fee income <sup>1</sup>											
<b>3 Total net interest income</b>											
4 Other income <sup>2</sup>											
<b>5 Total revenue</b>											
6 REO (foreclosed property expense)											
7 Operational risk losses											
8 Administrative expenses											
9 Other expenses											
<b>10 Pre-provision net revenue</b>											
11 (Provision) benefit for credit losses											
12 Derivatives gains (losses)											
13 Trading gains (losses)											
14 Other gains (losses) <sup>3</sup>											
15 Global market shock impact on trading securities and held-for-sale loans											
16 Counterparty default losses											
<b>17 Pre-Tax income (loss)</b>											
18 (Provision) benefit for federal income taxes											
19 Extraordinary gains (losses), net of tax effect											
<b>20 Net income (loss)</b>											
21 Global market shock impact on available-for-sale securities											
22 Other comprehensive income											
<b>23 Comprehensive income (loss)</b>											

<sup>1</sup> Includes guaranty fees received for managing credit risk on mortgage loans of consolidated trusts/PCs, amortization income and TCCA fees

<sup>2</sup> If applicable includes SOP 03-3 gains/losses, net.

<sup>3</sup> If applicable includes Security Impairments

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

<b><u>Capital Roll Forward (SEVERELY ADVERSE)</u></b> <b><u>(without establishing DTA VA)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
<b>CAPITAL</b>											
1 Beginning capital											
2 Senior preferred Treasury draw (prior period)											
3 Net income (loss)											
4 Less: Dividends											
5 Change in AOCI											
6 Change in non-controlling/minority interest											
7 Other											
<b>8 Ending capital (deficit)</b>											
9 Beginning PSPA funding commitment available											
10 Treasury draw required											
<b>11 Remaining PSPA funding commitment available</b>											
<b>OTHER</b>											
12 Deferred tax assets, net of allowance											
<b>13 Total Assets</b>											

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

**Capital Roll Forward (SEVERELY ADVERSE)**  
**(with establishing DTA VA)**

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Quarter Cumulative Total
<b>CAPITAL</b>											
1	Beginning capital										
2	Senior preferred Treasury draw (prior period)										
3	Net income (loss)										
4	Less: Dividends										
5	Change in AOCI										
6	Change in non-controlling/minority interest										
7	Other										
<b>8</b>	<b>Ending capital (deficit)</b>										
9	Beginning PSPA funding commitment available										
10	Treasury draw required										
<b>11</b>	<b>Remaining PSPA funding commitment available</b>										
<b>OTHER</b>											
12	Deferred tax assets, net of allowance										
<b>13</b>	<b>Total Assets</b>										

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

(\$s in millions)

**Capital Summary (SEVERELY ADVERSE)  
(without establishing DTA VA)**

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>BALANCE SHEET ITEMS</b>										
1	Senior preferred stock									
2	Junior preferred stock									
3	Common equity									
4	Retained earnings									
5	Accumulated other comprehensive income									
6	Treasury stock									
7	<b>Net worth</b>									
8	Loan loss reserves									
<b>STATUTORY CAPITAL</b>										
9	Core capital (statutory)									
10	Total capital (statutory) = (9 + 8)									
<b>ASSETS</b>										
11	On-balance sheet exposures (Line 6 from ATA Detail tab)									
12	Off-balance sheet exposures (Line 10 from ATA Detail tab)									
13	Adjusted total assets (ATA) (Line 11 from ATA Detail tab)									
14	Risk-weighted assets (RWAs)									
15	Risk density (RWAs/ATA)									
16	3-percent of ATA (Jan 2021 PSPA Exit Requirement)									
<b>ERCF RISK-BASED CAPITAL REQUIREMENTS</b>										
17	Common equity Tier 1 (CET1)									
18	Additional Tier 1 capital (AT1)									
19	Tier 1 capital									
20	Tier 2 capital									
21	<b>RBC Minimum Requirement = (19 + 20)</b>									
22	Stress capital buffer									
23	Stability capital buffer									
24	Countercyclical buffer									
25	Prescribed capital conservation buffer amount (PCCBA) = (22 + 23 + 24)									
26	<b>Total Capital Requirement (RBC Minimum Requirement + PCCBA = 21 + 25)</b>									
<b>LEVERAGE CAPITAL REQUIREMENTS</b>										
27	Leverage capital requirement									
28	Prescribed leverage buffer amount (PLBA)									
29	<b>Total Leverage Requirement and PLBA = (27 + 28)</b>									
<b>30 BINDING CAPITAL REQUIREMENT</b>										
<b>AVAILABLE CAPITAL</b>										
31	CET1 capital									
32	Additional Tier 1 capital									
33	Tier 2 capital									
34	<b>Total capital = (31 + 32 + 33)</b>									

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

(\$s in millions)

**Capital Summary (SEVERELY ADVERSE)  
(with establishing DTA VA)**

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>BALANCE SHEET ITEMS</b>										
1	Senior preferred stock									
2	Junior preferred stock									
3	Common equity									
4	Retained earnings									
5	Accumulated other comprehensive income									
6	Treasury stock									
7	<b>Net worth</b>									
8	Loan loss reserves									
<b>STATUTORY CAPITAL</b>										
9	Core capital (statutory)									
10	Total capital (statutory) = (9 + 8)									
<b>ASSETS</b>										
11	On-balance sheet exposures (Line 6 from ATA Detail tab)									
12	Off-balance sheet exposures (Line 10 from ATA Detail tab)									
13	Adjusted total assets (ATA) (Line 11 from ATA Detail tab)									
14	Risk-weighted assets (RWAs)									
15	Risk density (RWAs/ATA)									
16	3-percent of ATA (Jan 2021 PSPA Exit Requirement)									
<b>ERC F RISK-BASED CAPITAL REQUIREMENTS</b>										
17	Common equity Tier 1 (CET1)									
18	Additional Tier 1 capital (AT1)									
19	Tier 1 capital									
20	Tier 2 capital									
21	<b>RBC Minimum Requirement = (19 + 20)</b>									
22	Stress capital buffer									
23	Stability capital buffer									
24	Countercyclical buffer									
25	Prescribed capital conservation buffer amount (PCCBA) = (22 + 23 + 24)									
26	<b>Total Capital Requirement (RBC Minimum Requirement + PCCBA = 21 + 25)</b>									
<b>LEVERAGE CAPITAL REQUIREMENTS</b>										
27	Leverage capital requirement									
28	Prescribed leverage buffer amount (PLBA)									
29	<b>Total Leverage Requirement and PLBA = (27 + 28)</b>									
<b>30 BINDING CAPITAL REQUIREMENT</b>										
<b>AVAILABLE CAPITAL</b>										
31	CET1 capital									
32	Additional Tier 1 capital									
33	Tier 2 capital									
34	<b>Total capital = (31 + 32 + 33)</b>									

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

(\$s in millions)

**Adjusted Total Assets Detail (SEVERELY ADVERSE)**  
**(without establishing DTA VA)**

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
ON-BALANCE SHEET EXPOSURES										
1	On-balance sheet assets									
2	Less: on-balance sheet assets for derivatives and repo-style transactions									
3	Plus: Allowance for Credit Losses									
4	Adjusted on-balance sheet assets									
5	Less: Amounts deducted from CET1 and additional Tier 1 Capital									
<b>6</b>	<b>Total on-balance sheet exposures</b>									
OFF-BALANCE SHEET EXPOSURES										
7	Total derivatives exposures									
8	Total exposures for repo-style transactions									
9	Other-off balance sheet exposures									
<b>10</b>	<b>Total off-balance sheet exposures (7 + 8 + 9)</b>									
<b>11</b>	<b>Adjusted Total Assets (6 + 10)</b>									

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

(\$s in millions)

**Adjusted Total Assets Detail (SEVERELY ADVERSE)**  
**(with establishing DTA VA)**

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
ON-BALANCE SHEET EXPOSURES										
1	On-balance sheet assets									
2	Less: on-balance sheet assets for derivatives and repo-style transactions									
3	Plus: Allowance for Credit Losses									
4	Adjusted on-balance sheet assets									
5	Less: Amounts deducted from CET1 and additional Tier 1 Capital									
<b>6</b>	<b>Total on-balance sheet exposures</b>									
OFF-BALANCE SHEET EXPOSURES										
7	Total derivatives exposures									
8	Total exposures for repo-style transactions									
9	Other-off balance sheet exposures									
<b>10</b>	<b>Total off-balance sheet exposures (7 + 8 + 9)</b>									
<b>11</b>	<b>Adjusted Total Assets (6 + 10)</b>									



## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

<b><u>Portfolio Balances (SEVERELY ADVERSE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
RETAINED PORTFOLIO										
Agency securities										
1 Single-family										
2 Multifamily										
Non-Agency securities										
3 Private Label Securities (PLS)										
4 Commercial Mortgage-backed Securities (CMBS)										
5 Other <sup>1</sup>										
Whole loans										
6 Single-family										
7 Multifamily										
<b>8 Total retained portfolio</b>										
<b>9 Single-family guaranty book of business</b>										

<sup>1</sup> Other includes mortgage revenue bonds and other.

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

### **Global Market Shock (SEVERELY ADVERSE)**

Applicable  
UPB

---

Q1 Loss

---

- 1 Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS)
- 2 Commercial Mortgage-backed Securities (CMBS)
- 3 Asset-based Securities (ABS) and other collateral
- 4 Single-Family Agency Securities
- 5 Multifamily Agency Securities
- 6 Municipal Securities
- 7 Single-Family Loans
- 8 Multifamily Loans
- 9 Counterparty Default Risk\*

\* Please provide the name and attribution of counterparty default risk by type (eg: derivatives, repo, etc.) of the largest counterparty below:

Counterparty Name	Counterparty Type	Total Potential Income Statement Impact
	Derivatives	
	Repo	
	Single-Family Mortgage Insurance Provider	
	Multifamily Credit Enhancement Provider	
	Non-Bank Servicer	
	CRT – Reinsurer	
	Unsecured Overnight Deposits	
	Other	
	Total	

# Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

## **Global Market Shock (SEVERELY ADVERSE)**

Applicable  
UPB

Q1 Loss

### TRADING SECURITIES

- 1 Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS)
- 2 Commercial Mortgage-backed Securities (CMBS)
- 3 Asset-based Securities (ABS) and other collateral
- 4 Single Family Agency Securities
- 5 Multifamily Agency Securities
- 6 Municipal Securities
- 7 Counterparty Default Risk

### AVAILABLE-FOR-SALE SECURITIES (Post-Tax Amounts)

- 8 Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS)
- 9 Commercial Mortgage-backed Securities (CMBS)
- 10 Asset-based Securities (ABS) and other collateral
- 11 Single Family Agency Securities
- 12 Multifamily Agency Securities
- 13 Municipal Securities

### HELD-FOR-SALE LOANS

- 14 Single Family Loans
- 15 Multifamily Loans

# Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

**Trading & Other Fair Value Assets Template**  
Agencies (Severely Adverse)

	MV (\$MM) Available-for-Sale Securities	MV (\$MM) Trading Securities	Profit/Loss from OAS Widening (AFS)	Profit/Loss from OAS Widening (Trading Secs)
<b>US Residential Agency Products</b>				
IOs				
POs				
Other CMOs				
Pass-Throughs				
Agency Debt/Debentures				
IOS Index				
POS Index				
MBX Index				
Other Agency Derivatives				
TBA's				
Reverse Mortgages				
Residential Other / Unspecified				
<b>Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>US Commercial Agency Products</b>				
Cash Agency CMBS				
Agency CMBS Derivatives				
Commercial Other / Unspecified				
<b>Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Non-US Agency Products</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

<b>Credit Overview - Quarterly (SEVERELY ADVERSE)</b> <b>(includes single-family and multifamily)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
	<b>TOTAL PORTFOLIO</b>										
CREDIT EXPENSES (\$s in millions)											
1	Foreclosed property expense (REO)										
2	Net charge-offs										
3	Credit losses										
4	(Provision) benefit for credit losses										
<b>5</b>	<b>Credit Expenses<sup>1</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
6	Beginning loan loss reserve										
7	Net charge-offs										
8	Provision (benefit) for loan losses										
9	Other										
<b>10</b>	<b>Ending Loan Loss Reserve</b>										
11	Unpaid Principal Balance (\$s in millions)										

<sup>1</sup> Amount depicts the summation of foreclosed property expense and provision for credit losses.

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

<b>Single-Family Credit Overview - Quarterly (SEVERELY ADVERSE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
	<b>TOTAL PORTFOLIO</b>										
CREDIT EXPENSES (\$s in millions)											
1	Foreclosed property expense (REO)										
2	Net charge-offs										
3	Credit losses										
4	(Provision) benefit for credit losses										
<b>5</b>	<b>Credit Expenses<sup>1</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
6	Beginning loan loss reserve										
7	Net charge-offs										
8	Provision (benefit) for loan losses/guaranty losses										
9	Other										
<b>10</b>	<b>Ending Loan Loss Reserve</b>										
11	Unpaid Principal Balance (\$s in millions)										
<b>CURRENT BOOK (as of 12/31/22)</b>											
CREDIT EXPENSES (\$s in millions)											
12	Foreclosed property expense (REO)										
13	Net charge-offs										
14	Credit losses										
15	(Provision) benefit for credit losses										
<b>16</b>	<b>Credit Expenses<sup>1</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
17	Beginning loan loss reserve										
18	Net charge-offs										
19	Provision (benefit) for loan losses/guaranty losses										
20	Other										
<b>21</b>	<b>Ending Loan Loss Reserve - Current Book</b>										
22	Unpaid Principal Balance (\$s in millions)										
<b>NEW BUSINESS</b>											
CREDIT EXPENSES (\$s in millions)											
23	Foreclosed property expense (REO)										
24	Net charge-offs										
25	Credit losses										
26	(Provision) benefit for credit losses										
<b>27</b>	<b>Credit Expenses<sup>1</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
28	Beginning loan loss reserve										
29	Net charge-offs										
30	Provision (benefit) for loan losses/guaranty losses										
31	Other										
<b>32</b>	<b>Ending Loan Loss Reserve - New Business</b>										
33	Unpaid Principal Balance (\$s in millions)										

<sup>1</sup> Amount depicts the summation of foreclosed property expense, provision for credit losses, and SOP 03-3 losses.

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

<b>Single-Family Credit Overview - Quarterly (SEVERELY ADVERSE)</b>	Most Recent										
	Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
SERIOUSLY DELINQUENT LOAN ACTIVITY (count in '000s)											
1	Beginning seriously delinquent loans										
2	Seriously delinquent inflows - new SDQ										
3	Seriously delinquent inflows - cured										
4	Seriously delinquent cured by modification										
5	Seriously delinquent - cured										
6	Seriously delinquent to default										
7	Seriously delinquent to payoff										
<b>8</b>	<b>Ending Seriously Delinquent Loans</b>										
9	Ending seriously delinquent rate (%)										
10	Aggregate UPB of seriously delinquent loans (\$s in millions)										
11	Loan modifications (count in 000s)										
	(\$s in millions)										
PRIVATE MORTGAGE INSURERS - OVERVIEW (Nine Quarter Cumulative Totals)											
		Arch Mortgage Insurance Company	Essent Guaranty, Inc.	Genworth Mortgage Insurance Corporation	Mortgage Guaranty Insurance Corporation	PMI Mortgage Insurance Co.	Radian Guaranty Inc.	Republic Mortgage Insurance Company	Triad Guaranty Insurance Corporation	United Guaranty Residential Insurance Co.	Other
12	Expected Gross Claims to MI Companies <sup>1</sup>										
13	Less: Reinsurance Proceeds										
14	Subtotal (net of reinsurance)										
15	Less: Haircut Amount										
<b>16</b>	<b>Expected Net Claims from MI Companies<sup>1</sup></b>										
17	Gross MI Benefit included in ending Loan Loss Reserves <sup>2</sup>										
18	Less: Haircut Amount <sup>3</sup>										
19	Net MI Benefit included in ending Loan Loss Reserves <sup>2</sup>										
<b>20</b>	<b>Total Net MI Benefit</b>										

<sup>1</sup> Represents amount related to loans that default during the nine-quarter projection period.

<sup>2</sup> Represents amount of MI benefit included in loan loss reserves at the end of the nine-quarter projection period.

<sup>3</sup> Represents amount of Gross MI benefit included in loan loss reserves at the end of the nine-quarter projection period is reduced due to MI Haircut.

NOTE: Seriously delinquent loans are 90 days or more delinquent, or in the process of foreclosure.

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

**Single-Family Credit Summary (SEVERELY ADVERSE)**

**Delinquency Status - CURRENT BOOK**

(\$s in millions)

Delinquency Status as of 12/31/22	LLR		UPB		Nine Quarter Cumulative Totals	
	Beginning	Ending	Beginning	Ending	Charge-Offs	Provision (Benefit) for Credit Losses
<b>MODIFIED LOANS</b>						
1 Current						
2 Less than 90 days delinquent						
3 Seriously delinquent (90 days or more delinquent or in the process of foreclosure)						
<b>4 Total</b>						
<b>NON-MODIFIED LOANS</b>						
5 Current						
6 Less than 90 days delinquent						
7 Seriously delinquent (90 days or more delinquent or in the process of foreclosure)						
<b>8 Total</b>						
<b>9 TOTAL</b>						



## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family Credit Summary (SEVERELY ADVERSE)

Mark-to-Market Loan-to-Value - CURRENT BOOK

(\$s in millions)		LLR		UPB		Nine Quarter Cumulative Totals	
LTV as of 12/31/22		Beginning	Ending	Beginning	Ending	Charge-Offs	Provision (Benefit) for Credit Losses
1	<60%						
2	60% - 80%						
3	>80% - 100%						
4	>100%						
<b>5</b>	<b>Total</b>						

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family Credit Summary (SEVERELY ADVERSE)

#### Vintage Status

(\$s in millions)		LLR		UPB		Nine Quarter Cumulative Totals	
		Beginning	Ending	Beginning	Ending	Charge-Offs	Provision (Benefit) for Credit Losses
Loan Origination Year							
1	2004 and prior						
2	2005						
3	2006						
4	2007						
5	2008						
6	2009						
7	2010						
8	2011						
9	2012						
10	2013						
11	2014						
12	2015						
13	2016						
14	2017						
15	2018						
16	2019						
17	2020						
18	2021						
19	2022						
20	2023						
21	2024						
22	2025 1Q						
<b>23</b>	<b>TOTAL</b>						

Note: For loan origination years 2023, 2024 and 2025 Q1 beginning UPB should be forecasted acquisitions during the year

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family Credit Summary (SEVERELY ADVERSE)

Credit Score - CURRENT BOOK

(\$s in millions)		LLR		UPB		Nine Quarter Cumulative Totals	
	Credit Score as of 12/31/22	Beginning	Ending	Beginning	Ending	Charge-Offs	Provision (Benefit) for Credit Losses
1	<=620						
2	>620 - 680						
3	>680 - 740						
4	>740+						
<b>5</b>	<b>Total</b>						

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

### **Single-Family - 9 Quarter Cumulative Credit Losses (SEVERELY ADVERSE)**

#### **CURRENT BOOK**

		Loan-To-Value											
		<30	30 - 60	61 - 70	71 - 75	76 - 80	81 - 85	86 - 90	91 - 95	96 - 100	101 - 110	111 - 120	>120
Credit Score	<620												
	620 - 640												
	641 - 660												
	661 - 680												
	681 - 700												
	701 - 720												
	721 - 740												
	741 - 760												
	761 - 780												
	>780												

Credit losses represent the summation of net charge-offs and foreclosed property expenses (REO).

Use LTV and credit score as of December 31, 2022.

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

### Single-Family - Loan Loss Reserves (SEVERELY ADVERSE)

#### CURRENT BOOK

Loan Loss Reserves as of 12/31/22

		Loan-To-Value											
		<30	30 - 60	61 - 70	71 - 75	76 - 80	81 - 85	86 - 90	91 - 95	96 - 100	101 - 110	111 - 120	>120
Credit Score	<620												
	620 - 640												
	641 - 660												
	661 - 680												
	681 - 700												
	701 - 720												
	721 - 740												
	741 - 760												
	761 - 780												
	>780												

Use LTV and credit score as of December 31, 2022

Loan Loss Reserves at 3/31/25 (end of nine quarters)

		Loan-To-Value											
		<30	30 - 60	61 - 70	71 - 75	76 - 80	81 - 85	86 - 90	91 - 95	96 - 100	101 - 110	111 - 120	>120
Credit Score	<620												
	620 - 640												
	641 - 660												
	661 - 680												
	681 - 700												
	701 - 720												
	721 - 740												
	741 - 760												
	761 - 780												
	>780												

Use LTV and credit score as of December 31, 2022

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family Credit Summary (SEVERELY ADVERSE) Vintage and MTMLTV Status - CURRENT BOOK

(\$s in millions)

Loan Status at 12/31/22		Loan Loss Reserves				
		Beginning	Cumulative (Charge-offs) Recoveries	Provision (Benefit) for Credit Losses	Other	Ending
2004 and prior	<=80%					
	80% - 100%					
	>100%					
2005 - 2008	<=80%					
	80% - 100%					
	>100%					
2009 and Later	<=80%					
	80% - 100%					
	>100%					

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family Credit Summary (SEVERELY ADVERSE) Vintage and Delinquency Status - CURRENT BOOK

(\$s in millions)

Loan Loss Reserves
--------------------

Loan Status at 12/31/22	Beginning	Cumulative (Charge-offs) Recoveries	Provision (Benefit) for Credit Losses	Other	Ending
2004 and prior					
Modified	Current <90 Days SDQ				
Non-Modified	Current <90 Days SDQ				
2005 - 2008					
Modified	Current <90 Days SDQ				
Non-Modified	Current <90 Days SDQ				
2009 and Later					
Modified	Current <90 Days SDQ				
Non-Modified	Current <90 Days SDQ				

## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family Credit Summary (SEVERELY ADVERSE) MTMLTV and Delinquency Status - CURRENT BOOK

(\$s in millions)

Loan Status at 12/31/22			Loan Loss Reserves			
			Beginning	Cumulative (Charge-offs) Recoveries	Provision (Benefit) for Credit Losses	Other
<=80%	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				
80% - 100%	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				
>100%	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				



