



EXPLORATORY ANALYSIS OF RISK TO THE ENTERPRISES

Summary Instructions and Guidance

Accompanying Order Nos.

2024-OR-FNMA-2 AND 2024-OR-FHLMC-2

March 27, 2024



Federal Housing Finance Agency

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I. Overview

As a companion to the 2024 Dodd-Frank Act Stress Tests (DFAST), the Federal Housing Finance Agency (FHFA) will require Fannie Mae and Freddie Mac (the Enterprises) to conduct an exploratory analysis. The exploratory analysis is distinct from the stress test and will complement the analysis of the Enterprises' DFAST results by providing additional insight into the financial strength of the Enterprises. The results of the exploratory analysis would provide additional information on the ability of the Enterprises to withstand stressed macroeconomic conditions of a severe recession combined with elevated interest rates and inflationary pressures. Section 1314 of the Safety and Soundness Act, 12 U.S.C. 4514(a) authorizes the Director of FHFA to require regulated entities, by general or specific order, to submit such reports on their management, activities, and operation as the Director considers appropriate.

The exploratory analysis to be conducted by the Enterprises would include the following two key elements and is similar to the Condition B exploratory analysis prescribed by the Federal Reserve in February 2024.

1. A severe global recession combined with high inflation and elevated interest rates; and
2. A market shock resulting in a sudden dislocation to financial markets due to expectations of a severe recession.

The conditions for the exploratory analysis are not forecasts but represent hypothetical assumptions to assess the financial strength of the Enterprises.

II. FHFA Guidance

The exploratory analysis is based on portfolios as of December 31, 2023. The planning horizon for the exploratory analysis is nine quarters starting with the first quarter of 2024 and extending through the first quarter of 2026. Assumptions for the variables used in this exploratory analysis are identical for both Enterprises and are contained in Appendices 1 through 5.

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 the exploratory analysis in its report to FHFA. 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.



Global Market Shock Assumptions

The global market shock assumptions provided by FHFA are to be applied to the Enterprises' trading securities, available-for-sale securities, and other fair value assets for the exploratory analysis as of December 31, 2023. 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 exploratory analysis. 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 variables in the exploratory analysis, 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 exploratory analysis. 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;
- 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 credit risk transfer (CRT) reinsurance counterparties and the potential losses and effects on capital associated with such a default; or
- 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.¹

The as-of date for the counterparty default scenario component is December 31, 2023 – 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.

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 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 exploratory analysis is consistent with the goals in FHFA's Conservatorship Scorecard.

¹ 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.



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 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 Enterprise should reflect the impact of these changes in accounting standards that have been adopted for financial reporting purposes.

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 exploratory analysis to FHFA on or before June 15, 2024.

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

The Enterprises are required to report the results using the 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 results.

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

Governance

Each board of directors should receive and review the results of the exploratory analysis for compliance with 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 exploratory analysis results.

Evaluation of Exploratory Analysis 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 results, assumptions, or processes are unacceptable.



Appendix 1: FHFA Exploratory Reporting Templates - Enterprises

Exploratory Analysis 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:



Exploratory Analysis of Risk to the Enterprises

Supplied Exploratory Analysis 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, indes, 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



Exploratory Analysis Variables Beyond Those Supplied

Exploratory Conditions (additional variables used beyond those supplied)

Variable Number	Variable Name	Variable Definition
1		
2		
3		
4		
5		



Exploratory Analysis Template Instructions

1. All numbers should be reported in millions.
2. Reported numbers should reflect the 12/31/2023 start date.



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

Income Statement (without establishing DTA VA)	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 ¹											
3 Total net interest income											
4 Other income ²											
5 Total revenue											
6 REO (foreclosed property expense)											
7 Operational risk losses											
8 Administrative expenses											
9 Other expenses											
10 Pre-provision net revenue											
11 (Provision) benefit for credit losses											
12 Derivatives gains (losses)											
13 Trading gains (losses)											
14 Other gains (losses) ³											
15 Global market shock impact on trading securities and held-for-sale loans											
16 Counterparty default losses											
17 Pre-Tax income (loss)											
18 (Provision) benefit for federal income taxes											
19 Extraordinary gains (losses), net of tax effect											
20 Net income (loss)											
21 Global market shock impact on available-for-sale securities											
22 Other comprehensive income											
23 Comprehensive income (loss)											

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

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

³ If applicable includes Security Impairments.



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

Income Statement (with establishing DTA VA)	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 ¹											
3 Total net interest income											
4 Other income ²											
5 Total revenue											
6 REO (foreclosed property expense)											
7 Operational risk losses											
8 Administrative expenses											
9 Other expenses											
10 Pre-provision net revenue