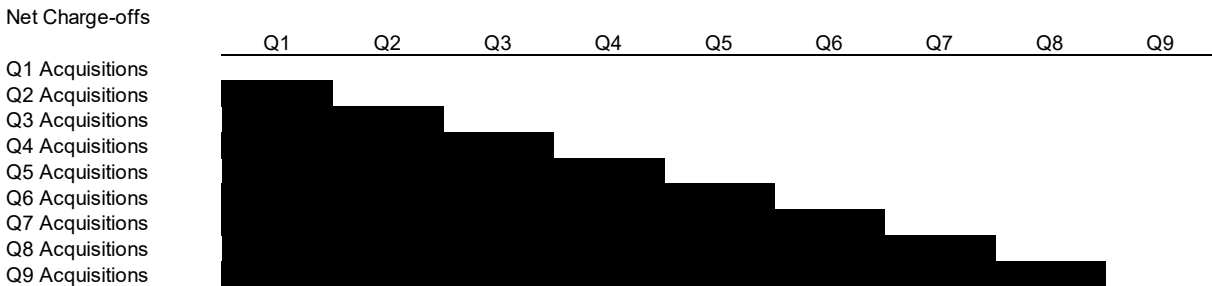
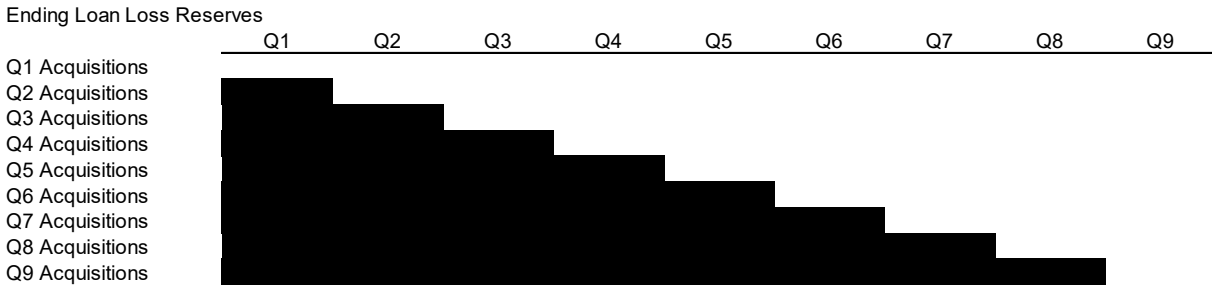
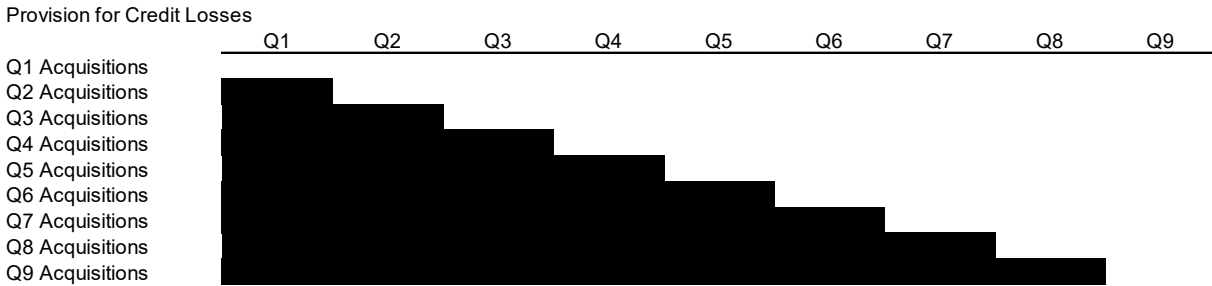
## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

### Single-Family New Book Credit Summary (SEVERELY ADVERSE)

From 1Q2023 - 1Q2025 (9 Quarters)

Original LTV	Acquisitions UPB								
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<60%									
60% - 80%									
>80% - 100%									
>100%									
<b>Total</b>									

Original FICO	Acquisitions UPB								
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<=620									
>620 - 680									
>680 - 740									
>740+									
<b>Total</b>									



## Enterprise Dodd-Frank Act Stress Test Template (Disclosure to FHFA ONLY)

(\$s in millions)

<b>Multifamily - Income Statement (SEVERELY ADVERSE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1 Net interest income <sup>1</sup>											
2 Management and guaranty fee income											
3 Other non-interest income											
<b>4 Total revenue</b>											
5 REO (foreclosed property exp.)											
6 Other expenses <sup>2</sup>											
<b>7 Pre-provision net revenue</b>											
8 (Provision) benefit for credit losses											
9 Derivatives gains (losses)											
10 Gains (losses) on loans											
11 Other fair value gains (losses)											
12 Global market shock impact on trading securities and held-for-sale loans											
<b>13 Pre-Tax income (loss)</b>											
14 Provision (benefit) for federal income taxes											
15 Extraordinary gains (losses), net of tax effect											
<b>16 Net income (loss)</b>											
17 Global market shock impact on available-for-sale securities											
18 Other comprehensive income											
<b>19 Comprehensive income (loss)</b>											

<sup>1</sup> Includes net interest income on multifamily whole loans, GSE multifamily MBS held in the retained portfolio, CMBS, and multifamily MRBs.

<sup>2</sup> Includes operational risk losses, administrative expenses, gains from partnership investments.

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

<b>Multifamily Credit Overview - Quarterly (SEVERELY ADVERSE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
	<b>TOTAL PORTFOLIO</b>										
CREDIT EXPENSES (\$s in millions)											
1 Foreclosed property expense (REO)											
2 Net charge-offs											
3 Credit losses											
4 (Provision) benefit for credit losses											
<b>5 Credit Expenses <sup>1</sup></b>											
LOAN LOSS RESERVE (\$s in millions)											
6 Beginning loan loss reserve											
7 Net charge-offs											
8 Provision (benefit) for loan losses											
9 Other											
<b>10 Ending Loan Loss Reserve</b>											
11 Unpaid Principal Balance (\$s in millions)											

<sup>1</sup> Amount depicts the summation of foreclosed property expense and provision for credit losses.

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

<b><u>Multifamily Key Metrics (SEVERELY ADVERSE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
(\$s in millions)											
1 Total multifamily market volume (industry)											
2 Enterprise market share percentage											
3 New acquisition volume											
4 Liquidation volume <sup>1</sup>											
5 Securitization volume											
6 Effective guaranty fee rate <sup>2</sup> (bps)											
7 Guaranty portfolio balance											
8 Loans and securities held in portfolio											

<sup>1</sup> Includes property sales and other run-off/prepayments.

<sup>2</sup> Guaranty fee income divided by weighted average portfolio balance.

**Enterprise Dodd-Frank Act Stress Test Template  
(Disclosure to FHFA ONLY)**

<b>Credit Risk Transfers - Quarterly (SEVERELY ADVERSE)</b>		Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
(\$s in millions)												
<b>Single-Family</b>												
CAS/STACR (Non-REMIC/Non-Trust)												
1	Interest Expense											
2	Fair Value Gain (Loss)											
3	Other Expenses											
4	Benefits											
CAS/STACR (REMIC/Trust)												
5	Interest Expense											
6	Other Expenses											
7	Benefits											
CIRT/ACIS												
8	Premium Expense											
9	Other Expenses											
10	Benefits											
OTHER												
11	Fair Value Gain (Loss)											
12	Other Expenses											
13	Benefits											
<b>14</b>	<b>Total Single-Family Income (Loss)</b>											
<b>Multifamily</b>												
Capital Markets - Non-Trust <sup>1</sup>												
15	Interest Expense											
16	Fair Value Gain (Loss)											
17	Other Expenses											
18	Benefits											
Capital Markets - Trust <sup>1</sup>												
19	Interest Expense											
20	Other Expenses											
21	Benefits											
Insurance/Reinsurance												
22	Premium Expense											
23	Other Expenses											
24	Benefits											
Other												
25	Other											
26	Credit Expense											
27	Other Expenses											
28	Benefits											
<b>29</b>	<b>Total Multifamily Income (Loss)</b>											
<b>30</b>	<b>Total Income (Loss)</b>											
<b>NEW CRT ISSUANCES</b>												
31	New SF Reinsurance Transactions (Risk-In-Force)											
32	New SF Capital Markets Transactions (Risk-In-Force)											
33	New MF Reinsurance Transactions (Risk-In-Force)											
34	New MF Capital Markets Transactions (Risk-In-Force)											
35	SF Other New Transactions (Risk-In Force)											
36	MF Other New Transactions (Risk-In Force)											
<b>37</b>	<b>Reference Pool Related to New CRT Issuances (Quarter)</b>											
38	Total Outstanding Reference Pool at End of Quarter											

1. Multifamily Capital Markets transactions exclude K-Deals and similar transactions.

# Enterprise Dodd-Frank Act Stress Test Template - SEVERELY ADVERSE (Disclosure to the Public)

## Cumulative Projected Financial Metrics (Q1 2023 - Q1 2025)

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 <sup>6</sup>		Billions of dollars	Percent of average assets <sup>6</sup>

- 1 Pre-provision net revenue<sup>1</sup>
- 2 (Provision) benefit for credit losses
- 3 Mark-to-market gains (losses)<sup>2</sup>
- 4 Global market shock impact on trading securities  
and counterparty
- 5 Net income before taxes
- 6 (Provision) benefit for taxes
- 7 Other comprehensive income (loss)<sup>3</sup>
- 8 Total comprehensive income (loss)
  
- 9 Net Worth as of March 31, 2025
- 10 CET1 Capital as of March 31, 2025
  
- 11 Credit losses<sup>4</sup>
- 12 Credit losses (% of average portfolio balance)<sup>5</sup>

<sup>1</sup> Includes net interest income, operational risk losses, foreclosed property income (expense), and other non-interest income/expenses.

<sup>2</sup> Includes fair value gains (losses) on derivative and trading securities, and other gains (losses) on investment securities.

<sup>3</sup> Includes global market shock impact on available-for-sale securities.

<sup>4</sup> Credit losses are defined as charge-offs, net plus foreclosed property expenses.

<sup>5</sup> Average portfolio balance over the nine-quarter planning horizon.

<sup>6</sup> Average total assets over the nine-quarter planning horizon.

## Appendix 2: Baseline 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 rate	5-year Treasury yield	10-year Treasury yield	BBB corporate yield	Mortgage rate	Prime rate	Dow Jones Total Stock Market Index (Level)	House Price Index (Level)	Commercial Real Estate Price Index (Level)	Market Volatility Index (Level)
2008 Q1	-1.6	-0.2	0.7	4.0	5.0	4.4	2.1	2.8	3.9	6.4	5.9	6.2	13,284	166	230	32.2
2008 Q2	2.3	4.4	8.0	12.3	5.3	5.3	1.6	3.2	4.1	6.7	6.1	5.1	13,016	158	234	24.1
2008 Q3	-2.1	0.9	-7.8	-3.8	6.0	6.3	1.5	3.1	4.1	7.1	6.3	5.0	11,826	151	228	46.7
2008 Q4	-8.5	-7.6	4.4	-2.1	6.9	-8.9	0.3	2.2	3.7	9.7	5.8	4.1	9,057	144	221	80.9
2009 Q1	-4.6	-4.8	-0.9	-3.5	8.3	-2.7	0.2	1.9	3.2	9.1	5.1	3.3	8,044	139	208	56.7
2009 Q2	-0.7	-1.4	2.2	3.8	9.3	2.1	0.2	2.3	3.7	8.1	5.0	3.3	9,343	139	171	42.3
2009 Q3	1.5	1.9	-4.8	-2.1	9.6	3.5	0.2	2.5	3.8	6.5	5.2	3.3	10,813	140	166	31.3
2009 Q4	4.3	5.7	0.8	3.9	9.9	3.2	0.1	2.3	3.7	5.8	4.9	3.3	11,385	140	154	30.7
2010 Q1	2.0	3.1	3.1	4.7	9.8	0.6	0.1	2.4	3.9	5.6	5.0	3.3	12,033	140	160	27.3
2010 Q2	3.9	6.0	6.8	7.5	9.6	-0.1	0.1	2.3	3.6	5.4	4.9	3.3	10,646	139	172	45.8
2010 Q3	3.1	4.4	2.6	3.4	9.5	1.2	0.2	1.6	2.9	4.8	4.4	3.3	11,814	137	171	32.9
2010 Q4	2.1	4.5	1.5	4.1	9.5	3.3	0.1	1.5	3.0	4.7	4.4	3.3	13,132	135	172	23.5
2011 Q1	-1.0	1.1	3.9	7.4	9.0	4.3	0.1	2.1	3.5	5.0	4.8	3.3	13,909	134	178	29.4
2011 Q2	2.7	5.5	-1.0	2.9	9.1	4.6	0.0	1.8	3.3	4.8	4.7	3.3	13,844	134	175	22.7
2011 Q3	-0.2	2.3	1.8	3.7	9.0	2.6	0.0	1.1	2.5	4.5	4.3	3.3	11,677	134	173	48.0
2011 Q4	4.6	5.1	1.1	2.5	8.6	1.8	0.0	1.0	2.1	4.8	4.0	3.3	13,019	134	183	45.5
2012 Q1	3.3	5.8	7.6	10.4	8.3	2.3	0.1	0.9	2.1	4.4	3.9	3.3	14,628	136	183	23.0
2012 Q2	1.8	3.5	3.6	4.6	8.2	0.8	0.1	0.8	1.8	4.3	3.8	3.3	14,100	139	182	26.7
2012 Q3	0.7	2.8	-2.6	-1.5	8.0	1.8	0.1	0.7	1.6	3.9	3.6	3.3	14,895	142	185	20.5
2012 Q4	0.4	2.5	11.6	14.2	7.8	2.7	0.1	0.7	1.7	3.6	3.4	3.3	14,835	145	188	22.7
2013 Q1	3.5	5.2	-14.9	-13.6	7.7	1.6	0.1	0.8	1.9	3.7	3.5	3.3	16,396	148	191	19.0
2013 Q2	0.6	1.7	3.0	3.3	7.5	-0.4	0.1	0.9	2.0	3.8	3.7	3.3	16,771	152	202	20.5
2013 Q3	3.2	5.2	1.5	3.2	7.2	2.2	0.0	1.5	2.7	4.7	4.4	3.3	17,718	156	213	17.0
2013 Q4	2.9	5.4	1.2	2.9	6.9	1.5	0.1	1.4	2.8	4.5	4.3	3.3	19,413	159	213	20.3
2014 Q1	-1.4	0.3	5.1	7.1	6.7	2.5	0.0	1.6	2.8	4.4	4.4	3.3	19,711	161	210	21.4
2014 Q2	5.2	7.6	5.4	7.5	6.2	2.1	0.0	1.7	2.7	4.0	4.2	3.3	20,569	162	219	17.0
2014 Q3	4.7	6.6	4.6	5.8	6.1	1.0	0.0	1.7	2.5	3.9	4.1	3.3	20,459	164	223	17.0
2014 Q4	1.8	2.5	5.7	5.2	5.7	-1.0	0.0	1.6	2.3	4.0	4.0	3.3	21,425	167	231	26.3
2015 Q1	3.3	3.1	5.4	3.7	5.5	-2.6	0.0	1.5	2.0	3.9	3.7	3.3	21,708	169	241	22.4
2015 Q2	2.3	4.6	1.1	3.1	5.4	2.8	0.0	1.5	2.2	3.9	3.8	3.3	21,631	171	246	18.9
2015 Q3	1.3	2.5	2.3	3.3	5.1	1.5	0.0	1.6	2.3	4.3	4.0	3.3	19,959	174	246	40.7
2015 Q4	0.6	0.5	2.5	2.1	5.0	0.0	0.1	1.6	2.2	4.4	3.9	3.3	21,101	176	244	24.4
2016 Q1	2.4	2.0	3.1	3.3	4.9	-0.2	0.3	1.4	2.0	4.5	3.7	3.5	21,179	178	240	28.1
2016 Q2	1.2	4.1	-0.7	1.9	4.9	3.2	0.3	1.3	1.8	3.9	3.6	3.5	21,622	180	248	25.8
2016 Q3	2.4	3.6	1.9	3.5	4.9	1.7	0.3	1.2	1.6	3.5	3.4	3.5	22,469	183	257	18.1
2016 Q4	2.0	4.2	2.1	4.1	4.8	2.6	0.4	1.7	2.2	3.9	3.8	3.5	23,277	186	257	22.5

## Appendix 2: Baseline Scenario - Domestic (Cont.)

Date	Real GDP growth	Nominal GDP growth	Real disposable income growth	Nominal disposable income growth	Unemployment rate	CPI inflation rate	3-month Treasury rate	5-year Treasury yield	10-year Treasury yield	BBB corporate yield	Mortgage rate	Prime rate	Dow Jones Total Stock Market Index (Level)	House Price Index (Level)	Commercial Real Estate Price Index (Level)	Market Volatility Index (Level)
2017 Q1	1.7	3.9	4.0	6.4	4.6	2.8	0.6	2.0	2.5	4.0	4.2	3.8	24,508	188	253	13.1
2017 Q2	2.0	3.3	4.0	5.1	4.4	0.5	0.9	1.8	2.3	3.8	4.0	4.0	25,125	191	266	16.0
2017 Q3	3.4	5.4	2.3	3.8	4.3	1.9	1.0	1.8	2.3	3.7	3.9	4.3	26,149	194	269	16.0
2017 Q4	4.1	7.0	1.6	4.2	4.2	3.2	1.2	2.1	2.4	3.7	3.9	4.3	27,673	197	273	13.1
2018 Q1	2.8	5.3	4.1	7.1	4.0	3.3	1.6	2.5	2.8	4.1	4.3	4.5	27,383	200	275	37.3
2018 Q2	2.8	6.4	3.4	5.6	3.9	2.3	1.8	2.8	2.9	4.5	4.5	4.8	28,314	202	276	23.6
2018 Q3	2.9	4.3	4.3	5.8	3.8	1.7	2.0	2.8	2.9	4.5	4.6	5.0	30,190	204	276	16.1
2018 Q4	0.7	2.6	4.4	6.0	3.8	1.5	2.3	2.9	3.0	4.8	4.8	5.3	25,725	206	273	36.1
2019 Q1	2.2	3.8	5.3	6.1	3.9	1.0	2.4	2.5	2.7	4.5	4.4	5.5	29,194	208	285	25.5
2019 Q2	2.7	5.0	0.0	2.4	3.6	3.2	2.3	2.1	2.4	4.0	4.0	5.5	30,244	210	299	20.6
2019 Q3	3.6	5.0	3.3	4.4	3.6	1.5	2.0	1.7	1.8	3.4	3.7	5.3	30,442	212	296	24.6
2019 Q4	1.8	3.3	2.6	4.1	3.6	2.5	1.6	1.6	1.8	3.3	3.7	4.8	33,035	215	294	20.6
2020 Q1	-4.6	-3.1	2.4	3.9	3.8	1.3	1.1	1.2	1.4	3.4	3.5	4.4	25,985	218	299	82.7
2020 Q2	-29.9	-30.9	46.5	43.8	13.0	-3.4	0.1	0.4	0.7	3.4	3.2	3.3	31,577	220	295	57.1
2020 Q3	35.3	40.1	-15.3	-12.4	8.8	4.8	0.1	0.3	0.6	2.4	3.0	3.3	34,306	227	301	33.6
2020 Q4	3.9	6.6	-9.0	-7.5	6.8	2.2	0.1	0.4	0.9	2.3	2.8	3.3	39,220	235	313	40.3
2021 Q1	6.3	11.7	52.4	59.2	6.2	4.1	0.1	0.6	1.4	2.4	2.9	3.3	41,603	243	314	37.2
2021 Q2	7.0	13.8	-28.8	-24.2	5.9	8.2	0.0	0.8	1.6	2.6	3.0	3.3	44,904	255	322	27.6
2021 Q3	2.7	9.0	-4.6	0.8	5.1	6.7	0.0	0.8	1.4	2.4	2.9	3.3	44,706	266	346	25.7
2021 Q4	7.0	14.3	-4.9	1.0	4.2	7.9	0.1	1.2	1.6	2.7	3.1	3.3	48,634	277	358	31.1
2022 Q1	-1.6	6.6	-10.6	-3.9	3.8	9.2	0.3	1.9	2.0	3.5	3.8	3.3	45,847	290	350	36.5
2022 Q2	-0.6	8.5	-2.3	4.8	3.6	10.5	1.1	3.0	3.0	4.9	5.3	3.9	37,977	298	349	34.8
2022 Q3	3.2	7.7	1.0	5.4	3.6	5.7	2.7	3.3	3.2	5.3	5.6	5.4	36,098	298	358	32.6
2022 Q4	1.7	5.7	2.1	6.0	3.6	3.1	4.0	4.1	3.9	6.1	6.7	6.8	38,521	300	358	33.6
2023 Q1	-0.5	2.9	1.8	5.1	3.9	3.2	4.7	4.0	3.9	5.9	6.2	7.4	38,521	301	361	30.7
2023 Q2	-0.9	2.1	0.7	3.5	4.3	2.9	4.8	4.0	3.8	5.8	5.9	7.6	38,521	303	364	29.0
2023 Q3	0.0	2.6	1.5	4.0	4.6	2.7	4.6	3.9	3.7	5.6	5.6	7.4	38,521	304	366	27.2
2023 Q4	0.9	3.4	2.0	4.3	4.8	2.4	4.4	3.7	3.6	5.5	5.4	7.2	38,521	306	369	28.4
2024 Q1	1.5	3.9	2.4	4.6	4.9	2.2	4.0	3.6	3.5	5.4	5.2	6.8	38,521	307	372	28.5
2024 Q2	1.9	4.1	2.4	4.5	4.9	2.1	3.7	3.5	3.4	5.3	5.0	6.5	38,521	309	375	28.6
2024 Q3	2.2	4.3	2.4	4.3	4.8	2.2	3.3	3.4	3.3	5.3	4.9	6.2	38,521	310	377	28.4
2024 Q4	2.3	4.4	2.4	4.4	4.7	2.1	3.1	3.3	3.3	5.2	4.9	6.0	38,521	312	380	28.4
2025 Q1	2.2	4.4	2.1	4.2	4.6	2.2	3.0	3.2	3.3	5.2	4.8	5.9	38,521	314	383	28.5
2025 Q2	2.1	3.9	2.0	4.1	4.6	2.2	3.0	3.1	3.3	5.2	4.8	5.9	38,521	315	386	28.5
2025 Q3	2.1	3.8	2.0	4.0	4.6	2.2	3.0	3.0	3.3	5.2	4.8	5.9	38,521	317	389	28.5
2025 Q4	2.1	3.8	2.0	4.0	4.6	2.2	3.0	3.0	3.2	5.2	4.8	5.9	38,521	318	392	28.5
2026 Q1	2.0	3.9	2.0	4.0	4.6	2.2	3.0	2.9	3.2	5.2	4.8	5.9	38,521	320	395	28.4



## Appendix 3: Baseline Scenario - International

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate (USD/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index)	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)
2008 Q1	2.1	4.2	1.581	7.0	8.1	88.0	1.4	1.4	99.9	2.0	3.4	1.986
2008 Q2	-1.3	3.2	1.575	6.0	6.3	88.7	-2.4	1.7	106.2	-1.9	5.8	1.991
2008 Q3	-2.1	3.2	1.408	2.9	3.0	91.6	-4.8	3.8	105.9	-5.9	5.9	1.780
2008 Q4	-7.1	-1.4	1.392	0.6	-1.1	92.3	-9.5	-2.4	90.8	-8.6	0.4	1.462
2009 Q1	-11.8	-1.0	1.326	4.2	-1.4	94.3	-17.9	-3.5	99.2	-7.5	-0.2	1.430
2009 Q2	-0.1	0.0	1.402	15.0	2.3	92.3	8.0	-1.5	96.4	-1.1	2.3	1.645
2009 Q3	1.6	1.1	1.463	12.6	4.1	91.3	-0.2	-1.5	89.5	0.5	3.6	1.600
2009 Q4	1.7	1.6	1.433	9.7	5.0	90.7	5.1	-1.4	93.1	1.4	2.8	1.617
2010 Q1	1.8	1.8	1.353	9.6	4.4	89.8	4.3	1.0	93.4	3.9	4.2	1.519
2010 Q2	3.9	1.9	1.229	9.5	3.4	91.1	4.8	-1.4	88.5	4.7	3.3	1.495
2010 Q3	1.7	1.6	1.360	8.8	4.2	88.4	7.5	-2.0	83.5	2.6	2.2	1.573
2010 Q4	2.4	2.6	1.327	9.6	7.5	87.4	-3.2	1.4	81.7	0.6	3.9	1.539
2011 Q1	3.7	3.7	1.418	9.6	6.2	86.5	-4.1	-0.4	82.8	1.0	7.0	1.605
2011 Q2	-0.1	3.1	1.452	6.8	5.4	85.3	-3.5	-0.7	80.6	0.2	4.6	1.607
2011 Q3	0.6	1.3	1.345	5.6	5.3	87.4	10.1	0.4	77.0	0.6	3.5	1.562
2011 Q4	-1.7	3.5	1.297	6.5	3.0	87.3	-0.5	-0.6	77.0	-0.2	3.4	1.554
2012 Q1	-0.9	2.9	1.333	7.6	3.2	86.3	5.7	2.3	82.4	3.4	2.3	1.599
2012 Q2	-1.1	2.2	1.267	5.8	3.9	88.1	-3.6	-1.4	79.8	-0.2	1.9	1.569
2012 Q3	-0.4	1.5	1.286	6.6	2.2	86.3	-1.5	-2.0	77.9	5.1	2.1	1.613
2012 Q4	-1.8	2.6	1.319	7.2	3.5	86.0	-0.3	0.1	86.6	-0.4	4.2	1.626
2013 Q1	-1.3	1.3	1.282	6.7	4.6	86.3	5.7	0.6	94.2	0.9	3.0	1.519
2013 Q2	2.1	0.2	1.301	6.2	2.8	87.2	3.6	0.0	99.2	2.7	1.5	1.521
2013 Q3	1.2	1.1	1.354	7.7	3.6	86.6	3.9	2.7	98.3	3.0	2.1	1.618
2013 Q4	1.2	0.5	1.378	6.8	3.8	85.8	-0.5	2.4	105.3	2.6	1.7	1.657
2014 Q1	1.7	0.9	1.378	6.1	1.4	86.9	3.3	1.0	103.0	3.8	1.8	1.668
2014 Q2	0.8	-0.4	1.369	7.4	2.6	86.7	-7.0	8.3	101.3	3.5	1.4	1.711
2014 Q3	2.0	0.1	1.263	6.6	2.5	87.0	0.3	1.9	109.7	3.1	0.8	1.622
2014 Q4	1.4	0.0	1.210	5.8	0.9	88.1	1.9	-0.8	119.9	2.6	-0.3	1.558
2015 Q1	2.6	-0.8	1.074	6.3	0.9	88.1	6.4	0.1	120.0	1.7	-1.3	1.485
2015 Q2	1.9	2.4	1.115	6.9	2.8	88.5	0.5	1.1	122.1	2.6	0.8	1.573
2015 Q3	1.7	-0.2	1.116	6.5	2.8	91.1	0.4	0.3	119.8	1.7	0.7	1.512
2015 Q4	1.9	-0.4	1.086	5.7	1.1	92.3	-0.7	-0.8	120.3	3.0	0.0	1.475
2016 Q1	2.2	-1.4	1.139	7.0	3.0	91.8	3.0	-0.5	112.4	1.5	0.0	1.438
2016 Q2	0.9	1.5	1.103	6.9	3.0	94.2	-0.6	0.0	102.8	2.5	0.7	1.324
2016 Q3	1.9	1.3	1.124	6.6	1.2	93.7	0.8	-0.4	101.2	1.8	2.0	1.302
2016 Q4	3.1	1.7	1.055	5.8	1.6	97.6	0.6	2.1	116.8	2.6	2.1	1.234

### Appendix 3: Baseline Scenario – International (Cont.)

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate (USD/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index)	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)
2017 Q1	2.8	2.6	1.070	6.2	1.3	95.2	3.3	-0.5	111.4	3.0	3.8	1.254
2017 Q2	3.2	0.5	1.141	6.7	2.3	94.8	1.3	0.7	112.4	2.2	3.1	1.300
2017 Q3	3.1	1.1	1.181	5.8	2.3	93.7	3.4	0.4	112.6	2.1	2.2	1.340
2017 Q4	3.3	1.7	1.202	6.0	2.4	91.1	0.5	1.6	112.7	2.5	3.1	1.353
2018 Q1	0.0	1.8	1.232	8.5	2.5	89.1	0.4	2.2	106.2	0.6	2.5	1.403
2018 Q2	2.2	2.2	1.168	6.4	1.9	93.5	1.1	-1.1	110.7	1.8	1.9	1.320
2018 Q3	0.0	2.8	1.162	2.9	3.0	97.3	-2.0	1.8	113.5	2.2	2.5	1.305
2018 Q4	2.6	1.0	1.146	5.3	1.0	96.3	-0.5	0.7	109.7	1.0	2.1	1.276
2019 Q1	2.5	-0.5	1.123	8.4	1.1	94.4	0.9	-0.5	110.7	2.5	0.9	1.303
2019 Q2	1.3	2.2	1.137	6.3	5.0	96.5	1.2	1.2	107.8	0.4	2.6	1.270
2019 Q3	0.8	1.2	1.091	0.5	3.5	99.9	0.9	0.0	108.1	2.5	1.7	1.231
2019 Q4	0.1	1.3	1.123	3.9	6.4	97.9	-10.4	1.3	108.7	-0.1	0.4	1.327
2020 Q1	-12.8	-0.5	1.102	-23.4	3.7	101.5	1.8	0.1	107.5	-10.2	2.0	1.245
2020 Q2	-38.5	-1.2	1.124	35.0	-1.9	97.5	-28.2	-0.8	107.8	-61.0	-1.7	1.237
2020 Q3	59.3	0.4	1.172	20.0	2.1	95.8	24.2	-0.5	105.6	84.9	1.7	1.292
2020 Q4	-1.0	0.4	1.223	12.7	-0.4	92.8	7.9	-2.5	103.2	4.9	0.1	1.366
2021 Q1	-0.2	4.6	1.174	5.6	3.2	93.5	-0.6	1.8	110.6	-4.1	2.4	1.380
2021 Q2	8.2	1.9	1.185	4.3	2.4	91.7	1.3	-1.6	111.1	28.8	4.0	1.381
2021 Q3	9.3	4.6	1.158	0.6	1.2	93.0	-1.8	1.6	111.5	7.1	4.7	1.347
2021 Q4	2.2	7.6	1.132	7.7	2.7	92.5	4.9	0.4	115.2	6.2	8.6	1.350
2022 Q1	2.5	10.6	1.109	6.1	2.0	92.9	-1.8	3.0	121.4	2.5	7.7	1.315
2022 Q2	3.2	9.5	1.047	-2.8	6.9	98.5	4.5	4.7	135.7	0.2	16.0	1.216
2022 Q3	1.3	9.7	0.978	6.3	2.5	104.1	-0.8	3.4	144.7	-1.2	8.0	1.113
2022 Q4	-0.7	10.1	1.070	4.0	3.0	101.4	2.7	2.5	131.8	-0.2	8.5	1.208
2023 Q1	-0.6	6.1	1.069	4.3	2.8	101.5	1.2	2.1	130.9	-1.3	7.2	1.215
2023 Q2	-0.2	4.8	1.067	4.6	2.6	101.6	0.1	1.7	130.1	-2.1	6.0	1.222
2023 Q3	0.3	3.8	1.066	4.8	2.6	101.7	-0.2	1.4	129.3	-2.0	4.7	1.230
2023 Q4	0.8	2.9	1.065	4.9	2.6	101.8	0.3	1.2	128.4	-0.9	3.6	1.237
2024 Q1	1.6	2.3	1.065	4.9	2.7	101.8	1.4	1.2	128.4	1.1	2.5	1.237
2024 Q2	2.0	1.9	1.065	4.9	2.7	101.8	2.1	1.2	128.4	2.3	1.7	1.237
2024 Q3	2.1	1.7	1.065	4.8	2.7	101.8	2.1	1.2	128.4	2.7	1.1	1.237
2024 Q4	1.9	1.8	1.065	4.8	2.6	101.8	1.6	1.3	128.4	2.6	0.8	1.237
2025 Q1	1.6	2.0	1.065	4.8	2.5	101.8	0.5	1.3	128.4	2.2	0.6	1.237
2025 Q2	1.4	2.1	1.065	4.8	2.3	101.8	-0.1	1.4	128.4	2.0	0.6	1.237
2025 Q3	1.4	2.2	1.065	4.8	2.3	101.8	-0.3	1.4	128.4	1.9	0.6	1.237
2025 Q4	1.4	2.1	1.065	4.7	2.3	101.8	-0.1	1.4	128.4	2.0	0.7	1.237
2026 Q1	1.4	1.9	1.065	4.7	2.4	101.8	0.2	1.4	128.4	2.1	0.9	1.237

## Appendix 4: 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 rate	5-year Treasury yield	10-year Treasury yield	BBB corporate yield	Mortgage rate	Prime rate	Dow Jones Total Stock Market Index (Level)	House Price Index (Level)	Commercial Real Estate Price Index (Level)	Market Volatility Index (Level)
2008 Q1	-1.6	-0.2	0.7	4.0	5.0	4.4	2.1	2.8	3.9	6.4	5.9	6.2	13,284	166	230	32.2
2008 Q2	2.3	4.4	8.0	12.3	5.3	5.3	1.6	3.2	4.1	6.7	6.1	5.1	13,016	158	234	24.1
2008 Q3	-2.1	0.9	-7.8	-3.8	6.0	6.3	1.5	3.1	4.1	7.1	6.3	5.0	11,826	151	228	46.7
2008 Q4	-8.5	-7.6	4.4	-2.1	6.9	-8.9	0.3	2.2	3.7	9.7	5.8	4.1	9,057	144	221	80.9
2009 Q1	-4.6	-4.8	-0.9	-3.5	8.3	-2.7	0.2	1.9	3.2	9.1	5.1	3.3	8,044	139	208	56.7
2009 Q2	-0.7	-1.4	2.2	3.8	9.3	2.1	0.2	2.3	3.7	8.1	5.0	3.3	9,343	139	171	42.3
2009 Q3	1.5	1.9	-4.8	-2.1	9.6	3.5	0.2	2.5	3.8	6.5	5.2	3.3	10,813	140	166	31.3
2009 Q4	4.3	5.7	0.8	3.9	9.9	3.2	0.1	2.3	3.7	5.8	4.9	3.3	11,385	140	154	30.7
2010 Q1	2.0	3.1	3.1	4.7	9.8	0.6	0.1	2.4	3.9	5.6	5.0	3.3	12,033	140	160	27.3
2010 Q2	3.9	6.0	6.8	7.5	9.6	-0.1	0.1	2.3	3.6	5.4	4.9	3.3	10,646	139	172	45.8
2010 Q3	3.1	4.4	2.6	3.4	9.5	1.2	0.2	1.6	2.9	4.8	4.4	3.3	11,814	137	171	32.9
2010 Q4	2.1	4.5	1.5	4.1	9.5	3.3	0.1	1.5	3.0	4.7	4.4	3.3	13,132	135	172	23.5
2011 Q1	-1.0	1.1	3.9	7.4	9.0	4.3	0.1	2.1	3.5	5.0	4.8	3.3	13,909	134	178	29.4
2011 Q2	2.7	5.5	-1.0	2.9	9.1	4.6	0.0	1.8	3.3	4.8	4.7	3.3	13,844	134	175	22.7
2011 Q3	-0.2	2.3	1.8	3.7	9.0	2.6	0.0	1.1	2.5	4.5	4.3	3.3	11,677	134	173	48.0
2011 Q4	4.6	5.1	1.1	2.5	8.6	1.8	0.0	1.0	2.1	4.8	4.0	3.3	13,019	134	183	45.5
2012 Q1	3.3	5.8	7.6	10.4	8.3	2.3	0.1	0.9	2.1	4.4	3.9	3.3	14,628	136	183	23.0
2012 Q2	1.8	3.5	3.6	4.6	8.2	0.8	0.1	0.8	1.8	4.3	3.8	3.3	14,100	139	182	26.7
2012 Q3	0.7	2.8	-2.6	-1.5	8.0	1.8	0.1	0.7	1.6	3.9	3.6	3.3	14,895	142	185	20.5
2012 Q4	0.4	2.5	11.6	14.2	7.8	2.7	0.1	0.7	1.7	3.6	3.4	3.3	14,835	145	188	22.7
2013 Q1	3.5	5.2	-14.9	-13.6	7.7	1.6	0.1	0.8	1.9	3.7	3.5	3.3	16,396	148	191	19.0
2013 Q2	0.6	1.7	3.0	3.3	7.5	-0.4	0.1	0.9	2.0	3.8	3.7	3.3	16,771	152	202	20.5
2013 Q3	3.2	5.2	1.5	3.2	7.2	2.2	0.0	1.5	2.7	4.7	4.4	3.3	17,718	156	213	17.0
2013 Q4	2.9	5.4	1.2	2.9	6.9	1.5	0.1	1.4	2.8	4.5	4.3	3.3	19,413	159	213	20.3
2014 Q1	-1.4	0.3	5.1	7.1	6.7	2.5	0.0	1.6	2.8	4.4	4.4	3.3	19,711	161	210	21.4
2014 Q2	5.2	7.6	5.4	7.5	6.2	2.1	0.0	1.7	2.7	4.0	4.2	3.3	20,569	162	219	17.0
2014 Q3	4.7	6.6	4.6	5.8	6.1	1.0	0.0	1.7	2.5	3.9	4.1	3.3	20,459	164	223	17.0
2014 Q4	1.8	2.5	5.7	5.2	5.7	-1.0	0.0	1.6	2.3	4.0	4.0	3.3	21,425	167	231	26.3
2015 Q1	3.3	3.1	5.4	3.7	5.5	-2.6	0.0	1.5	2.0	3.9	3.7	3.3	21,708	169	241	22.4
2015 Q2	2.3	4.6	1.1	3.1	5.4	2.8	0.0	1.5	2.2	3.9	3.8	3.3	21,631	171	246	18.9
2015 Q3	1.3	2.5	2.3	3.3	5.1	1.5	0.0	1.6	2.3	4.3	4.0	3.3	19,959	174	246	40.7
2015 Q4	0.6	0.5	2.5	2.1	5.0	0.0	0.1	1.6	2.2	4.4	3.9	3.3	21,101	176	244	24.4
2016 Q1	2.4	2.0	3.1	3.3	4.9	-0.2	0.3	1.4	2.0	4.5	3.7	3.5	21,179	178	240	28.1
2016 Q2	1.2	4.1	-0.7	1.9	4.9	3.2	0.3	1.3	1.8	3.9	3.6	3.5	21,622	180	248	25.8
2016 Q3	2.4	3.6	1.9	3.5	4.9	1.7	0.3	1.2	1.6	3.5	3.4	3.5	22,469	183	257	18.1
2016 Q4	2.0	4.2	2.1	4.1	4.8	2.6	0.4	1.7	2.2	3.9	3.8	3.5	23,277	186	257	22.5

## Appendix 4: Severely Adverse Scenario - Domestic (Cont.)

Date	Real GDP growth	Nominal GDP growth	Real disposable income growth	Nominal disposable income growth	Unemployment rate	CPI inflation rate	3-month Treasury rate	5-year Treasury yield	10-year Treasury yield	BBB corporate yield	Mortgage rate	Prime rate	Dow Jones Total Stock Market Index (Level)	House Price Index (Level)	Commercial Real Estate Price Index (Level)	Market Volatility Index (Level)
2017 Q1	1.7	3.9	4.0	6.4	4.6	2.8	0.6	2.0	2.5	4.0	4.2	3.8	24,508	188	253	13.1
2017 Q2	2.0	3.3	4.0	5.1	4.4	0.5	0.9	1.8	2.3	3.8	4.0	4.0	25,125	191	266	16.0
2017 Q3	3.4	5.4	2.3	3.8	4.3	1.9	1.0	1.8	2.3	3.7	3.9	4.3	26,149	194	269	16.0
2017 Q4	4.1	7.0	1.6	4.2	4.2	3.2	1.2	2.1	2.4	3.7	3.9	4.3	27,673	197	273	13.1
2018 Q1	2.8	5.3	4.1	7.1	4.0	3.3	1.6	2.5	2.8	4.1	4.3	4.5	27,383	200	275	37.3
2018 Q2	2.8	6.4	3.4	5.6	3.9	2.3	1.8	2.8	2.9	4.5	4.5	4.8	28,314	202	276	23.6
2018 Q3	2.9	4.3	4.3	5.8	3.8	1.7	2.0	2.8	2.9	4.5	4.6	5.0	30,190	204	276	16.1
2018 Q4	0.7	2.6	4.4	6.0	3.8	1.5	2.3	2.9	3.0	4.8	4.8	5.3	25,725	206	273	36.1
2019 Q1	2.2	3.8	5.3	6.1	3.9	1.0	2.4	2.5	2.7	4.5	4.4	5.5	29,194	208	285	25.5
2019 Q2	2.7	5.0	0.0	2.4	3.6	3.2	2.3	2.1	2.4	4.0	4.0	5.5	30,244	210	299	20.6
2019 Q3	3.6	5.0	3.3	4.4	3.6	1.5	2.0	1.7	1.8	3.4	3.7	5.3	30,442	212	296	24.6
2019 Q4	1.8	3.3	2.6	4.1	3.6	2.5	1.6	1.6	1.8	3.3	3.7	4.8	33,035	215	294	20.6
2020 Q1	-4.6	-3.1	2.4	3.9	3.8	1.3	1.1	1.2	1.4	3.4	3.5	4.4	25,985	218	299	82.7
2020 Q2	-29.9	-30.9	46.5	43.8	13.0	-3.4	0.1	0.4	0.7	3.4	3.2	3.3	31,577	220	295	57.1
2020 Q3	35.3	40.1	-15.3	-12.4	8.8	4.8	0.1	0.3	0.6	2.4	3.0	3.3	34,306	227	301	33.6
2020 Q4	3.9	6.6	-9.0	-7.5	6.8	2.2	0.1	0.4	0.9	2.3	2.8	3.3	39,220	235	313	40.3
2021 Q1	6.3	11.7	52.4	59.2	6.2	4.1	0.1	0.6	1.4	2.4	2.9	3.3	41,603	243	314	37.2
2021 Q2	7.0	13.8	-28.8	-24.2	5.9	8.2	0.0	0.8	1.6	2.6	3.0	3.3	44,904	255	322	27.6
2021 Q3	2.7	9.0	-4.6	0.8	5.1	6.7	0.0	0.8	1.4	2.4	2.9	3.3	44,706	266	346	25.7
2021 Q4	7.0	14.3	-4.9	1.0	4.2	7.9	0.1	1.2	1.6	2.7	3.1	3.3	48,634	277	358	31.1
2022 Q1	-1.6	6.6	-10.6	-3.9	3.8	9.2	0.3	1.9	2.0	3.5	3.8	3.3	45,847	290	350	36.5
2022 Q2	-0.6	8.5	-2.3	4.8	3.6	10.5	1.1	3.0	3.0	4.9	5.3	3.9	37,977	298	349	34.8
2022 Q3	3.2	7.7	1.0	5.4	3.6	5.7	2.7	3.3	3.2	5.3	5.6	5.4	36,098	298	358	32.6
2022 Q4	1.7	5.7	2.1	6.0	3.6	3.1	4.0	4.1	3.9	6.1	6.7	6.8	38,521	300	358	33.6
2023 Q1	-12.5	-10.1	-7.9	-5.8	5.6	2.3	1.7	1.2	1.1	5.8	4.0	4.7	24,338	249	348	70.0
2023 Q2	-6.7	-5.3	-3.0	-1.8	6.8	1.5	1.0	0.9	0.8	6.3	3.7	4.0	22,132	229	337	75.0
2023 Q3	-8.0	-7.0	-3.4	-2.4	8.1	1.3	0.1	0.8	0.8	6.5	3.8	3.1	21,502	213	323	65.4
2023 Q4	-5.9	-4.9	-2.1	-0.9	9.2	1.3	0.1	0.8	0.8	6.6	3.8	3.1	21,186	202	301	58.0
2024 Q1	-1.8	-0.7	0.3	1.6	9.7	1.4	0.1	0.9	0.9	6.4	3.8	3.1	21,817	194	277	52.1
2024 Q2	0.6	1.9	1.5	2.8	9.9	1.4	0.1	0.9	1.0	6.1	3.7	3.1	22,762	190	255	47.4
2024 Q3	0.9	2.2	1.7	2.9	10.0	1.4	0.1	1.0	1.1	5.8	3.5	3.1	24,023	186	234	43.6
2024 Q4	6.3	7.6	5.3	6.6	9.5	1.5	0.1	1.0	1.2	5.5	3.4	3.1	25,599	191	215	40.6
2025 Q1	5.9	7.2	5.3	6.7	9.0	1.5	0.1	1.0	1.3	5.1	3.3	3.1	27,490	196	218	38.2
2025 Q2	5.6	6.4	5.1	6.5	8.6	1.5	0.1	1.0	1.3	4.8	3.2	3.1	29,381	202	220	36.2
2025 Q3	5.3	6.3	4.8	6.3	8.2	1.6	0.1	1.0	1.4	4.5	3.1	3.1	32,217	207	223	34.7
2025 Q4	5.0	6.1	4.5	6.0	7.8	1.6	0.1	1.0	1.5	4.1	3.1	3.1	35,369	212	226	33.4
2026 Q1	4.7	6.0	4.2	5.7	7.5	1.6	0.1	1.1	1.5	3.8	3.1	3.1	38,521	216	228	32.4

## Appendix 5: Severely Adverse Scenario – International

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate (USD/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index)	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)
2008 Q1	2.1	4.2	1.581	7.0	8.1	88.0	1.4	1.4	99.9	2.0	3.4	1.986
2008 Q2	-1.3	3.2	1.575	6.0	6.3	88.7	-2.4	1.7	106.2	-1.9	5.8	1.991
2008 Q3	-2.1	3.2	1.408	2.9	3.0	91.6	-4.8	3.8	105.9	-5.9	5.9	1.780
2008 Q4	-7.1	-1.4	1.392	0.6	-1.1	92.3	-9.5	-2.4	90.8	-8.6	0.4	1.462
2009 Q1	-11.8	-1.0	1.326	4.2	-1.4	94.3	-17.9	-3.5	99.2	-7.5	-0.2	1.430
2009 Q2	-0.1	0.0	1.402	15.0	2.3	92.3	8.0	-1.5	96.4	-1.1	2.3	1.645
2009 Q3	1.6	1.1	1.463	12.6	4.1	91.3	-0.2	-1.5	89.5	0.5	3.6	1.600
2009 Q4	1.7	1.6	1.433	9.7	5.0	90.7	5.1	-1.4	93.1	1.4	2.8	1.617
2010 Q1	1.8	1.8	1.353	9.6	4.4	89.8	4.3	1.0	93.4	3.9	4.2	1.519
2010 Q2	3.9	1.9	1.229	9.5	3.4	91.1	4.8	-1.4	88.5	4.7	3.3	1.495
2010 Q3	1.7	1.6	1.360	8.8	4.2	88.4	7.5	-2.0	83.5	2.6	2.2	1.573
2010 Q4	2.4	2.6	1.327	9.6	7.5	87.4	-3.2	1.4	81.7	0.6	3.9	1.539
2011 Q1	3.7	3.7	1.418	9.6	6.2	86.5	-4.1	-0.4	82.8	1.0	7.0	1.605
2011 Q2	-0.1	3.1	1.452	6.8	5.4	85.3	-3.5	-0.7	80.6	0.2	4.6	1.607
2011 Q3	0.6	1.3	1.345	5.6	5.3	87.4	10.1	0.4	77.0	0.6	3.5	1.562
2011 Q4	-1.7	3.5	1.297	6.5	3.0	87.3	-0.5	-0.6	77.0	-0.2	3.4	1.554
2012 Q1	-0.9	2.9	1.333	7.6	3.2	86.3	5.7	2.3	82.4	3.4	2.3	1.599
2012 Q2	-1.1	2.2	1.267	5.8	3.9	88.1	-3.6	-1.4	79.8	-0.2	1.9	1.569
2012 Q3	-0.4	1.5	1.286	6.6	2.2	86.3	-1.5	-2.0	77.9	5.1	2.1	1.613
2012 Q4	-1.8	2.6	1.319	7.2	3.5	86.0	-0.3	0.1	86.6	-0.4	4.2	1.626
2013 Q1	-1.3	1.3	1.282	6.7	4.6	86.3	5.7	0.6	94.2	0.9	3.0	1.519
2013 Q2	2.1	0.2	1.301	6.2	2.8	87.2	3.6	0.0	99.2	2.7	1.5	1.521
2013 Q3	1.2	1.1	1.354	7.7	3.6	86.6	3.9	2.7	98.3	3.0	2.1	1.618
2013 Q4	1.2	0.5	1.378	6.8	3.8	85.8	-0.5	2.4	105.3	2.6	1.7	1.657
2014 Q1	1.7	0.9	1.378	6.1	1.4	86.9	3.3	1.0	103.0	3.8	1.8	1.668
2014 Q2	0.8	-0.4	1.369	7.4	2.6	86.7	-7.0	8.3	101.3	3.5	1.4	1.711
2014 Q3	2.0	0.1	1.263	6.6	2.5	87.0	0.3	1.9	109.7	3.1	0.8	1.622
2014 Q4	1.4	0.0	1.210	5.8	0.9	88.1	1.9	-0.8	119.9	2.6	-0.3	1.558
2015 Q1	2.6	-0.8	1.074	6.3	0.9	88.1	6.4	0.1	120.0	1.7	-1.3	1.485
2015 Q2	1.9	2.4	1.115	6.9	2.8	88.5	0.5	1.1	122.1	2.6	0.8	1.573
2015 Q3	1.7	-0.2	1.116	6.5	2.8	91.1	0.4	0.3	119.8	1.7	0.7	1.512
2015 Q4	1.9	-0.4	1.086	5.7	1.1	92.3	-0.7	-0.8	120.3	3.0	0.0	1.475
2016 Q1	2.2	-1.4	1.139	7.0	3.0	91.8	3.0	-0.5	112.4	1.5	0.0	1.438
2016 Q2	0.9	1.5	1.103	6.9	3.0	94.2	-0.6	0.0	102.8	2.5	0.7	1.324
2016 Q3	1.9	1.3	1.124	6.6	1.2	93.7	0.8	-0.4	101.2	1.8	2.0	1.302
2016 Q4	3.1	1.7	1.055	5.8	1.6	97.6	0.6	2.1	116.8	2.6	2.1	1.234

## Appendix 5: Severely Adverse Scenario - International (Cont.)

Date	Euro area real GDP growth	Euro area inflation	Euro area bilateral dollar exchange rate (USD/euro)	Developing Asia real GDP growth	Developing Asia inflation	Developing Asia bilateral dollar exchange rate (F/USD, index)	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)
2017 Q1	2.8	2.6	1.070	6.2	1.3	95.2	3.3	-0.5	111.4	3.0	3.8	1.254
2017 Q2	3.2	0.5	1.141	6.7	2.3	94.8	1.3	0.7	112.4	2.2	3.1	1.300
2017 Q3	3.1	1.1	1.181	5.8	2.3	93.7	3.4	0.4	112.6	2.1	2.2	1.340
2017 Q4	3.3	1.7	1.202	6.0	2.4	91.1	0.5	1.6	112.7	2.5	3.1	1.353
2018 Q1	0.0	1.8	1.232	8.5	2.5	89.1	0.4	2.2	106.2	0.6	2.5	1.403
2018 Q2	2.2	2.2	1.168	6.4	1.9	93.5	1.1	-1.1	110.7	1.8	1.9	1.320
2018 Q3	0.0	2.8	1.162	2.9	3.0	97.3	-2.0	1.8	113.5	2.2	2.5	1.305
2018 Q4	2.6	1.0	1.146	5.3	1.0	96.3	-0.5	0.7	109.7	1.0	2.1	1.276
2019 Q1	2.5	-0.5	1.123	8.4	1.1	94.4	0.9	-0.5	110.7	2.5	0.9	1.303
2019 Q2	1.3	2.2	1.137	6.3	5.0	96.5	1.2	1.2	107.8	0.4	2.6	1.270
2019 Q3	0.8	1.2	1.091	0.5	3.5	99.9	0.9	0.0	108.1	2.5	1.7	1.231
2019 Q4	0.1	1.3	1.123	3.9	6.4	97.9	-10.4	1.3	108.7	-0.1	0.4	1.327
2020 Q1	-12.8	-0.5	1.102	-23.4	3.7	101.5	1.8	0.1	107.5	-10.2	2.0	1.245
2020 Q2	-38.5	-1.2	1.124	35.0	-1.9	97.5	-28.2	-0.8	107.8	-61.0	-1.7	1.237
2020 Q3	59.3	0.4	1.172	20.0	2.1	95.8	24.2	-0.5	105.6	84.9	1.7	1.292
2020 Q4	-1.0	0.4	1.223	12.7	-0.4	92.8	7.9	-2.5	103.2	4.9	0.1	1.366
2021 Q1	-0.2	4.6	1.174	5.6	3.2	93.5	-0.6	1.8	110.6	-4.1	2.4	1.380
2021 Q2	8.2	1.9	1.185	4.3	2.4	91.7	1.3	-1.6	111.1	28.8	4.0	1.381
2021 Q3	9.3	4.6	1.158	0.6	1.2	93.0	-1.8	1.6	111.5	7.1	4.7	1.347
2021 Q4	2.2	7.6	1.132	7.7	2.7	92.5	4.9	0.4	115.2	6.2	8.6	1.350
2022 Q1	2.5	10.6	1.109	6.1	2.0	92.9	-1.8	3.0	121.4	2.5	7.7	1.315
2022 Q2	3.2	9.5	1.047	-2.8	6.9	98.5	4.5	4.7	135.7	0.2	16.0	1.216
2022 Q3	1.3	9.7	0.978	6.3	2.5	104.1	-0.8	3.4	144.7	-1.2	8.0	1.113
2022 Q4	-0.7	10.1	1.070	4.0	3.0	101.4	2.7	2.5	131.8	-0.2	8.5	1.208
2023 Q1	-5.8	5.3	1.061	-1.7	0.8	102.2	-8.9	0.6	128.7	-4.2	6.8	1.198
2023 Q2	-5.2	3.4	1.053	-0.4	-0.7	103.1	-6.5	-0.3	127.9	-4.6	5.2	1.188
2023 Q3	-4.3	2.4	1.032	1.9	-0.6	105.2	-4.7	-0.8	127.6	-3.8	4.0	1.165
2023 Q4	-4.1	1.2	1.015	2.5	-1.2	106.9	-4.2	-1.2	127.1	-3.6	2.7	1.146
2024 Q1	-3.9	0.3	1.011	4.4	-1.0	107.3	-3.8	-1.5	126.5	-3.4	1.3	1.141
2024 Q2	-3.7	-0.3	1.007	5.4	-1.0	107.7	-3.3	-1.7	126.3	-3.2	0.2	1.137
2024 Q3	1.0	-0.5	1.009	3.8	-1.1	107.5	1.0	-1.4	126.5	1.0	-0.4	1.139
2024 Q4	4.2	0.2	1.011	6.7	0.2	107.3	4.5	-0.6	126.6	3.5	-0.3	1.141
2025 Q1	5.3	0.7	1.019	7.1	0.6	106.4	5.5	0.1	127.1	4.4	-0.2	1.151
2025 Q2	6.3	1.2	1.036	7.6	1.4	104.7	6.5	0.9	127.3	5.3	0.1	1.169
2025 Q3	7.4	1.9	1.044	8.0	2.5	103.9	7.0	1.6	127.6	6.2	0.6	1.179
2025 Q4	8.4	2.5	1.053	8.5	3.6	103.1	7.5	2.2	127.7	7.0	1.2	1.188
2026 Q1	9.5	3.0	1.061	8.4	4.5	102.2	8.5	2.7	128.0	7.9	1.8	1.198

## Appendix 6: Global Market Shock - Severely Adverse

### Securitized Products

Trading, PE & Other Fair Value Assets  
Securitized Products

RMBS															
Relative MV Shock Based on Current Rating (%)	Non-Agency Prime	Sub-prime	Option ARMS	Other AltA	Unspec Non-Prime	HELOC	RMBS CDO	RMBS CDS	Credit Basket	PrimeX	ABX / TABX	Prime Whole Loans	Non-Prime Whole Loans	European RMBS	Other / Unspecified
	<b>AAA Total</b>														
> 9Y	-16.4%	-26.5%	-26.5%	-26.5%	-26.5%	-26.5%	-33.1%	-22.5%	-22.5%	-13.9%	-22.5%	-30.9%	-52.6%	-18.0%	-33.1%
> 6Y and <= 9Y	-17.2%	-33.1%	-33.1%	-33.1%	-33.1%	-33.1%	-41.3%	-28.1%	-28.1%	-14.6%	-28.1%	-25.5%	-51.1%	-19.0%	-41.3%
> 3Y and <= 6Y	-13.5%	-33.1%	-33.1%	-33.1%	-33.1%	-33.1%	-41.3%	-28.1%	-28.1%	-11.5%	-28.1%	-22.2%	-51.1%	-14.8%	-41.3%
<= 3Y	-8.7%	-33.1%	-33.1%	-33.1%	-33.1%	-33.1%	-41.3%	-28.1%	-28.1%	-7.4%	-28.1%	-17.9%	-51.1%	-9.6%	-41.3%
Unspecified Vintage	-17.2%	-33.1%	-33.1%	-33.1%	-33.1%	-33.1%	-41.3%	-28.1%	-28.1%	-14.6%	-28.1%	-30.9%	-52.6%	-19.0%	-41.3%
<b>AA Total</b>															
> 9Y	-19.5%	-27.3%	-27.3%	-27.3%	-27.3%	-27.3%	-34.1%	-23.2%	-23.2%	-16.6%	-23.2%	-30.9%	-52.6%	-21.5%	-34.1%
> 6Y and <= 9Y	-21.6%	-34.1%	-34.1%	-34.1%	-34.1%	-34.1%	-42.6%	-29.0%	-29.0%	-18.4%	-29.0%	-25.5%	-51.1%	-23.8%	-42.6%
> 3Y and <= 6Y	-27.0%	-34.1%	-34.1%	-34.1%	-34.1%	-34.1%	-42.6%	-29.0%	-29.0%	-23.0%	-29.0%	-22.2%	-51.1%	-29.7%	-42.6%
<= 3Y	-14.0%	-34.1%	-34.1%	-34.1%	-34.1%	-34.1%	-42.6%	-29.0%	-29.0%	-11.9%	-29.0%	-17.9%	-51.1%	-15.4%	-42.6%
Unspecified Vintage	-27.0%	-34.1%	-34.1%	-34.1%	-34.1%	-34.1%	-42.6%	-29.0%	-29.0%	-23.0%	-29.0%	-30.9%	-52.6%	-29.7%	-42.6%
<b>A Total</b>															
> 9Y	-32.9%	-32.9%	-32.9%	-32.9%	-32.9%	-32.9%	-41.1%	-28.0%	-28.0%	-28.0%	-28.0%	-30.9%	-52.6%	-36.2%	-41.1%
> 6Y and <= 9Y	-32.9%	-36.9%	-36.9%	-36.9%	-36.9%	-36.9%	-46.1%	-31.3%	-31.3%	-36.9%	-31.3%	-25.5%	-51.1%	-36.2%	-46.1%
> 3Y and <= 6Y	-29.2%	-36.9%	-36.9%	-36.9%	-36.9%	-36.9%	-46.1%	-31.3%	-31.3%	-24.8%	-31.3%	-22.2%	-51.1%	-32.1%	-46.1%
<= 3Y	-20.9%	-36.9%	-36.9%	-36.9%	-36.9%	-36.9%	-46.1%	-31.3%	-31.3%	-17.7%	-31.3%	-17.9%	-51.1%	-22.9%	-46.1%
Unspecified Vintage	-32.9%	-36.9%	-36.9%	-36.9%	-36.9%	-36.9%	-46.1%	-31.3%	-31.3%	-28.0%	-31.3%	-30.9%	-52.6%	-36.2%	-46.1%
<b>BBB Total</b>															
> 9Y	-34.9%	-38.7%	-38.7%	-38.7%	-38.7%	-38.7%	-48.3%	-32.9%	-32.9%	-29.7%	-32.9%	-30.9%	-52.6%	-38.4%	-48.3%
> 6Y and <= 9Y	-34.9%	-48.3%	-48.3%	-48.3%	-48.3%	-48.3%	-60.4%	-41.1%	-41.1%	-29.7%	-41.1%	-25.5%	-51.1%	-38.4%	-60.4%
> 3Y and <= 6Y	-36.5%	-48.3%	-48.3%	-48.3%	-48.3%	-48.3%	-60.4%	-41.1%	-41.1%	-31.0%	-41.1%	-22.2%	-51.1%	-40.2%	-60.4%
<= 3Y	-52.4%	-52.4%	-52.4%	-52.4%	-52.4%	-52.4%	-65.5%	-44.6%	-44.6%	-44.6%	-44.6%	-17.9%	-51.1%	-57.7%	-65.5%
Unspecified Vintage	-52.4%	-52.4%	-52.4%	-52.4%	-52.4%	-52.4%	-65.5%	-44.6%	-44.6%	-44.6%	-44.6%	-30.9%	-52.6%	-57.7%	-65.5%
<b>BB Total</b>															
> 9Y	-34.9%	-38.7%	-38.7%	-38.7%	-38.7%	-38.7%	-48.3%	-32.9%	-32.9%	-29.7%	-32.9%	-30.9%	-52.6%	-38.4%	-48.3%
> 6Y and <= 9Y	-34.9%	-48.3%	-48.3%	-48.3%	-48.3%	-48.3%	-60.4%	-41.1%	-41.1%	-29.7%	-41.1%	-25.5%	-51.1%	-38.4%	-60.4%
> 3Y and <= 6Y	-52.6%	-52.6%	-52.6%	-52.6%	-52.6%	-52.6%	-65.7%	-44.7%	-44.7%	-44.7%	-44.7%	-22.2%	-51.1%	-57.9%	-65.7%
<= 3Y	-52.6%	-52.6%	-52.6%	-52.6%	-52.6%	-52.6%	-65.7%	-44.7%	-44.7%	-44.7%	-44.7%	-17.9%	-51.1%	-57.9%	-65.7%
Unspecified Vintage	-52.6%	-52.6%	-52.6%	-52.6%	-52.6%	-52.6%	-65.7%	-44.7%	-44.7%	-44.7%	-44.7%	-30.9%	-52.6%	-57.9%	-65.7%
<b>B Total</b>															
> 9Y	-34.9%	-38.7%	-38.7%	-38.7%	-38.7%	-38.7%	-48.3%	-32.9%	-32.9%	-29.7%	-32.9%	-30.9%	-52.6%	-38.4%	-48.3%
> 6Y and <= 9Y	-34.9%	-48.3%	-48.3%	-48.3%	-48.3%	-48.3%	-60.4%	-41.1%	-41.1%	-29.7%	-41.1%	-25.5%	-51.1%	-38.4%	-60.4%
> 3Y and <= 6Y	-58.8%	-58.8%	-58.8%	-58.8%	-58.8%	-58.8%	-73.5%	-49.9%	-49.9%	-49.9%	-49.9%	-22.2%	-51.1%	-64.6%	-73.5%
<= 3Y	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-85.0%	-70.8%	-70.8%	-70.8%	-70.8%	-17.9%	-51.1%	-85.0%	-85.0%
Unspecified Vintage	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-85.0%	-70.8%	-70.8%	-70.8%	-70.8%	-30.9%	-52.6%	-85.0%	-85.0%
<b>&lt;B Total</b>															
> 9Y	-34.9%	-47.8%	-47.8%	-47.8%	-47.8%	-47.8%	-59.8%	-40.6%	-40.6%	-29.7%	-40.6%	-30.9%	-52.6%	-38.4%	-59.8%
> 6Y and <= 9Y	-34.9%	-59.8%	-59.8%	-59.8%	-59.8%	-59.8%	-74.7%	-50.8%	-50.8%	-29.7%	-50.8%	-25.5%	-51.1%	-38.4%	-74.7%
> 3Y and <= 6Y	-58.8%	-59.8%	-59.8%	-59.8%	-59.8%	-59.8%	-74.7%	-50.8%	-50.8%	-49.9%	-50.8%	-22.2%	-51.1%	-64.6%	-74.7%
<= 3Y	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-85.0%	-70.8%	-70.8%	-70.8%	-70.8%	-17.9%	-51.1%	-85.0%	-85.0%
Unspecified Vintage	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-85.0%	-70.8%	-70.8%	-70.8%	-70.8%	-30.9%	-52.6%	-85.0%	-85.0%
<b>NR Total</b>															
> 9Y	-34.9%	-47.8%	-47.8%	-47.8%	-47.8%	-47.8%	-59.8%	-40.6%	-40.6%	-29.7%	-40.6%	-30.9%	-52.6%	-38.4%	-59.8%
> 6Y and <= 9Y	-34.9%	-59.8%	-59.8%	-59.8%	-59.8%	-59.8%	-74.7%	-50.8%	-50.8%	-29.7%	-50.8%	-25.5%	-51.1%	-38.4%	-74.7%
> 3Y and <= 6Y	-58.8%	-59.8%	-59.8%	-59.8%	-59.8%	-59.8%	-74.7%	-50.8%	-50.8%	-49.9%	-50.8%	-22.2%	-51.1%	-64.6%	-74.7%
<= 3Y	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-85.0%	-70.8%	-70.8%	-70.8%	-70.8%	-17.9%	-51.1%	-85.0%	-85.0%
Unspecified Vintage	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-83.3%	-85.0%	-70.8%	-70.8%	-70.8%	-70.8%	-30.9%	-52.6%	-85.0%	-85.0%

# Securitized Products

Trading, PE & Other Fair Value Assets  
Securitized Products

	ABS							CMBS							Corporate CDO / CLO		Warehouse		
	Autos	Credit Cards	Student Loans	ABS CDS	Credit Basket	Index Tranches	Other / Unspecified	Cash Non-Agency CMBS	CMBS CDS	CMBS CDO	Credit Basket	Index Tranches	Whole Loans	Other / Unspecified	CLO	Other / Unspecified	Total Size	Total Protection	Other / Unspecified
<b>Relative MV Shock Based on Current Rating (%)</b>																			
<b>AAA Total</b>																			
> 9Y	-8.1%	-16.3%	-14.5%	-16.3%	-16.3%	-16.3%	-16.3%	-6.1%	-5.2%	-7.6%	-5.2%	-5.2%	-24.9%	-7.6%	-17.5%	-17.5%	-52.6%	52.6%	-33.1%
> 6Y and <= 9Y	-8.1%	-16.3%	-10.0%	-16.3%	-16.3%	-16.3%	-16.3%	-19.4%	-16.5%	-24.3%	-16.5%	-16.5%	-35.5%	-24.3%	-17.5%	-17.5%	-51.1%	51.1%	-41.3%
> 3Y and <= 6Y	-8.1%	-16.3%	-8.3%	-16.3%	-16.3%	-16.3%	-16.3%	-30.9%	-26.3%	-38.6%	-26.3%	-26.3%	-44.7%	-38.6%	-18.9%	-18.9%	-51.1%	51.1%	-41.3%
<= 3Y	-11.9%	-10.0%	-10.1%	-11.9%	-11.9%	-11.9%	-11.9%	-38.5%	-32.7%	-48.1%	-32.7%	-32.7%	-50.8%	-48.1%	-22.6%	-22.6%	-51.1%	51.1%	-48.1%
Unspecified Vintage	-11.9%	-16.3%	-14.5%	-16.3%	-16.3%	-16.3%	-16.3%	-38.5%	-32.7%	-48.1%	-32.7%	-32.7%	-50.8%	-48.1%	-22.6%	-22.6%	-52.6%	52.6%	-48.1%
<b>AA Total</b>																			
> 9Y	-8.6%	-16.3%	-14.5%	-16.3%	-16.3%	-16.3%	-16.3%	-8.7%	-7.4%	-10.9%	-7.4%	-7.4%	-24.9%	-10.9%	-34.0%	-34.0%	-52.6%	52.6%	-34.1%
> 6Y and <= 9Y	-8.6%	-16.3%	-12.3%	-16.3%	-16.3%	-16.3%	-16.3%	-36.2%	-30.8%	-45.3%	-30.8%	-30.8%	-35.5%	-45.3%	-34.0%	-34.0%	-51.1%	51.1%	-45.3%
> 3Y and <= 6Y	-8.6%	-16.3%	-12.0%	-16.3%	-16.3%	-16.3%	-16.3%	-49.7%	-42.2%	-62.1%	-42.2%	-42.2%	-44.7%	-62.1%	-36.0%	-36.0%	-51.1%	51.1%	-62.1%
<= 3Y	-12.0%	-10.0%	-13.0%	-13.0%	-13.0%	-13.0%	-13.0%	-60.3%	-51.3%	-75.4%	-51.3%	-51.3%	-50.8%	-75.4%	-39.2%	-39.2%	-51.1%	51.1%	-75.4%
Unspecified Vintage	-12.0%	-16.3%	-14.5%	-16.3%	-16.3%	-16.3%	-16.3%	-60.3%	-51.3%	-75.4%	-51.3%	-51.3%	-50.8%	-75.4%	-39.2%	-39.2%	-52.6%	52.6%	-75.4%
<b>A Total</b>																			
> 9Y	-10.8%	-18.3%	-16.5%	-18.3%	-18.3%	-18.3%	-18.3%	-25.4%	-21.6%	-31.8%	-21.6%	-21.6%	-24.9%	-31.8%	-38.5%	-38.5%	-52.6%	52.6%	-41.1%
> 6Y and <= 9Y	-10.8%	-18.3%	-14.4%	-18.3%	-18.3%	-18.3%	-18.3%	-43.4%	-36.9%	-54.3%	-36.9%	-36.9%	-35.5%	-54.3%	-38.5%	-38.5%	-51.1%	51.1%	-54.3%
> 3Y and <= 6Y	-10.8%	-18.3%	-14.1%	-18.3%	-18.3%	-18.3%	-18.3%	-55.1%	-46.8%	-68.8%	-46.8%	-46.8%	-44.7%	-68.8%	-39.5%	-39.5%	-51.1%	51.1%	-68.8%
<= 3Y	-12.0%	-10.0%	-13.0%	-13.0%	-13.0%	-13.0%	-13.0%	-70.3%	-59.8%	-85.0%	-59.8%	-59.8%	-50.8%	-85.0%	-43.7%	-43.7%	-51.1%	51.1%	-85.0%
Unspecified Vintage	-12.0%	-18.3%	-16.5%	-18.3%	-18.3%	-18.3%	-18.3%	-70.3%	-59.8%	-85.0%	-59.8%	-59.8%	-50.8%	-85.0%	-43.7%	-43.7%	-52.6%	52.6%	-85.0%
<b>BBB Total</b>																			
> 9Y	-13.4%	-20.7%	-19.0%	-20.7%	-20.7%	-20.7%	-20.7%	-30.4%	-25.9%	-38.0%	-25.9%	-25.9%	-24.9%	-38.0%	-44.0%	-44.0%	-52.6%	52.6%	-48.3%
> 6Y and <= 9Y	-13.4%	-20.7%	-17.0%	-20.7%	-20.7%	-20.7%	-20.7%	-44.9%	-38.1%	-56.1%	-38.1%	-38.1%	-35.5%	-56.1%	-44.0%	-44.0%	-51.1%	51.1%	-60.4%
> 3Y and <= 6Y	-13.4%	-20.7%	-16.6%	-20.7%	-20.7%	-20.7%	-20.7%	-57.8%	-49.1%	-72.3%	-49.1%	-49.1%	-44.7%	-72.3%	-44.2%	-44.2%	-51.1%	51.1%	-72.3%
<= 3Y	-20.2%	-18.4%	-21.1%	-21.1%	-21.1%	-21.1%	-21.1%	-70.3%	-59.8%	-85.0%	-59.8%	-59.8%	-50.8%	-85.0%	-49.1%	-49.1%	-51.1%	51.1%	-85.0%
Unspecified Vintage	-20.2%	-20.7%	-21.1%	-21.1%	-21.1%	-21.1%	-21.1%	-70.3%	-59.8%	-85.0%	-59.8%	-59.8%	-50.8%	-85.0%	-49.1%	-49.1%	-52.6%	52.6%	-85.0%
<b>BB Total</b>																			
> 9Y	-13.4%	-20.7%	-19.0%	-20.7%	-20.7%	-20.7%	-20.7%	-40.4%	-34.4%	-50.5%	-34.4%	-34.4%	-24.9%	-50.5%	-57.2%	-57.2%	-52.6%	52.6%	-57.2%
> 6Y and <= 9Y	-13.4%	-20.7%	-17.0%	-20.7%	-20.7%	-20.7%	-20.7%	-56.7%	-48.2%	-70.9%	-48.2%	-48.2%	-35.5%	-70.9%	-57.2%	-57.2%	-51.1%	51.1%	-70.9%
> 3Y and <= 6Y	-13.4%	-20.7%	-16.6%	-20.7%	-20.7%	-20.7%	-20.7%	-66.2%	-56.3%	-82.7%	-56.3%	-56.3%	-44.7%	-82.7%	-58.3%	-58.3%	-51.1%	51.1%	-82.7%
<= 3Y	-38.0%	-36.7%	-38.8%	-38.8%	-38.8%	-38.8%	-38.8%	-70.3%	-59.8%	-85.0%	-59.8%	-59.8%	-50.8%	-85.0%	-60.8%	-60.8%	-51.1%	51.1%	-85.0%
Unspecified Vintage	-38.0%	-36.7%	-38.8%	-38.8%	-38.8%	-38.8%	-38.8%	-70.3%	-59.8%	-85.0%	-59.8%	-59.8%	-50.8%	-85.0%	-60.8%	-60.8%	-52.6%	52.6%	-85.0%
<b>B Total</b>																			
> 9Y	-13.4%	-20.7%	-19.0%	-20.7%	-20.7%	-20.7%	-20.7%	-68.5%	-58.2%	-85.0%	-58.2%	-58.2%	-24.9%	-85.0%	-58.6%	-58.6%	-52.6%	52.6%	-85.0%
> 6Y and <= 9Y	-13.4%	-20.7%	-17.0%	-20.7%	-20.7%	-20.7%	-20.7%	-68.0%	-57.8%	-85.0%	-57.8%	-57.8%	-35.5%	-85.0%	-58.6%	-58.6%	-51.1%	51.1%	-85.0%
> 3Y and <= 6Y	-13.4%	-20.7%	-16.6%	-20.7%	-20.7%	-20.7%	-20.7%	-66.7%	-56.7%	-83.4%	-56.7%	-56.7%	-44.7%	-83.4%	-59.1%	-59.1%	-51.1%	51.1%	-83.4%
<= 3Y	-38.0%	-36.7%	-38.8%	-38.8%	-38.8%	-38.8%	-38.8%	-70.3%	-59.8%	-85.0%	-59.8%	-59.8%	-50.8%	-85.0%	-60.8%	-60.8%	-51.1%	51.1%	-85.0%
Unspecified Vintage	-38.0%	-36.7%	-38.8%	-38.8%	-38.8%	-38.8%	-38.8%	-70.3%	-59.8%	-85.0%	-59.8%	-59.8%	-50.8%	-85.0%	-60.8%	-60.8%	-52.6%	52.6%	-85.0%
<b>&lt;B Total</b>																			
> 9Y	-13.4%	-20.7%	-19.0%	-20.7%	-20.7%	-20.7%	-20.7%	-68.5%	-58.2%	-85.0%	-58.2%	-58.2%	-24.9%	-85.0%	-62.5%	-62.5%	-52.6%	52.6%	-85.0%
> 6Y and <= 9Y	-13.4%	-20.7%	-17.0%	-20.7%	-20.7%	-20.7%	-20.7%	-80.6%	-68.5%	-85.0%	-68.5%	-68.5%	-35.5%	-85.0%	-62.5%	-62.5%	-51.1%	51.1%	-85.0%
> 3Y and <= 6Y	-13.4%	-20.7%	-16.6%	-20.7%	-20.7%	-20.7%	-20.7%	-80.6%	-68.5%	-85.0%	-68.5%	-68.5%	-44.7%	-85.0%	-62.5%	-62.5%	-51.1%	51.1%	-85.0%
<= 3Y	-38.0%	-36.7%	-38.8%	-38.8%	-38.8%	-38.8%	-38.8%	-80.6%	-68.5%	-85.0%	-68.5%	-68.5%	-50.8%	-85.0%	-62.5%	-62.5%	-51.1%	51.1%	-85.0%
Unspecified Vintage	-38.0%	-36.7%	-38.8%	-38.8%	-38.8%	-38.8%	-38.8%	-80.6%	-68.5%	-85.0%	-68.5%	-68.5%	-50.8%	-85.0%	-62.5%	-62.5%	-52.6%	52.6%	-85.0%
<b>NR Total</b>																			
> 9Y	-13.4%	-20.7%	-19.0%	-20.7%	-20.7%	-20.7%	-20.7%	-68.5%	-58.2%	-85.0%	-58.2%	-58.2%	-24.9%	-85.0%	-62.5%	-62.5%	-52.6%	52.6%	-85.0%
> 6Y and <= 9Y	-13.4%	-20.7%	-17.0%	-20.7%	-20.7%	-20.7%	-20.7%	-80.6%	-68.5%	-85.0%	-68.5%	-68.5%	-35.5%	-85.0%	-62.5%	-62.5%	-51.1%	51.1%	-85.0%
> 3Y and <= 6Y	-13.4%	-20.7%	-16.6%	-20.7%	-20.7%	-20.7%	-20.7%	-80.6%	-68.5%	-85.0%	-68.5%	-68.5%	-44.7%	-85.0%	-62.5%	-62.5%	-51.1%	51.1%	-85.0%
<= 3Y	-38.0%	-36.7%	-38.8%	-38.8%	-38.8%	-38.8%	-38.8%	-80.6%	-68.5%	-85.0%	-68.5%	-68.5%	-50.8%	-85.0%	-62.5%	-62.5%	-51.1%	51.1%	-85.0%
Unspecified Vintage	-38.0%	-36.7%	-38.8%	-38.8%	-38.8%	-38.8%	-38.8%	-80.6%	-68.5%	-85.0%	-68.5%	-68.5%	-50.8%	-85.0%	-62.5%	-62.5%	-52.6%	52.6%	-85.0%



# Municipals

## Trading, PE & Other Fair Value Assets Munis

	Relative MV Shock (%)	Spread Widening (bps)
<b>Bonds</b>		
AAA		252.4
AA		263.0
A		276.4
BBB		323.0
BB		604.0
B		805.6
<B: Defaulted	-24.3%	
<B: Not Defaulted		1,167.7
<B: Default Status Unknown		1,167.7
NR		1,167.7
<b>Loans</b>		
AAA		252.4
AA		263.0
A		276.4
BBB		323.0
BB		604.0
B		805.6
<B: Defaulted	-24.3%	
<B: Not Defaulted		1,167.7
<B: Default Status Unknown		1,167.7
NR		1,167.7
<b>CDS</b>		
AAA		252.4
AA		263.0
A		276.4
BBB		323.0
BB		604.0
B		805.6
<B: Defaulted	-24.3%	
<B: Not Defaulted		1,167.7
<B: Default Status Unknown		1,167.7
NR		1,167.7
<b>Indices</b>		
AAA		252.4
AA		263.0
A		276.4
BBB		323.0
BB		604.0
B		805.6
<B: Defaulted	-24.3%	
<B: Not Defaulted		1,167.7
<B: Default Status Unknown		1,167.7
NR		1,167.7
<b>Other / Unspecified Munis</b>		
AAA		252.4
AA		263.0
A		276.4
BBB		323.0
BB		604.0
B		805.6
<B: Defaulted	-24.3%	
<B: Not Defaulted		1,167.7
<B: Default Status Unknown		1,167.7
NR		1,167.7

## Agencies

### Trading, PE & Other Fair Value Assets

#### Agencies

OAS Widening (bps)
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#### US Residential Agency Products

IOs	387.0
POs	73.0
Other CMOs	91.0
Pass-Throughs	91.0
Agency Debt/Debentures	58.0
IOS Index	387.0
POS Index	73.0
MBX Index	61.0
Other Agency Derivatives	58.0
TBA's	61.0
Reverse Mortgages	91.0
Residential Other / Unspecified	61.0

#### US Commercial Agency Products

Cash Agency CMBS	124.0
Agency CMBS Derivatives	124.0
Commercial Other / Unspecified	124.0

#### Non-US Agency Products

AAA	290.0
AA	435.0
A	442.0
BBB	550.0
BB	600.0
B	1,831.0
<B	3,062.0
NR	3,062.0

# Rates DV01

DFAST 2023 Market Shocks: Severely Adverse Scenario  
Rates DV01

Rates Shocks (bps)	MATURITY												
	1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	30Y
<b>AUD Directional Risks</b>													
Governments	(127.7)	(124.8)	(121.1)	(118.0)	(115.4)	(108.7)	(105.1)	(101.7)	(100.1)	(99.0)	(98.1)	(97.6)	(97.2)
Agencies	(127.7)	(124.8)	(121.1)	(118.0)	(115.4)	(108.7)	(105.1)	(101.7)	(100.1)	(99.0)	(98.1)	(97.6)	(97.2)
Municipals	(127.7)	(124.8)	(121.1)	(118.0)	(115.4)	(108.7)	(105.1)	(101.7)	(100.1)	(99.0)	(98.1)	(97.6)	(97.2)
Swaps / Discounting Curve	(123.5)	(120.7)	(117.2)	(114.3)	(111.9)	(105.9)	(102.8)	(100.2)	(99.2)	(98.6)	(98.2)	(98.0)	(97.8)
Instruments shocked by MV**													
Other	(123.5)	(120.7)	(117.2)	(114.3)	(111.9)	(105.9)	(102.8)	(100.2)	(99.2)	(98.6)	(98.2)	(98.0)	(97.8)

**AUD Basis Risks (Do not include the swap/discounting curve specified above)**

OIS Basis													
1m Basis													
3m Basis													
6m Basis													
12m Basis													
Other Basis													

**CAD Directional Risks**

Governments	(115.8)	(112.9)	(108.9)	(105.2)	(101.8)	(90.9)	(83.1)	(73.1)	(67.3)	(62.4)	(58.4)	(56.4)	(54.4)
Agencies	(115.8)	(112.9)	(108.9)	(105.2)	(101.8)	(90.9)	(83.1)	(73.1)	(67.3)	(62.4)	(58.4)	(56.4)	(54.4)
Municipals	(115.8)	(112.9)	(108.9)	(105.2)	(101.8)	(90.9)	(83.1)	(73.1)	(67.3)	(62.4)	(58.4)	(56.4)	(54.4)
Swaps / Discounting Curve	(111.6)	(109.0)	(105.4)	(102.1)	(99.1)	(89.1)	(82.0)	(72.7)	(67.4)	(62.8)	(59.0)	(57.1)	(55.2)
Instruments shocked by MV**													
Other	(111.6)	(109.0)	(105.4)	(102.1)	(99.1)	(89.1)	(82.0)	(72.7)	(67.4)	(62.8)	(59.0)	(57.1)	(55.2)

**CAD Basis Risks (Do not include the swap/discounting curve specified above)**

OIS Basis													
1m Basis													
3m Basis													
6m Basis													
12m Basis													
Other Basis													

**CHF Directional Risks**

Governments	(49.8)	(49.4)	(48.9)	(48.4)	(48.0)	(46.4)	(45.2)	(43.3)	(42.1)	(40.9)	(39.8)	(39.3)	(38.7)
Agencies	(49.8)	(49.4)	(48.9)	(48.4)	(48.0)	(46.4)	(45.2)	(43.3)	(42.1)	(40.9)	(39.8)	(39.3)	(38.7)
Municipals	(49.8)	(49.4)	(48.9)	(48.4)	(48.0)	(46.4)	(45.2)	(43.3)	(42.1)	(40.9)	(39.8)	(39.3)	(38.7)
Swaps / Discounting Curve	(45.6)	(45.5)	(45.3)	(45.1)	(45.0)	(44.3)	(43.7)	(42.7)	(41.9)	(41.1)	(40.3)	(39.9)	(39.5)
Instruments shocked by MV**													
Other	(45.6)	(45.5)	(45.3)	(45.1)	(45.0)	(44.3)	(43.7)	(42.7)	(41.9)	(41.1)	(40.3)	(39.9)	(39.5)

**CHF Basis Risks (Do not include the swap/discounting curve specified above)**

OIS Basis													
1m Basis													
3m Basis													
6m Basis													
12m Basis													
Other Basis													

## Rates DV01 (Continued)

### DKK Directional Risks

Governments	(82.0)	(81.1)	(79.9)	(78.7)	(77.6)	(73.7)	(70.6)	(66.1)	(63.0)	(60.1)	(57.4)	(55.9)	(54.5)
Agencies	(82.0)	(81.1)	(79.9)	(78.7)	(77.6)	(73.7)	(70.6)	(66.1)	(63.0)	(60.1)	(57.4)	(55.9)	(54.5)
Municipals	(82.0)	(81.1)	(79.9)	(78.7)	(77.6)	(73.7)	(70.6)	(66.1)	(63.0)	(60.1)	(57.4)	(55.9)	(54.5)
Swaps / Discounting Curve	(77.7)	(77.0)	(76.0)	(75.1)	(74.2)	(71.0)	(68.5)	(64.8)	(62.2)	(59.8)	(57.5)	(56.3)	(55.1)
Instruments shocked by MV**													
Other	(77.7)	(77.0)	(76.0)	(75.1)	(74.2)	(71.0)	(68.5)	(64.8)	(62.2)	(59.8)	(57.5)	(56.3)	(55.1)

### DKK Basis Risks (Do not include the swap/discounting curve specified above)

OIS Basis													
1m Basis													
3m Basis													
6m Basis													
12m Basis													
Other Basis													

### EUR Directional Risks

Governments: Austria	(68.3)	(66.2)	(63.4)	(61.1)	(59.1)	(53.8)	(50.9)	(48.0)	(46.7)	(45.7)	(44.9)	(44.5)	(44.1)
Governments: Belgium	(78.7)	(76.9)	(74.3)	(71.9)	(69.7)	(62.5)	(57.2)	(50.3)	(46.2)	(42.7)	(39.8)	(38.3)	(36.8)
Governments: Finland	(73.1)	(71.5)	(69.4)	(67.6)	(66.0)	(61.6)	(59.1)	(56.5)	(55.2)	(54.3)	(53.5)	(53.2)	(52.8)
Governments: France	(81.6)	(79.9)	(77.5)	(75.2)	(73.1)	(66.1)	(60.8)	(53.8)	(49.4)	(45.5)	(42.3)	(40.6)	(38.9)
Governments: Germany	(103.6)	(101.5)	(98.6)	(95.9)	(93.4)	(85.2)	(79.0)	(70.7)	(65.7)	(61.3)	(57.6)	(55.7)	(53.8)
Governments: Greece	113.1	128.1	148.8	167.6	184.6	238.9	276.9	324.2	350.9	373.3	391.5	400.6	409.8
Governments: Ireland	13.1	24.2	39.8	54.1	67.2	109.8	140.6	180.5	203.7	223.6	240.1	248.4	256.7
Governments: Italy	163.4	176.6	194.9	211.5	226.6	274.6	308.3	350.3	373.9	393.7	409.8	417.9	426.0
Governments: Netherlands	(101.0)	(98.5)	(95.0)	(91.7)	(88.7)	(79.0)	(71.8)	(62.4)	(56.9)	(52.1)	(48.2)	(46.2)	(44.2)
Governments: Portugal	206.5	232.0	266.9	298.3	326.5	414.4	473.9	545.3	584.0	615.6	640.9	653.6	666.4
Governments: Spain	69.4	79.5	93.5	106.4	118.2	156.8	184.8	220.9	242.0	260.1	275.1	282.7	290.2
Governments: Other	(83.7)	(81.8)	(79.3)	(77.1)	(75.1)	(68.8)	(64.5)	(59.3)	(56.2)	(53.7)	(51.5)	(50.4)	(49.3)
Agencies	(83.7)	(81.8)	(79.3)	(77.1)	(75.1)	(68.8)	(64.5)	(59.3)	(56.2)	(53.7)	(51.5)	(50.4)	(49.3)
Municipals	(83.7)	(81.8)	(79.3)	(77.1)	(75.1)	(68.8)	(64.5)	(59.3)	(56.2)	(53.7)	(51.5)	(50.4)	(49.3)
Swaps / Discounting Curve	(86.4)	(84.7)	(82.2)	(79.9)	(77.9)	(71.2)	(66.4)	(60.6)	(57.5)	(55.4)	(54.3)	(54.1)	(54.1)
Instruments shocked by MV**													
Other	(86.4)	(84.7)	(82.2)	(79.9)	(77.9)	(71.2)	(66.4)	(60.6)	(57.5)	(55.4)	(54.3)	(54.1)	(54.1)

### EUR Basis Risks (Do not include the swap/discounting curve specified above)

OIS Basis													
1m Basis	20.0	20.0	20.0	20.0	15.0	14.0	12.0	10.0	8.0	7.0	6.0	6.0	6.0
3m Basis	25.0	25.0	25.0	25.0	18.0	18.0	15.0	14.0	13.0	11.0	11.0	10.0	9.0
6m Basis	30.0	30.0	30.0	30.0	20.0	19.0	17.0	15.0	13.0	11.0	11.0	11.0	10.0
12m Basis	30.0	30.0	30.0	30.0	20.0	19.0	17.0	15.0	13.0	11.0	11.0	11.0	10.0
Other Basis	30.0	30.0	30.0	30.0	20.0	19.0	17.0	15.0	13.0	11.0	11.0	11.0	10.0

### GBP Directional Risks

Governments	(101.6)	(99.0)	(95.5)	(92.4)	(89.6)	(81.2)	(75.6)	(69.3)	(66.0)	(63.4)	(61.3)	(60.2)	(59.2)
Agencies	(101.6)	(99.0)	(95.5)	(92.4)	(89.6)	(81.2)	(75.6)	(69.3)	(66.0)	(63.4)	(61.3)	(60.2)	(59.2)
Municipals	(101.6)	(99.0)	(95.5)	(92.4)	(89.6)	(81.2)	(75.6)	(69.3)	(66.0)	(63.4)	(61.3)	(60.2)	(59.2)
Swaps / Discounting Curve	(101.6)	(99.0)	(95.5)	(92.4)	(89.6)	(81.2)	(75.6)	(69.3)	(66.0)	(63.4)	(61.3)	(60.2)	(59.2)
Instruments shocked by MV**													
Other	(101.6)	(99.0)	(95.5)	(92.4)	(89.6)	(81.2)	(75.6)	(69.3)	(66.0)	(63.4)	(61.3)	(60.2)	(59.2)

### GBP Basis Risks (Do not include the swap/discounting curve specified above)

OIS Basis													
1m Basis	25.0	25.0	23.0	18.0	14.0	9.0	9.0	8.0	8.0	6.0	6.0	6.0	6.0
3m Basis	30.0	30.0	28.0	20.0	15.0	10.0	10.0	8.0	8.0	6.0	6.0	6.0	6.0
6m Basis	30.0	30.0	28.0	20.0	15.0	10.0	10.0	8.0	8.0	6.0	6.0	6.0	6.0
12m Basis	30.0	30.0	28.0	20.0	15.0	10.0	10.0	8.0	8.0	6.0	6.0	6.0	6.0
Other Basis	30.0	30.0	28.0	20.0	15.0	10.0	10.0	8.0	8.0	6.0	6.0	6.0	6.0

## Rates DV01 (Continued)

### JPY Directional Risks

Governments	(11.0)	(11.3)	(11.7)	(12.0)	(12.4)	(13.5)	(14.5)	(15.9)	(16.9)	(17.9)	(18.8)	(19.2)	(19.7)
Agencies	(11.0)	(11.3)	(11.7)	(12.0)	(12.4)	(13.5)	(14.5)	(15.9)	(16.9)	(17.9)	(18.8)	(19.2)	(19.7)
Municipals	(11.0)	(11.3)	(11.7)	(12.0)	(12.4)	(13.5)	(14.5)	(15.9)	(16.9)	(17.9)	(18.8)	(19.2)	(19.7)
Swaps / Discounting Curve	(11.0)	(11.3)	(11.7)	(12.0)	(12.4)	(13.5)	(14.5)	(15.9)	(16.9)	(17.9)	(18.8)	(19.2)	(19.7)
Instruments shocked by MV**													
Other	(11.0)	(11.3)	(11.7)	(12.0)	(12.4)	(13.5)	(14.5)	(15.9)	(16.9)	(17.9)	(18.8)	(19.2)	(19.7)

### JPY Basis Risks (Do not include the swap/discounting curve specified above)

OIS Basis													
1m Basis													
3m Basis													
6m Basis													
12m Basis													
Other Basis													

### NOK Directional Risks

Governments	(98.8)	(95.9)	(92.2)	(89.0)	(86.4)	(79.1)	(75.1)	(71.1)	(69.2)	(67.8)	(66.7)	(66.1)	(65.6)
Agencies	(98.8)	(95.9)	(92.2)	(89.0)	(86.4)	(79.1)	(75.1)	(71.1)	(69.2)	(67.8)	(66.7)	(66.1)	(65.6)
Municipals	(98.8)	(95.9)	(92.2)	(89.0)	(86.4)	(79.1)	(75.1)	(71.1)	(69.2)	(67.8)	(66.7)	(66.1)	(65.6)
Swaps / Discounting Curve	(95.1)	(93.2)	(90.5)	(88.0)	(85.8)	(79.4)	(75.6)	(71.8)	(70.1)	(68.7)	(67.7)	(67.2)	(66.6)
Instruments shocked by MV**													
Other	(95.1)	(93.2)	(90.5)	(88.0)	(85.8)	(79.4)	(75.6)	(71.8)	(70.1)	(68.7)	(67.7)	(67.2)	(66.6)

### NOK Basis Risks (Do not include the swap/discounting curve specified above)

OIS Basis													
1m Basis													
3m Basis													
6m Basis													
12m Basis													
Other Basis													

### NZD Directional Risks

Governments	(98.8)	(97.8)	(96.6)	(95.5)	(94.7)	(92.5)	(91.4)	(90.3)	(89.8)	(89.5)	(89.2)	(89.0)	(88.9)
Agencies	(98.8)	(97.8)	(96.6)	(95.5)	(94.7)	(92.5)	(91.4)	(90.3)	(89.8)	(89.5)	(89.2)	(89.0)	(88.9)
Municipals	(98.8)	(97.8)	(96.6)	(95.5)	(94.7)	(92.5)	(91.4)	(90.3)	(89.8)	(89.5)	(89.2)	(89.0)	(88.9)
Swaps / Discounting Curve	(95.3)	(95.5)	(95.4)	(95.0)	(94.5)	(93.0)	(92.1)	(91.2)	(90.8)	(90.5)	(90.2)	(90.1)	(90.0)
Instruments shocked by MV**													
Other	(95.3)	(95.5)	(95.4)	(95.0)	(94.5)	(93.0)	(92.1)	(91.2)	(90.8)	(90.5)	(90.2)	(90.1)	(90.0)

### NZD Basis Risks (Do not include the swap/discounting curve specified above)

OIS Basis													
1m Basis													
3m Basis													
6m Basis													
12m Basis													
Other Basis													

## Rates DV01 (Continued)

### SEK Directional Risks

Governments	(82.1)	(80.4)	(78.0)	(75.9)	(74.0)	(68.3)	(64.6)	(60.3)	(58.1)	(56.4)	(55.0)	(54.3)	(53.6)
Agencies	(82.1)	(80.4)	(78.0)	(75.9)	(74.0)	(68.3)	(64.6)	(60.3)	(58.1)	(56.4)	(55.0)	(54.3)	(53.6)
Municipals	(82.1)	(80.4)	(78.0)	(75.9)	(74.0)	(68.3)	(64.6)	(60.3)	(58.1)	(56.4)	(55.0)	(54.3)	(53.6)
Swaps / Discounting Curve	(78.0)	(76.5)	(74.5)	(72.7)	(71.1)	(66.4)	(63.3)	(59.9)	(58.1)	(56.7)	(55.6)	(55.0)	(54.5)
Instruments shocked by MV**													
Other	(78.0)	(76.5)	(74.5)	(72.7)	(71.1)	(66.4)	(63.3)	(59.9)	(58.1)	(56.7)	(55.6)	(55.0)	(54.5)

### SEK Basis Risks (Do not include the swap/discounting curve specified above)

OIS Basis													
1m Basis													
3m Basis													
6m Basis													
12m Basis													
Other Basis													

### USD Directional Risks

Governments	(176.6)	(171.7)	(164.8)	(158.5)	(152.8)	(134.6)	(121.7)	(105.6)	(96.6)	(89.0)	(82.8)	(79.7)	(76.6)
Agencies	(176.6)	(171.7)	(164.8)	(158.5)	(152.8)	(134.6)	(121.7)	(105.6)	(96.6)	(89.0)	(82.8)	(79.7)	(76.6)
Municipals	(176.6)	(171.7)	(164.8)	(158.5)	(152.8)	(134.6)	(121.7)	(105.6)	(96.6)	(89.0)	(82.8)	(79.7)	(76.6)
Swaps / Discounting Curve	(176.6)	(171.7)	(164.8)	(158.5)	(152.8)	(134.6)	(121.7)	(105.6)	(96.6)	(89.0)	(82.8)	(79.7)	(76.6)
Instruments shocked by MV**													
Other	(176.6)	(171.7)	(164.8)	(158.5)	(152.8)	(134.6)	(121.7)	(105.6)	(96.6)	(89.0)	(82.8)	(79.7)	(76.6)

### USD Basis Risks (Do not include the swap/discounting curve specified above)

Prime Basis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CP Basis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OIS Basis													
1m Basis	49.0	49.0	25.0	19.0	17.0	15.0	10.0	6.0	5.0	4.0	4.0	4.0	4.0
3m Basis	72.0	72.0	44.0	32.0	30.0	20.0	15.0	9.0	8.0	8.0	5.0	5.0	5.0
6m Basis	80.0	80.0	80.0	42.0	39.0	26.0	18.0	12.0	10.0	9.0	6.0	6.0	6.0
12m Basis	80.0	80.0	80.0	42.0	39.0	26.0	18.0	12.0	10.0	9.0	6.0	6.0	6.0
Other Basis	72.0	72.0	44.0	32.0	30.0	20.0	15.0	9.0	8.0	8.0	5.0	5.0	5.0

Absolute increase in Muni SIFMA/Libor Ratio (Pts)	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4
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### Other Advanced Economies Directional Risks

Governments	(176.6)	(171.7)	(164.8)	(158.5)	(152.8)	(134.6)	(121.7)	(105.6)	(96.6)	(89.0)	(82.8)	(79.7)	(76.6)
Agencies	(176.6)	(171.7)	(164.8)	(158.5)	(152.8)	(134.6)	(121.7)	(105.6)	(96.6)	(89.0)	(82.8)	(79.7)	(76.6)
Municipals	(176.6)	(171.7)	(164.8)	(158.5)	(152.8)	(134.6)	(121.7)	(105.6)	(96.6)	(89.0)	(82.8)	(79.7)	(76.6)
Swaps / Discounting Curve	(176.6)	(171.7)	(164.8)	(158.5)	(152.8)	(134.6)	(121.7)	(105.6)	(96.6)	(89.0)	(82.8)	(79.7)	(76.6)
Instruments shocked by MV**													
Other	(176.6)	(171.7)	(164.8)	(158.5)	(152.8)	(134.6)	(121.7)	(105.6)	(96.6)	(89.0)	(82.8)	(79.7)	(76.6)

## Rates DV01 (Continued)

### Directional Risks: Emerging Europe

BGN	57.6	62.9	70.3	77.3	83.9	106.5	124.2	149.5	166.2	181.9	196.1	203.7	211.3
CZK	57.6	62.9	70.3	77.3	83.9	106.5	124.2	149.5	166.2	181.9	196.1	203.7	211.3
HRK	57.6	62.9	70.3	77.3	83.9	106.5	124.2	149.5	166.2	181.9	196.1	203.7	211.3
HUF	57.6	62.9	70.3	77.3	83.9	106.5	124.2	149.5	166.2	181.9	196.1	203.7	211.3
PLN	36.5	40.5	46.2	51.5	56.4	73.0	85.7	103.4	114.6	124.9	133.8	138.4	143.1
RON	57.6	62.9	70.3	77.3	83.9	106.5	124.2	149.5	166.2	181.9	196.1	203.7	211.3
RUB	209.9	239.3	276.6	307.2	332.4	397.9	432.1	464.3	478.8	489.8	498.3	502.6	506.8
Other Emerging Europe	58.6	63.8	71.3	78.2	84.8	107.2	124.8	150.0	166.6	182.3	196.4	203.9	211.5

### Directional Risks: Latin America & Caribbean

ARS	209.9	239.3	276.6	307.2	332.4	397.9	432.1	464.3	478.8	489.8	498.3	502.6	506.8
BRL	209.9	239.3	276.6	307.2	332.4	397.9	432.1	464.3	478.8	489.8	498.3	502.6	506.8
CLP	209.9	239.3	276.6	307.2	332.4	397.9	432.1	464.3	478.8	489.8	498.3	502.6	506.8
COP	209.9	239.3	276.6	307.2	332.4	397.9	432.1	464.3	478.8	489.8	498.3	502.6	506.8
MXN	209.9	239.3	276.6	307.2	332.4	397.9	432.1	464.3	478.8	489.8	498.3	502.6	506.8
PEN	209.9	239.3	276.6	307.2	332.4	397.9	432.1	464.3	478.8	489.8	498.3	502.6	506.8
VEF	209.9	239.3	276.6	307.2	332.4	397.9	432.1	464.3	478.8	489.8	498.3	502.6	506.8
Other Latam & Caribbean	209.9	239.3	276.6	307.2	332.4	397.9	432.1	464.3	478.8	489.8	498.3	502.6	506.8

### Directional Risks: Asia Ex-Japan

CNY	(64.1)	(62.8)	(61.0)	(59.3)	(57.8)	(52.9)	(49.3)	(44.7)	(42.0)	(39.7)	(37.8)	(36.8)	(35.9)
HKD	(72.4)	(70.6)	(68.2)	(66.1)	(64.3)	(59.2)	(56.2)	(53.0)	(51.5)	(50.3)	(49.3)	(48.9)	(48.4)
IDR	(77.4)	(75.9)	(74.0)	(72.4)	(70.9)	(66.7)	(64.1)	(61.1)	(59.6)	(58.3)	(57.3)	(56.8)	(56.2)
INR	(77.4)	(75.9)	(74.0)	(72.4)	(70.9)	(66.7)	(64.1)	(61.1)	(59.6)	(58.3)	(57.3)	(56.8)	(56.2)
KRW	(34.9)	(34.4)	(33.5)	(32.8)	(32.1)	(29.8)	(28.1)	(25.9)	(24.6)	(23.4)	(22.5)	(22.0)	(21.5)
MYR	(77.4)	(75.9)	(74.0)	(72.4)	(70.9)	(66.7)	(64.1)	(61.1)	(59.6)	(58.3)	(57.3)	(56.8)	(56.2)
PHP	(77.4)	(75.9)	(74.0)	(72.4)	(70.9)	(66.7)	(64.1)	(61.1)	(59.6)	(58.3)	(57.3)	(56.8)	(56.2)
SGD	(93.2)	(91.8)	(89.8)	(88.0)	(86.3)	(81.1)	(77.4)	(72.8)	(70.2)	(68.1)	(66.3)	(65.4)	(64.6)
THB	(50.6)	(49.5)	(48.0)	(46.8)	(45.7)	(42.8)	(41.2)	(39.5)	(38.8)	(38.2)	(37.8)	(37.5)	(37.3)
TWD	(72.4)	(70.6)	(68.2)	(66.1)	(64.3)	(59.2)	(56.2)	(53.0)	(51.5)	(50.3)	(49.3)	(48.9)	(48.4)
Other Asia Ex-Japan	(77.4)	(75.9)	(74.0)	(72.4)	(70.9)	(66.7)	(64.1)	(61.1)	(59.6)	(58.3)	(57.3)	(56.8)	(56.2)

### Directional Risks: Middle East/North Africa

ILS	(56.4)	(55.1)	(53.5)	(52.1)	(50.8)	(47.0)	(44.7)	(42.2)	(40.9)	(39.9)	(39.1)	(38.7)	(38.3)
TRY	113.4	118.5	125.1	130.6	135.4	148.5	155.9	163.4	166.9	169.6	171.6	172.7	173.7
Other Middle East/Africa	113.4	118.5	125.1	130.6	135.4	148.5	155.9	163.4	166.9	169.6	171.6	172.7	173.7

### Directional Risks: Sub-Saharan Africa

ZAR	298.2	298.0	297.7	297.3	297.0	295.7	294.5	292.3	290.4	288.0	284.8	282.5	279.5
Other Sub-Saharan Africa	298.2	298.0	297.7	297.3	297.0	295.7	294.5	292.3	290.4	288.0	284.8	282.5	279.5

# Relative Normal Interest Rate Shocks

DFAST 2023 Market Shocks: Severely Adverse Scenario  
Rates Vega

## Relative Normal Interest Rate Shocks (%)

		MATURITY													
		1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	25Y	30Y
AUD	1M	22.6%	22.1%	21.5%	20.9%	20.4%	18.1%	16.4%	14.2%	13.1%	12.6%	12.6%	12.6%	12.5%	12.5%
	3M	20.6%	20.1%	19.5%	18.9%	18.6%	16.7%	15.6%	14.0%	13.3%	13.1%	13.0%	12.9%	12.9%	12.9%
	6M	17.7%	17.2%	16.7%	16.2%	15.8%	14.9%	14.0%	13.0%	12.3%	12.4%	12.3%	12.2%	12.2%	12.2%
	9M	15.3%	14.9%	14.4%	14.0%	13.6%	13.0%	12.5%	12.1%	11.6%	11.9%	11.8%	11.7%	11.7%	11.7%
	1Y	13.4%	13.0%	12.6%	12.2%	11.8%	11.4%	11.4%	11.4%	11.1%	11.5%	11.3%	11.3%	11.3%	11.2%
	2Y	12.2%	11.8%	11.3%	10.9%	10.5%	10.0%	9.9%	9.4%	9.6%	10.3%	10.2%	10.1%	10.1%	10.1%
	3Y	11.8%	11.4%	10.8%	10.4%	10.0%	9.3%	8.8%	8.5%	8.8%	9.1%	9.0%	9.0%	8.9%	8.9%
	5Y	11.7%	11.2%	10.6%	10.1%	9.7%	8.6%	8.2%	7.9%	8.0%	8.1%	8.0%	7.9%	7.9%	7.9%
	7Y	12.9%	12.3%	11.6%	10.9%	10.5%	9.0%	8.5%	7.9%	7.9%	8.0%	7.9%	7.8%	7.8%	7.8%
	10Y	14.1%	13.5%	12.7%	12.0%	11.4%	10.0%	9.2%	8.4%	8.3%	8.5%	8.3%	8.2%	8.2%	8.0%
	15Y	13.6%	13.0%	12.1%	11.5%	10.9%	9.3%	8.6%	7.8%	7.7%	7.8%	7.6%	7.5%	7.5%	7.5%
	20Y	13.2%	12.6%	11.9%	11.1%	10.5%	9.1%	8.3%	7.5%	7.3%	7.5%	7.3%	7.2%	7.2%	7.1%
30Y	13.0%	12.4%	11.6%	10.9%	10.3%	8.8%	8.0%	7.3%	7.1%	7.1%	6.9%	6.9%	6.8%	6.8%	
EUR	1M	6.2%	6.3%	6.3%	6.3%	6.4%	5.6%	5.9%	5.7%	6.0%	6.1%	6.4%	6.7%	6.8%	6.9%
	3M	5.8%	5.8%	5.8%	5.9%	5.9%	5.5%	5.7%	5.7%	5.8%	6.0%	6.3%	6.5%	6.6%	6.7%
	6M	5.4%	5.4%	5.4%	5.5%	5.5%	5.2%	5.5%	5.5%	5.7%	5.9%	6.1%	6.3%	6.4%	6.5%
	9M	5.0%	5.0%	5.1%	5.1%	5.1%	5.0%	5.2%	5.3%	5.5%	5.7%	5.8%	6.0%	6.2%	6.2%
	1Y	4.7%	4.7%	4.7%	4.8%	4.9%	4.8%	5.0%	5.1%	5.3%	5.4%	5.6%	5.9%	5.9%	6.0%
	2Y	3.6%	3.6%	3.7%	3.8%	3.7%	3.9%	4.1%	4.4%	4.5%	4.8%	5.0%	5.1%	5.3%	5.3%
	3Y	3.0%	3.1%	3.1%	3.2%	3.2%	3.4%	3.5%	3.9%	4.1%	4.3%	4.6%	4.8%	4.9%	4.9%
	5Y	2.3%	2.4%	2.4%	2.5%	2.6%	2.7%	3.0%	3.3%	3.6%	3.9%	4.2%	4.4%	4.5%	4.7%
	7Y	2.0%	2.1%	2.1%	2.2%	2.3%	2.5%	2.7%	3.1%	3.4%	3.7%	4.1%	4.3%	4.4%	4.7%
	10Y	1.9%	1.9%	2.0%	2.0%	2.1%	2.2%	2.5%	2.9%	3.2%	3.4%	4.1%	4.3%	4.6%	4.7%
	15Y	1.7%	1.7%	1.8%	1.9%	1.9%	2.1%	2.4%	2.9%	3.2%	3.7%	4.2%	4.6%	4.8%	5.0%
	20Y	1.7%	1.7%	1.8%	1.9%	1.9%	2.3%	2.5%	3.0%	3.3%	3.7%	4.4%	4.9%	5.1%	5.3%
30Y	1.6%	1.7%	1.7%	1.9%	2.0%	2.3%	2.5%	3.1%	3.6%	4.2%	4.9%	5.5%	5.8%	6.1%	
GBP	1M	3.3%	3.3%	3.3%	3.2%	3.2%	3.0%	3.0%	3.3%	3.4%	3.7%	3.8%	4.0%	4.0%	4.0%
	3M	3.5%	3.5%	3.4%	3.4%	3.3%	3.1%	3.2%	3.4%	3.6%	3.9%	4.0%	4.2%	4.3%	4.3%
	6M	3.4%	3.3%	3.3%	3.2%	3.2%	3.0%	3.0%	3.3%	3.4%	3.8%	4.0%	4.2%	4.3%	
	9M	3.2%	3.2%	3.1%	3.1%	3.1%	2.9%	2.9%	3.1%	3.3%	3.6%	3.8%	4.0%	4.0%	4.1%
	1Y	3.0%	3.0%	3.0%	2.9%	2.9%	2.8%	2.9%	3.0%	3.1%	3.5%	3.7%	3.8%	3.9%	4.0%
	2Y	2.5%	2.5%	2.4%	2.4%	2.3%	2.2%	2.2%	2.4%	2.4%	2.7%	3.0%	3.2%	3.3%	3.5%
	3Y	2.2%	2.2%	2.1%	2.1%	2.0%	1.9%	1.9%	2.0%	2.1%	2.5%	2.8%	3.0%	3.2%	3.4%
	5Y	2.2%	2.1%	2.1%	2.0%	2.0%	1.7%	1.7%	1.8%	1.9%	2.3%	2.6%	2.9%	3.1%	3.4%
	7Y	2.2%	2.2%	2.1%	2.0%	2.0%	1.7%	1.7%	1.8%	1.9%	2.3%	2.8%	3.2%	3.5%	3.8%
	10Y	2.6%	2.5%	2.3%	2.3%	2.2%	2.0%	1.9%	1.9%	2.0%	2.4%	3.0%	3.5%	4.0%	4.4%
	15Y	2.7%	2.6%	2.5%	2.4%	2.3%	2.0%	1.9%	1.9%	2.1%	2.5%	3.1%	3.7%	4.2%	4.8%
	20Y	2.9%	2.8%	2.6%	2.5%	2.5%	2.2%	2.1%	2.0%	2.2%	2.6%	3.2%	3.9%	4.6%	5.0%
30Y	3.1%	3.0%	2.9%	2.7%	2.6%	2.3%	2.2%	2.2%	2.2%	2.6%	3.3%	4.2%	4.8%	5.4%	
JPY	1M	44.3%	43.8%	42.5%	41.6%	40.3%	33.7%	28.1%	17.9%	13.7%	9.9%	7.3%	5.9%	5.4%	5.0%
	3M	39.0%	38.6%	37.4%	36.6%	35.5%	30.7%	25.1%	15.5%	12.1%	9.1%	6.9%	5.6%	5.2%	4.9%
	6M	33.7%	33.0%	32.0%	31.3%	30.7%	26.3%	21.9%	15.0%	12.0%	9.1%	7.0%	5.7%	5.3%	5.0%
	9M	29.4%	28.8%	28.3%	27.4%	26.8%	23.7%	20.1%	14.9%	12.0%	9.4%	7.2%	6.0%	5.7%	5.4%
	1Y	26.5%	26.0%	25.5%	24.7%	24.2%	21.7%	18.7%	14.7%	11.9%	9.7%	7.5%	6.4%	5.9%	5.6%
	2Y	25.3%	24.9%	24.4%	23.7%	23.2%	21.1%	19.1%	15.7%	13.3%	11.1%	9.1%	7.4%	7.1%	6.7%
	3Y	25.4%	25.0%	24.5%	23.8%	23.4%	21.1%	19.3%	16.4%	14.5%	12.5%	10.4%	8.4%	7.9%	7.7%
	5Y	25.8%	25.5%	24.9%	24.4%	23.7%	21.7%	20.1%	17.8%	16.0%	13.9%	11.7%	9.8%	9.2%	8.9%
	7Y	27.1%	26.8%	26.1%	25.7%	25.0%	22.9%	21.1%	18.8%	16.7%	14.8%	12.4%	10.5%	9.9%	9.5%
	10Y	29.0%	28.5%	28.0%	27.3%	26.8%	24.3%	22.4%	19.6%	17.6%	15.5%	12.8%	11.0%	10.6%	10.1%
	15Y	29.5%	29.2%	28.5%	28.0%	27.2%	24.8%	22.7%	19.6%	17.6%	15.6%	13.0%	11.4%	10.8%	10.4%
	20Y	29.6%	29.1%	28.6%	27.9%	27.4%	24.7%	22.5%	19.5%	17.6%	15.6%	13.4%	11.4%	10.8%	10.6%
30Y	29.9%	29.4%	28.6%	28.1%	27.6%	24.9%	22.8%	19.5%	17.6%	15.6%	13.4%	11.6%	11.0%	10.6%	



## Relative Normal Interest Rate Shocks (Continued)

USD															
EXPIRY	1M	17.1%	16.9%	16.6%	16.3%	16.0%	15.5%	14.8%	13.4%	13.5%	13.3%	14.6%	15.3%	15.7%	16.3%
	3M	17.0%	16.8%	16.5%	16.1%	15.8%	12.9%	13.0%	14.0%	13.7%	13.4%	14.1%	14.6%	15.4%	16.1%
	6M	16.6%	16.3%	16.0%	15.6%	15.3%	12.9%	12.7%	13.3%	13.2%	13.2%	13.7%	14.2%	14.5%	15.1%
	9M	15.7%	15.5%	15.1%	14.8%	14.5%	12.1%	11.9%	12.3%	12.5%	12.6%	13.0%	13.7%	14.0%	14.6%
	1Y	14.4%	14.1%	13.8%	13.5%	13.2%	12.5%	11.9%	11.8%	12.0%	12.2%	12.5%	13.1%	13.3%	13.7%
	2Y	12.9%	12.7%	12.3%	12.0%	11.7%	10.7%	10.4%	10.0%	10.0%	10.2%	10.3%	10.7%	11.0%	11.0%
	3Y	12.2%	12.0%	11.6%	11.2%	10.9%	10.1%	9.7%	9.1%	8.9%	8.9%	8.8%	9.0%	9.3%	9.3%
	5Y	11.9%	11.6%	11.1%	10.7%	10.3%	9.6%	8.6%	7.8%	7.5%	7.2%	7.0%	7.1%	7.3%	7.1%
	7Y	12.4%	12.0%	11.6%	11.1%	10.6%	9.6%	8.6%	7.5%	6.8%	6.3%	5.9%	5.9%	6.0%	5.8%
	10Y	13.1%	12.7%	12.1%	11.6%	11.1%	9.6%	8.5%	7.1%	6.4%	5.6%	5.3%	5.2%	5.2%	5.0%
15Y	14.4%	14.0%	13.2%	12.7%	12.1%	10.3%	8.9%	7.1%	6.1%	5.2%	4.7%	4.6%	4.3%	4.2%	
20Y	15.9%	15.3%	14.5%	13.8%	13.1%	10.3%	8.7%	6.7%	6.0%	5.0%	4.3%	4.0%	3.9%	3.6%	
30Y	15.9%	15.3%	14.5%	13.7%	13.0%	11.2%	9.4%	7.0%	5.7%	4.6%	3.8%	3.2%	2.6%	2.2%	

### US MBS Vega

Other Advanced Economies															
EXPIRY	1M	14.6%	14.4%	14.2%	14.0%	13.8%	12.4%	11.3%	9.7%	8.7%	8.3%	8.2%	8.1%	8.1%	8.1%
	3M	13.3%	13.1%	13.0%	12.8%	12.6%	11.6%	10.8%	9.6%	8.9%	8.6%	8.5%	8.4%	8.4%	8.3%
	6M	11.5%	11.3%	11.1%	11.0%	10.8%	10.3%	9.7%	8.9%	8.3%	8.2%	8.0%	8.0%	8.0%	7.9%
	9M	9.9%	9.8%	9.6%	9.5%	9.3%	9.1%	8.7%	8.4%	7.8%	7.9%	7.8%	7.7%	7.7%	7.6%
	1Y	8.7%	8.6%	8.4%	8.3%	8.2%	8.1%	8.0%	7.9%	7.6%	7.5%	7.4%	7.4%	7.4%	7.3%
	2Y	7.9%	7.8%	7.6%	7.5%	7.3%	7.2%	7.2%	6.6%	6.7%	7.0%	6.7%	6.7%	6.6%	6.6%
	3Y	7.7%	7.6%	7.4%	7.3%	7.1%	6.8%	6.5%	6.2%	6.2%	6.2%	6.0%	5.9%	5.9%	5.8%
	5Y	7.6%	7.5%	7.3%	7.1%	7.0%	6.4%	6.2%	5.9%	5.8%	5.6%	5.4%	5.3%	5.3%	5.2%
	7Y	8.4%	8.3%	8.0%	7.8%	7.5%	6.9%	6.5%	5.9%	5.8%	5.6%	5.3%	5.3%	5.1%	5.1%
	10Y	9.3%	9.0%	8.8%	8.5%	8.3%	7.7%	7.2%	6.3%	6.1%	5.8%	5.5%	5.4%	5.4%	5.4%
15Y	8.9%	8.7%	8.4%	8.2%	7.9%	7.2%	6.8%	6.0%	5.6%	5.4%	5.1%	5.0%	5.0%	5.0%	
20Y	8.7%	8.5%	8.2%	7.9%	7.7%	7.1%	6.5%	5.8%	5.5%	5.3%	5.0%	4.9%	4.7%	4.7%	
30Y	8.5%	8.3%	8.0%	7.8%	7.5%	6.8%	6.3%	5.6%	5.2%	5.0%	4.7%	4.6%	4.6%	4.4%	

### Total Emerging Europe

EXPIRY	1M	13.2%	13.0%	12.8%	12.6%	12.4%	12.6%	13.4%	13.9%	14.1%	14.5%	14.8%	15.7%	16.5%	17.3%
	3M	12.9%	12.7%	12.5%	12.3%	12.1%	12.4%	13.1%	13.5%	13.7%	13.9%	14.1%	15.0%	15.8%	16.5%
	6M	12.7%	12.6%	12.3%	12.1%	11.9%	12.3%	12.8%	13.0%	13.0%	13.1%	13.3%	14.1%	14.9%	15.6%
	9M	12.8%	12.6%	12.3%	12.1%	11.9%	12.3%	12.5%	12.4%	12.5%	12.6%	13.3%	14.0%	14.7%	
	1Y	13.2%	13.0%	12.7%	12.5%	12.2%	12.5%	12.4%	12.0%	11.8%	11.9%	12.0%	12.7%	13.3%	13.9%
	2Y	14.5%	14.3%	13.8%	13.6%	13.2%	12.0%	11.3%	10.4%	10.1%	10.0%	10.0%	10.5%	11.0%	11.5%
	3Y	13.2%	12.9%	12.6%	12.2%	11.8%	10.5%	9.8%	9.0%	8.7%	8.6%	8.6%	9.1%	9.6%	10.0%
	5Y	11.7%	11.4%	10.9%	10.6%	10.3%	9.2%	8.5%	7.8%	7.5%	7.0%	7.4%	7.9%	8.2%	8.6%
	7Y	11.0%	10.7%	10.3%	10.0%	9.7%	8.7%	8.2%	7.4%	6.8%	6.7%	7.1%	7.5%	7.8%	8.2%
	10Y	11.7%	11.4%	11.0%	10.6%	10.3%	9.0%	7.8%	6.7%	6.7%	6.8%	7.2%	7.6%	7.8%	8.2%
15Y	14.1%	13.8%	13.1%	12.7%	12.2%	10.8%	9.9%	8.9%	8.5%	8.3%	8.5%	8.7%	9.0%	9.3%	
20Y	16.3%	15.8%	15.3%	14.7%	14.2%	12.3%	11.3%	10.2%	9.7%	9.3%	9.5%	9.7%	10.0%	10.3%	
30Y	21.1%	20.5%	19.7%	18.9%	18.2%	15.9%	14.5%	12.7%	12.0%	11.7%	11.5%	11.7%	12.1%	12.3%	

### Total Latam & Caribbean

EXPIRY	1M	33.2%	32.8%	32.2%	31.6%	31.1%	26.7%	28.3%	31.8%	30.3%	28.4%	27.7%	27.3%	27.0%	26.9%
	3M	30.7%	30.2%	29.7%	29.2%	28.7%	24.7%	26.3%	29.4%	27.9%	26.3%	25.7%	25.5%	25.2%	25.3%
	6M	29.7%	29.3%	28.7%	28.2%	27.7%	23.6%	24.9%	27.4%	26.0%	24.4%	23.9%	23.6%	23.5%	23.6%
	9M	31.4%	30.9%	30.3%	29.7%	29.2%	22.9%	23.7%	25.3%	24.1%	22.9%	22.3%	22.1%	21.9%	22.0%
	1Y	34.0%	33.5%	32.7%	32.0%	31.4%	22.5%	22.8%	23.6%	22.5%	21.6%	21.1%	20.8%	20.6%	20.8%
	2Y	30.4%	29.8%	29.1%	28.3%	27.7%	20.3%	19.7%	19.5%	18.5%	17.8%	17.2%	16.9%	16.8%	17.0%
	3Y	26.1%	25.6%	24.8%	24.2%	23.5%	18.1%	17.2%	16.6%	15.9%	15.3%	14.8%	14.5%	14.7%	14.7%
	5Y	20.1%	19.6%	19.0%	18.4%	17.9%	16.1%	14.9%	13.7%	13.0%	13.0%	12.5%	12.2%	12.2%	12.5%
	7Y	18.5%	18.1%	17.5%	16.9%	16.3%	14.6%	13.7%	12.0%	11.6%	11.5%	10.9%	10.8%	11.0%	11.3%
	10Y	16.6%	16.1%	15.5%	14.9%	14.4%	12.9%	12.0%	11.0%	10.4%	10.4%	9.9%	9.8%	10.3%	10.7%
15Y	15.6%	15.2%	14.6%	14.1%	13.6%	12.1%	11.2%	10.3%	9.5%	9.4%	9.3%	10.0%	10.7%	11.3%	
20Y	14.1%	13.7%	13.1%	12.7%	12.2%	10.9%	10.1%	9.4%	9.2%	9.4%	10.7%	11.8%	12.9%	13.7%	
30Y	51.5%	50.0%	47.9%	46.2%	44.5%	39.3%	36.1%	32.8%	31.8%	32.0%	32.3%	33.4%	34.3%	35.3%	

## Relative Normal Interest Rate Shocks (Continued)

### Total Asia Ex-Japan

EXPIRY	1M	12.3%	12.1%	11.9%	11.7%	11.5%	11.1%	10.8%	10.3%	10.2%	10.0%	10.1%	10.4%	10.7%	11.1%
	3M	11.5%	11.3%	11.1%	10.9%	10.7%	10.5%	10.2%	9.8%	9.6%	9.4%	9.5%	9.8%	10.2%	10.6%
	6M	10.9%	10.8%	10.6%	10.4%	10.2%	9.9%	9.6%	9.1%	9.0%	8.8%	8.6%	8.9%	9.2%	9.5%
	9M	10.6%	10.4%	10.2%	10.0%	9.8%	9.7%	9.3%	9.1%	8.8%	8.7%	8.5%	8.8%	9.1%	9.4%
	1Y	10.3%	10.1%	9.9%	9.7%	9.5%	9.4%	9.1%	9.0%	8.7%	8.7%	8.6%	8.8%	9.1%	9.4%
	2Y	11.3%	11.1%	10.9%	10.5%	10.3%	10.0%	10.0%	8.4%	8.8%	8.7%	8.5%	8.7%	9.1%	9.3%
	3Y	11.9%	11.7%	11.3%	11.0%	10.7%	9.8%	9.6%	9.0%	8.8%	8.4%	8.1%	8.4%	8.6%	8.9%
	5Y	12.7%	12.3%	11.9%	11.5%	11.2%	10.4%	9.8%	8.8%	8.4%	8.0%	7.8%	8.0%	8.3%	8.6%
	7Y	13.3%	13.0%	12.5%	12.1%	11.7%	10.5%	10.0%	8.6%	8.1%	7.9%	7.5%	7.8%	8.0%	8.4%
	10Y	13.5%	13.2%	12.7%	12.3%	11.9%	11.1%	9.9%	8.3%	8.1%	7.7%	7.7%	8.0%	8.2%	8.6%
	15Y	14.4%	14.1%	13.5%	13.1%	12.6%	11.8%	10.6%	9.0%	8.8%	8.4%	8.4%	8.6%	8.8%	9.2%
	20Y	17.1%	16.7%	16.0%	15.4%	14.9%	13.8%	12.5%	10.6%	10.1%	9.5%	9.4%	9.6%	9.7%	10.0%
30Y	21.3%	20.8%	19.9%	19.2%	18.5%	17.0%	15.3%	12.9%	12.3%	11.5%	11.2%	11.3%	11.4%	11.8%	

### Total ME/N. Africa

EXPIRY	1M	8.0%	7.9%	7.7%	7.6%	7.5%	7.6%	8.1%	8.4%	8.5%	8.7%	9.0%	9.5%	10.0%	10.4%
	3M	7.8%	7.7%	7.5%	7.4%	7.3%	7.5%	7.9%	8.1%	8.2%	8.4%	8.6%	9.1%	9.6%	10.1%
	6M	7.7%	7.6%	7.5%	7.3%	7.2%	7.4%	7.8%	7.8%	7.9%	7.9%	8.1%	8.5%	9.0%	9.4%
	9M	7.7%	7.7%	7.5%	7.3%	7.2%	7.5%	7.6%	7.5%	7.5%	7.6%	7.6%	8.1%	8.4%	8.9%
	1Y	8.0%	7.9%	7.7%	7.5%	7.4%	7.6%	7.5%	7.3%	7.1%	7.2%	7.2%	7.7%	8.0%	8.4%
	2Y	8.8%	8.6%	8.4%	8.2%	8.0%	7.2%	6.8%	6.3%	6.1%	6.1%	6.0%	6.4%	6.7%	6.9%
	3Y	7.9%	7.8%	7.6%	7.4%	7.2%	6.4%	6.0%	5.5%	5.3%	5.2%	5.2%	5.6%	5.8%	6.0%
	5Y	7.0%	6.9%	6.7%	6.4%	6.2%	5.5%	5.1%	4.7%	4.6%	4.2%	4.5%	4.7%	5.0%	5.2%
	7Y	6.6%	6.5%	6.3%	6.0%	5.8%	5.3%	4.9%	4.5%	4.1%	4.0%	4.3%	4.5%	4.7%	5.0%
	10Y	7.1%	7.0%	6.7%	6.5%	6.3%	5.5%	4.8%	4.1%	4.1%	4.1%	4.3%	4.6%	4.7%	4.9%
	15Y	8.6%	8.3%	7.9%	7.7%	7.4%	6.5%	6.0%	5.4%	5.1%	5.1%	5.1%	5.3%	5.4%	5.6%
	20Y	9.9%	9.6%	9.3%	8.8%	8.5%	7.4%	6.9%	6.2%	5.9%	5.6%	5.7%	5.8%	6.0%	6.2%
30Y	12.8%	12.4%	11.8%	11.4%	11.1%	9.6%	8.7%	7.7%	7.2%	7.0%	7.1%	7.1%	7.4%	7.4%	

### Total Sub-Saharan Africa

EXPIRY	1M	27.6%	27.2%	26.7%	26.3%	25.9%	20.8%	17.5%	16.5%	16.4%	15.3%	15.1%	15.0%	15.0%	14.9%
	3M	21.2%	20.9%	20.5%	20.1%	19.8%	16.0%	13.9%	14.1%	14.0%	13.0%	12.8%	12.8%	12.7%	12.7%
	6M	18.6%	18.4%	18.0%	17.7%	17.4%	15.3%	13.4%	13.0%	12.7%	11.8%	11.5%	11.5%	11.4%	11.4%
	9M	17.8%	17.5%	17.2%	16.9%	16.5%	14.7%	12.8%	12.6%	12.2%	11.4%	11.2%	11.1%	11.1%	11.0%
	1Y	16.5%	16.2%	15.8%	15.5%	15.2%	14.2%	12.3%	12.1%	11.7%	11.1%	10.8%	10.8%	10.7%	10.7%
	2Y	13.8%	13.5%	13.1%	12.8%	12.5%	12.0%	11.3%	10.5%	10.0%	9.4%	9.2%	9.1%	9.1%	9.0%
	3Y	12.0%	11.8%	11.4%	11.1%	10.9%	10.3%	9.9%	9.5%	9.0%	8.4%	8.2%	8.1%	8.1%	8.1%
	5Y	10.9%	10.6%	10.3%	9.9%	9.6%	9.3%	8.8%	8.3%	7.9%	7.5%	7.2%	7.2%	7.1%	7.1%
	7Y	11.3%	11.0%	10.6%	10.3%	9.9%	8.9%	8.4%	7.7%	7.4%	7.2%	6.9%	6.8%	6.8%	6.7%
	10Y	12.2%	11.8%	11.4%	11.0%	10.7%	9.4%	8.5%	7.2%	6.7%	6.4%	6.1%	6.0%	6.0%	5.9%
	15Y	11.7%	11.3%	10.9%	10.5%	10.2%	9.0%	8.0%	6.7%	6.2%	5.9%	5.6%	5.6%	5.5%	5.5%
	20Y	11.4%	11.1%	10.7%	10.3%	9.9%	8.7%	7.7%	6.5%	6.0%	5.6%	5.4%	5.4%	5.3%	5.2%
30Y	11.2%	10.9%	10.4%	10.0%	9.6%	8.5%	7.5%	6.3%	5.7%	5.4%	5.2%	5.1%	5.0%	5.0%	

# Absolute Normal Interest Rate Shocks

DFAST 2023 Market Shocks: Severely Adverse Scenario  
Rates Vega

## Absolute Normal Interest Rate Shocks (bps)

		MATURITY													
		1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	25Y	30Y
AUD	1M	23.3	22.8	22.2	21.6	21.1	19.8	19.0	18.3	18.1	17.9	17.8	17.8	17.7	17.7
	3M	22.4	21.9	21.2	20.6	20.2	18.8	18.1	17.4	17.1	17.0	16.9	16.8	16.8	16.8
	6M	21.1	20.6	19.9	19.4	18.9	17.6	16.8	16.1	15.9	15.7	15.6	15.5	15.5	15.5
	9M	20.0	19.5	18.8	18.3	17.8	16.5	15.7	15.0	14.8	14.6	14.5	14.4	14.4	14.4
	1Y	19.0	18.5	17.9	17.3	16.8	15.5	14.8	14.1	13.8	13.7	13.5	13.5	13.5	13.4
	2Y	16.3	15.8	15.1	14.6	14.1	12.7	12.0	11.3	11.0	10.9	10.8	10.7	10.7	10.7
	3Y	14.6	14.1	13.4	12.9	12.4	11.1	10.3	9.6	9.4	9.2	9.1	9.1	9.0	9.0
	5Y	12.9	12.4	11.7	11.2	10.7	9.3	8.6	7.9	7.6	7.5	7.4	7.3	7.3	7.3
	7Y	12.1	11.6	10.9	10.3	9.9	8.5	7.8	7.1	6.8	6.7	6.6	6.5	6.5	6.5
	10Y	11.4	10.9	10.3	9.7	9.2	7.9	7.2	6.5	6.2	6.1	6.0	5.9	5.9	5.8
	15Y	11.0	10.5	9.8	9.3	8.8	7.4	6.7	6.0	5.8	5.6	5.5	5.4	5.4	5.4
	20Y	10.7	10.2	9.6	9.0	8.5	7.2	6.5	5.8	5.5	5.4	5.3	5.2	5.2	5.1
30Y	10.5	10.0	9.4	8.8	8.3	7.0	6.2	5.6	5.3	5.1	5.0	5.0	4.9	4.9	
EUR	1M	9.3	9.4	9.4	9.5	9.6	9.8	9.9	10.2	10.4	10.5	10.6	10.7	10.7	10.7
	3M	8.8	8.8	8.9	9.0	9.0	9.3	9.4	9.7	9.8	10.0	10.1	10.2	10.2	10.2
	6M	8.1	8.1	8.2	8.3	8.3	8.5	8.7	9.0	9.1	9.3	9.4	9.5	9.5	9.5
	9M	7.5	7.5	7.6	7.6	7.7	7.9	8.1	8.3	8.5	8.7	8.8	8.8	8.9	8.9
	1Y	6.9	7.0	7.0	7.1	7.2	7.4	7.5	7.8	8.0	8.1	8.2	8.3	8.3	8.3
	2Y	5.3	5.3	5.4	5.4	5.5	5.7	5.9	6.2	6.3	6.5	6.6	6.6	6.7	6.7
	3Y	4.2	4.3	4.3	4.4	4.5	4.7	4.8	5.1	5.3	5.4	5.5	5.6	5.6	5.6
	5Y	3.0	3.1	3.1	3.2	3.3	3.5	3.7	3.9	4.1	4.2	4.3	4.4	4.4	4.5
	7Y	2.4	2.5	2.5	2.6	2.7	2.9	3.1	3.3	3.5	3.6	3.7	3.8	3.8	3.9
	10Y	2.0	2.0	2.1	2.1	2.2	2.4	2.6	2.8	3.0	3.1	3.3	3.3	3.4	3.4
	15Y	1.6	1.6	1.7	1.8	1.8	2.0	2.2	2.5	2.6	2.8	2.9	3.0	3.0	3.0
	20Y	1.4	1.4	1.5	1.6	1.6	1.9	2.0	2.3	2.4	2.6	2.7	2.8	2.8	2.8
30Y	1.2	1.3	1.3	1.4	1.5	1.7	1.8	2.1	2.3	2.4	2.5	2.6	2.6	2.6	
GBP	1M	11.4	11.3	11.2	11.0	10.9	10.6	10.4	10.3	10.3	10.5	10.9	11.3	11.5	11.6
	3M	10.5	10.4	10.2	10.1	10.0	9.7	9.5	9.3	9.4	9.6	10.0	10.3	10.6	10.7
	6M	9.3	9.2	9.1	8.9	8.8	8.5	8.3	8.2	8.2	8.4	8.8	9.2	9.4	9.6
	9M	8.3	8.2	8.1	8.0	7.9	7.5	7.3	7.2	7.3	7.5	7.9	8.2	8.4	8.6
	1Y	7.5	7.4	7.3	7.2	7.1	6.8	6.6	6.4	6.5	6.7	7.1	7.4	7.6	7.8
	2Y	5.5	5.4	5.3	5.2	5.0	4.7	4.5	4.4	4.4	4.6	5.1	5.4	5.6	5.8
	3Y	4.5	4.4	4.3	4.2	4.1	3.7	3.5	3.4	3.4	3.7	4.1	4.4	4.6	4.8
	5Y	3.7	3.6	3.5	3.4	3.3	2.9	2.7	2.6	2.6	2.9	3.3	3.6	3.8	4.0
	7Y	3.4	3.3	3.2	3.1	3.0	2.6	2.5	2.3	2.4	2.6	3.0	3.3	3.5	3.7
	10Y	3.3	3.2	3.0	2.9	2.8	2.5	2.3	2.1	2.2	2.4	2.8	3.1	3.4	3.5
	15Y	3.1	3.0	2.9	2.8	2.7	2.3	2.1	2.0	2.1	2.3	2.7	3.0	3.2	3.4
	20Y	3.1	3.0	2.8	2.7	2.6	2.3	2.1	1.9	2.0	2.2	2.6	2.9	3.2	3.3
30Y	3.0	2.9	2.8	2.6	2.5	2.2	2.0	1.9	1.9	2.1	2.5	2.9	3.1	3.3	
JPY	1M	9.9	9.8	9.5	9.3	9.0	8.2	7.5	6.4	5.6	4.8	4.0	3.6	3.3	3.1
	3M	10.0	9.9	9.6	9.4	9.1	8.3	7.6	6.5	5.7	4.9	4.1	3.7	3.4	3.2
	6M	10.2	10.0	9.7	9.5	9.3	8.4	7.7	6.6	5.9	5.0	4.3	3.8	3.5	3.3
	9M	10.3	10.1	9.9	9.6	9.4	8.6	7.9	6.8	6.0	5.2	4.4	3.9	3.7	3.5
	1Y	10.4	10.2	10.0	9.7	9.5	8.7	8.0	6.9	6.1	5.3	4.5	4.1	3.8	3.6
	2Y	10.8	10.6	10.4	10.1	9.9	9.1	8.4	7.3	6.5	5.7	4.9	4.4	4.2	4.0
	3Y	11.1	10.9	10.7	10.4	10.2	9.3	8.6	7.5	6.8	6.0	5.2	4.7	4.4	4.3
	5Y	11.4	11.3	11.0	10.8	10.5	9.7	9.0	7.9	7.1	6.3	5.5	5.1	4.8	4.6
	7Y	11.6	11.5	11.2	11.0	10.7	9.9	9.2	8.1	7.3	6.5	5.7	5.3	5.0	4.8
	10Y	11.8	11.6	11.4	11.1	10.9	10.1	9.4	8.3	7.5	6.7	5.9	5.4	5.2	5.0
	15Y	11.9	11.8	11.5	11.3	11.0	10.2	9.5	8.4	7.6	6.8	6.0	5.6	5.3	5.1
	20Y	12.0	11.8	11.6	11.3	11.1	10.2	9.5	8.5	7.7	6.9	6.1	5.6	5.3	5.2
30Y	12.1	11.9	11.6	11.4	11.2	10.3	9.6	8.5	7.7	6.9	6.1	5.7	5.4	5.2	

## Absolute Normal Interest Rate Shocks (Continued)

USD																
EXPIRY	1M	29.6	29.2	28.6	28.1	27.6	26.0	24.7	23.1	22.2	21.4	20.8	20.5	20.4	20.3	
	3M	28.5	28.1	27.6	27.0	26.5	24.9	23.7	22.1	21.1	20.3	19.7	19.4	19.3	19.2	
	6M	27.1	26.6	26.1	25.5	25.0	23.4	22.2	20.6	19.6	18.9	18.3	18.0	17.8	17.7	
	9M	25.7	25.3	24.7	24.2	23.7	22.1	20.8	19.2	18.3	17.5	16.9	16.6	16.5	16.4	
	1Y	24.5	24.1	23.6	23.0	22.5	20.9	19.7	18.1	17.1	16.3	15.7	15.5	15.3	15.2	
	2Y	20.9	20.5	19.9	19.4	18.9	17.2	16.0	14.4	13.4	12.7	12.1	11.8	11.6	11.5	
	3Y	18.4	18.0	17.5	16.9	16.4	14.8	13.6	12.0	11.0	10.2	9.6	9.3	9.2	9.1	
	5Y	15.6	15.2	14.6	14.1	13.6	12.0	10.7	9.1	8.2	7.4	6.8	6.5	6.4	6.2	
	7Y	14.1	13.7	13.2	12.6	12.1	10.5	9.3	7.7	6.7	5.9	5.3	5.0	4.9	4.8	
	10Y	13.0	12.6	12.0	11.5	11.0	9.3	8.1	6.5	5.6	4.8	4.2	3.9	3.7	3.6	
	15Y	12.1	11.7	11.1	10.6	10.1	8.4	7.2	5.6	4.6	3.9	3.3	3.0	2.8	2.7	
20Y	11.6	11.2	10.6	10.1	9.6	8.0	6.7	5.1	4.2	3.4	2.8	2.5	2.4	2.3		
30Y	11.2	10.8	10.2	9.7	9.2	7.5	6.3	4.7	3.7	3.0	2.4	2.1	1.9	1.8		

### US MBS Vega

Other Advanced Economies																
EXPIRY	1M	15.1	14.9	14.7	14.5	14.3	13.6	13.1	12.5	12.1	11.8	11.6	11.5	11.5	11.4	
	3M	14.5	14.3	14.1	13.9	13.7	13.0	12.5	11.9	11.5	11.2	11.0	10.9	10.9	10.8	
	6M	13.7	13.5	13.3	13.1	12.9	12.2	11.7	11.1	10.7	10.4	10.2	10.1	10.1	10.0	
	9M	13.0	12.8	12.6	12.4	12.2	11.5	11.0	10.4	10.0	9.7	9.5	9.4	9.4	9.3	
	1Y	12.4	12.2	12.0	11.8	11.6	10.9	10.4	9.8	9.4	9.1	8.9	8.8	8.8	8.7	
	2Y	10.6	10.5	10.2	10.0	9.8	9.2	8.7	8.0	7.7	7.4	7.1	7.1	7.0	7.0	
	3Y	9.6	9.4	9.2	9.0	8.8	8.1	7.6	7.0	6.6	6.3	6.1	6.0	6.0	5.9	
	5Y	8.4	8.3	8.1	7.9	7.7	7.0	6.5	5.9	5.5	5.2	5.0	4.9	4.9	4.8	
	7Y	7.9	7.8	7.5	7.3	7.1	6.5	6.0	5.3	5.0	4.7	4.4	4.4	4.3	4.3	
	10Y	7.5	7.3	7.1	6.9	6.7	6.1	5.6	4.9	4.6	4.2	4.0	3.9	3.9	3.9	
	15Y	7.2	7.0	6.8	6.6	6.4	5.7	5.3	4.6	4.2	3.9	3.7	3.6	3.6	3.6	
20Y	7.0	6.9	6.6	6.4	6.2	5.6	5.1	4.5	4.1	3.8	3.6	3.5	3.4	3.4		
30Y	6.9	6.7	6.5	6.3	6.1	5.4	4.9	4.3	3.9	3.6	3.4	3.3	3.3	3.2		

### Total Emerging Europe

EXPIRY	1M	23.6	23.3	22.9	22.5	22.1	21.0	20.2	19.2	18.7	18.4	18.1	18.0	17.9	17.9
	3M	22.6	22.3	21.9	21.5	21.2	20.0	19.2	18.3	17.8	17.4	17.1	17.0	17.0	16.9
	6M	21.3	21.0	20.6	20.2	19.9	18.7	18.0	17.0	16.5	16.1	15.9	15.8	15.7	15.7
	9M	20.2	19.9	19.5	19.1	18.8	17.6	16.8	15.9	15.4	15.0	14.8	14.6	14.6	14.6
	1Y	19.3	19.0	18.5	18.2	17.8	16.7	15.9	14.9	14.4	14.0	13.8	13.7	13.6	13.6
	2Y	16.5	16.2	15.7	15.4	15.0	13.9	13.1	12.1	11.6	11.2	11.0	10.9	10.8	10.8
	3Y	14.8	14.5	14.1	13.7	13.3	12.2	11.4	10.4	9.9	9.6	9.3	9.2	9.2	9.1
	5Y	13.1	12.8	12.3	11.9	11.6	10.5	9.7	8.7	8.2	7.8	7.6	7.5	7.4	7.4
	7Y	12.2	11.9	11.5	11.1	10.8	9.6	8.9	7.9	7.4	7.0	6.8	6.7	6.6	6.6
	10Y	11.6	11.3	10.9	10.5	10.2	9.0	8.2	7.3	6.8	6.4	6.2	6.1	6.0	6.0
	15Y	11.2	10.9	10.4	10.1	9.7	8.6	7.8	6.8	6.3	5.9	5.7	5.6	5.5	5.5
20Y	10.9	10.6	10.2	9.8	9.5	8.3	7.5	6.6	6.1	5.7	5.5	5.4	5.3	5.3	
30Y	10.7	10.4	10.0	9.6	9.2	8.1	7.3	6.3	5.8	5.5	5.2	5.1	5.1	5.0	

### Total Latam & Caribbean

EXPIRY	1M	60.2	59.4	58.3	57.3	56.4	53.6	51.5	49.0	47.8	46.8	46.2	45.9	45.8	45.7
	3M	57.7	56.9	55.9	54.9	54.0	51.1	49.1	46.6	45.3	44.4	43.7	43.5	43.3	43.2
	6M	54.4	53.7	52.6	51.6	50.7	47.8	45.8	43.3	42.0	41.1	40.5	40.2	40.1	40.0
	9M	51.6	50.8	49.8	48.8	47.9	45.0	43.0	40.5	39.2	38.2	37.6	37.4	37.2	37.1
	1Y	49.1	48.4	47.3	46.3	45.4	42.5	40.5	38.0	36.7	35.8	35.2	34.9	34.8	34.7
	2Y	42.0	41.2	40.2	39.2	38.3	35.4	33.4	30.9	29.6	28.7	28.0	27.8	27.6	27.5
	3Y	37.7	37.0	35.9	34.9	34.0	31.1	29.1	26.6	25.3	24.4	23.8	23.5	23.4	23.3
	5Y	33.3	32.5	31.5	30.5	29.6	26.7	24.7	22.2	20.9	19.9	19.3	19.1	18.9	18.8
	7Y	31.2	30.5	29.4	28.4	27.5	24.6	22.6	20.1	18.8	17.9	17.2	17.0	16.8	16.7
	10Y	29.7	28.9	27.8	26.8	25.9	23.1	21.0	18.5	17.3	16.3	15.7	15.4	15.3	15.2
	15Y	28.5	27.7	26.6	25.7	24.8	21.9	19.8	17.4	16.1	15.1	14.5	14.2	14.1	14.0
20Y	27.9	27.1	26.0	25.1	24.2	21.3	19.2	16.8	15.5	14.5	13.9	13.6	13.5	13.4	
30Y	27.3	26.5	25.4	24.5	23.6	20.7	18.6	16.2	14.9	13.9	13.3	13.1	12.9	12.8	

## Absolute Normal Interest Rate Shocks (Continued)

### Total Asia Ex-Japan

EXPIRY	1M	20.1	19.9	19.5	19.2	18.9	17.9	17.3	16.4	16.0	15.7	15.5	15.4	15.3	15.3
	3M	19.3	19.1	18.7	18.4	18.1	17.1	16.4	15.6	15.2	14.9	14.6	14.6	14.5	14.5
	6M	18.2	18.0	17.6	17.3	17.0	16.0	15.3	14.5	14.1	13.8	13.5	13.5	13.4	13.4
	9M	17.3	17.0	16.7	16.3	16.0	15.1	14.4	13.6	13.1	12.8	12.6	12.5	12.5	12.4
	1Y	16.5	16.2	15.8	15.5	15.2	14.2	13.6	12.7	12.3	12.0	11.8	11.7	11.6	11.6
	2Y	14.1	13.8	13.5	13.1	12.8	11.9	11.2	10.3	9.9	9.6	9.4	9.3	9.3	9.2
	3Y	12.6	12.4	12.0	11.7	11.4	10.4	9.7	8.9	8.5	8.2	8.0	7.9	7.8	7.8
	5Y	11.2	10.9	10.5	10.2	9.9	8.9	8.3	7.4	7.0	6.7	6.5	6.4	6.3	6.3
	7Y	10.5	10.2	9.8	9.5	9.2	8.2	7.6	6.7	6.3	6.0	5.8	5.7	5.6	5.6
	10Y	9.9	9.7	9.3	9.0	8.7	7.7	7.0	6.2	5.8	5.5	5.3	5.2	5.1	5.1
	15Y	9.5	9.3	8.9	8.6	8.3	7.3	6.6	5.8	5.4	5.1	4.9	4.8	4.7	4.7
	20Y	9.3	9.1	8.7	8.4	8.1	7.1	6.4	5.6	5.2	4.9	4.7	4.6	4.5	4.5
30Y	9.1	8.9	8.5	8.2	7.9	6.9	6.2	5.4	5.0	4.7	4.5	4.4	4.3	4.3	

### Total ME/N. Africa

EXPIRY	1M	14.3	14.1	13.8	13.6	13.4	12.7	12.2	11.6	11.3	11.1	11.0	10.9	10.9	10.8
	3M	13.7	13.5	13.2	13.0	12.8	12.1	11.6	11.0	10.7	10.5	10.4	10.3	10.3	10.3
	6M	12.9	12.7	12.5	12.2	12.0	11.3	10.9	10.3	10.0	9.7	9.6	9.5	9.5	9.5
	9M	12.2	12.1	11.8	11.6	11.4	10.7	10.2	9.6	9.3	9.1	8.9	8.9	8.8	8.8
	1Y	11.7	11.5	11.2	11.0	10.8	10.1	9.6	9.0	8.7	8.5	8.3	8.3	8.2	8.2
	2Y	10.0	9.8	9.5	9.3	9.1	8.4	7.9	7.3	7.0	6.8	6.6	6.6	6.6	6.5
	3Y	8.9	8.8	8.5	8.3	8.1	7.4	6.9	6.3	6.0	5.8	5.6	5.6	5.5	5.5
	5Y	7.9	7.7	7.5	7.2	7.0	6.3	5.8	5.3	5.0	4.7	4.6	4.5	4.5	4.5
	7Y	7.4	7.2	7.0	6.7	6.5	5.8	5.4	4.8	4.5	4.2	4.1	4.0	4.0	4.0
	10Y	7.0	6.9	6.6	6.4	6.2	5.5	5.0	4.4	4.1	3.9	3.7	3.7	3.6	3.6
	15Y	6.8	6.6	6.3	6.1	5.9	5.2	4.7	4.1	3.8	3.6	3.4	3.4	3.3	3.3
	20Y	6.6	6.4	6.2	5.9	5.7	5.0	4.6	4.0	3.7	3.4	3.3	3.2	3.2	3.2
30Y	6.5	6.3	6.0	5.8	5.6	4.9	4.4	3.8	3.5	3.3	3.2	3.1	3.1	3.0	

### Total Sub-Saharan Africa

EXPIRY	1M	33.8	33.3	32.7	32.2	31.7	30.0	28.9	27.5	26.8	26.3	25.9	25.8	25.7	25.6
	3M	32.4	32.0	31.3	30.8	30.3	28.7	27.5	26.1	25.4	24.9	24.5	24.4	24.3	24.3
	6M	30.5	30.1	29.5	29.0	28.5	26.8	25.7	24.3	23.6	23.1	22.7	22.6	22.5	22.4
	9M	29.0	28.5	27.9	27.4	26.9	25.2	24.1	22.7	22.0	21.5	21.1	21.0	20.9	20.8
	1Y	27.6	27.1	26.5	26.0	25.5	23.9	22.7	21.3	20.6	20.1	19.7	19.6	19.5	19.4
	2Y	23.6	23.1	22.5	22.0	21.5	19.9	18.7	17.3	16.6	16.1	15.7	15.6	15.5	15.4
	3Y	21.2	20.7	20.1	19.6	19.1	17.5	16.3	14.9	14.2	13.7	13.3	13.2	13.1	13.1
	5Y	18.7	18.3	17.7	17.1	16.6	15.0	13.8	12.4	11.7	11.2	10.8	10.7	10.6	10.6
	7Y	17.5	17.1	16.5	15.9	15.4	13.8	12.7	11.3	10.6	10.0	9.7	9.5	9.5	9.4
	10Y	16.7	16.2	15.6	15.1	14.6	12.9	11.8	10.4	9.7	9.2	8.8	8.7	8.6	8.5
	15Y	16.0	15.5	14.9	14.4	13.9	12.3	11.1	9.7	9.0	8.5	8.1	8.0	7.9	7.9
	20Y	15.6	15.2	14.6	14.1	13.6	11.9	10.8	9.4	8.7	8.1	7.8	7.7	7.6	7.5
30Y	15.3	14.9	14.3	13.7	13.2	11.6	10.5	9.1	8.3	7.8	7.5	7.3	7.2	7.2	

## Other Rates

### DFAST 2023 Market Shocks: Severely Adverse Scenario

#### Other Rates

#### Absolute Change in Inflation (bps)

Currency	MATURITY												
	1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	30Y
AUD	(105.0)	(105.0)	(105.0)	(98.0)	(90.0)	(81.0)	(80.0)	(58.0)	(49.0)	(43.0)	(41.0)	(39.0)	(39.0)
EUR	(115.0)	(115.0)	(115.0)	(110.0)	(106.0)	(68.0)	(54.0)	(45.0)	(39.0)	(32.0)	(31.0)	(30.0)	(30.0)
GBP	(85.0)	(85.0)	(85.0)	(85.0)	(79.0)	(72.0)	(64.0)	(59.0)	(56.0)	(54.0)	(45.0)	(40.0)	(36.0)
JPY	(37.7)	(37.7)	(37.8)	(37.9)	(38.0)	(38.3)	(38.6)	(39.1)	(39.5)	(39.9)	(40.4)	(40.8)	(41.2)
USD	(145.0)	(145.0)	(140.0)	(125.0)	(120.0)	(88.0)	(70.0)	(59.0)	(54.0)	(47.0)	(43.0)	(41.0)	(40.0)
Other	(145.0)	(145.0)	(140.0)	(125.0)	(120.0)	(88.0)	(70.0)	(59.0)	(54.0)	(47.0)	(43.0)	(41.0)	(40.0)

#### Absolute Change in Cross-Currency vs. USD Basis (bps)

(move in bps of spread on non-USD leg)

Currency	MATURITY												
	1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	30Y
AUD	(18.8)	(18.8)	(16.2)	(13.5)	(10.9)	(11.0)	(11.1)	(11.4)	(11.6)	(12.0)	(12.6)	(13.2)	(14.5)
EUR	(32.4)	(32.4)	(28.0)	(23.6)	(19.1)	(18.8)	(18.5)	(17.9)	(17.2)	(16.3)	(14.7)	(13.1)	(10.0)
GBP	(24.7)	(24.7)	(21.2)	(17.8)	(14.4)	(14.3)	(14.2)	(14.0)	(13.8)	(13.5)	(13.0)	(12.5)	(11.5)
JPY	(36.2)	(36.2)	(31.9)	(27.7)	(23.4)	(23.2)	(22.9)	(22.3)	(21.8)	(20.9)	(19.6)	(18.2)	(15.4)
Other	(32.4)	(32.4)	(28.0)	(23.6)	(19.1)	(18.8)	(18.5)	(17.9)	(17.2)	(16.3)	(14.7)	(13.1)	(10.0)

## Appendix 7: Data Notes

The following are descriptions of data through 2022:Q4 (as released through January 12, 2023). The 2022:Q4 values of variables marked with an asterisk (\*) are estimates.

**U.S. real GDP growth\*:** Quarterly percent change in real gross domestic product (chained 2012 dollars), expressed at an annualized rate, Bureau of Economic Analysis (NIPA table 1.1.6, line 1).

**U.S. nominal GDP growth\*:** Quarterly percent change in gross domestic product (current dollars), expressed at an annualized rate, Bureau of Economic Analysis (NIPA table 1.1.5, line 1).

**U.S. real disposable income growth\*:** Quarterly percent change in real disposable personal income (current-dollar values divided by the price index for personal consumption expenditures), expressed at an annualized rate, Bureau of Economic Analysis (NIPA table 2.1, line 27, and NIPA table 1.1.4, line 2).

**U.S. nominal disposable income growth\*:** Quarterly percent change in disposable personal income (current dollars), expressed at an annualized rate, Bureau of Economic Analysis (NIPA table 2.1, line 27).

**U.S. unemployment rate:** Quarterly average of seasonally adjusted monthly unemployment rates for the civilian, non-institutional population aged 16 years and older, Bureau of Labor Statistics (series LNS14000000).

**U.S. CPI inflation:** Percent change in the quarterly average of seasonally adjusted monthly levels of the all-items CPI for all urban consumers (CPI-U), expressed at an annualized rate, Bureau of Labor Statistics (series CUSR0000SA0).

**U.S. 3-month Treasury rate:** Quarterly average of 3-month Treasury bill secondary market rate on a discount basis, H.15 Release, Selected Interest Rates, Federal Reserve Board (series RIFSGFSM03\_N.B).

**U.S. 5-year Treasury yield:** Quarterly average of the yield on 5-year U.S. Treasury notes, constructed for the FRB/US 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. 10-year Treasury yield:** Quarterly average of the yield on 10-year U.S. Treasury notes, constructed for the FRB/US model by Federal Reserve staff based on the Svensson smoothed term structure model; (see Svensson, "Estimating Forward Interest Rates").

**U.S. BBB corporate yield:** Quarterly average of ICE BofAML U.S. Corporate 7-10 Year Yield-to-Maturity Index, ICE Data Indices, LLC, used with permission. (C4A4 series.)

**U.S. mortgage rate:** Quarterly average of weekly series for the interest rate of a conventional, conforming, 30-year fixed-rate mortgage, obtained from the Primary Mortgage Market Survey of the Federal Home Loan Mortgage Corporation.

**U.S. prime rate:** Quarterly average of monthly series, H.15 Release (Selected Interest Rates), Federal Reserve Board (series RIFSPBLP\_N.M).

**U.S. Dow Jones Total Stock Market (Float Cap) Index:** End-of-quarter value via Bloomberg Finance LP.

**U.S. House Price Index\*:** Price Index for Owner-Occupied Real Estate, Z.1 Release (Financial Accounts of the United States),

Federal Reserve Board (series FL075035243.Q divided by 1000).

**U.S. Commercial Real Estate Price Index\*:** Commercial Real Estate Price Index, Z.1 Release (Financial Accounts of the United States), Federal Reserve Board (series FL075035503.Q divided by 1000).

**U.S. Market Volatility Index (VIX):** VIX converted to quarterly frequency using the maximum close-of-day value in any quarter, Chicago Board Options Exchange via Bloomberg Finance LP.

**Euro area real GDP growth\*:** Quarterly percent change in real gross domestic product at an annualized rate, 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:** Percent change in the quarterly average of the harmonized index of consumer prices at an annualized rate, staff calculations based on Statistical Office of the European Communities via Haver.

**Developing Asia real GDP growth\*:** Quarterly percent change in real gross domestic product at an annualized rate, staff calculations based on data from Bank of Korea via Haver; National Bureau of Statistics of China via Haver; Indian Central Statistics Office via Haver; Census and Statistics Department of Hong Kong via Haver; and Taiwan Directorate-General of Budget, Accounting and Statistics via Haver.

**Developing Asia inflation\*:** Percent change in the quarterly average of the consumer price index, or local equivalent, at an annualized rate, staff calculations based on data from National Bureau of Statistics of China via Haver; Indian Ministry of Statistics and Programme Implementation via Haver; Labour Bureau of India via Haver; Statistics Korea (KOSTAT) via Haver; Census and Statistics Department of Hong Kong via Haver; and Taiwan Directorate-General of Budget, Accounting and Statistics via Haver.

**Japan real GDP growth\*:** Quarterly percent change in gross domestic product at an annualized rate from 1980 to present and percent change in gross domestic expenditure at an annualized rate prior to 1980, Cabinet Office of Japan via Haver.

**Japan inflation\*:** Percent change in the quarterly average of the consumer price index at an annualized rate, based on data from the Ministry of Internal Affairs and Communications via Haver.

**U.K. real GDP growth\*:** Quarterly percent change in gross domestic product at an annualized rate, U.K. Office for National Statistics via Haver.

**U.K. inflation\*:** Percent change in the quarterly average of the consumer price index at an annualized rate from 1988 to present and percent change in the quarterly average of the retail prices index prior to 1988, staff calculations based on data from the U.K. Office for National Statistics via Haver.

**Exchange rates:** End-of-quarter exchange rates, H.10 Release (Foreign Exchange Rates), Federal Reserve Board.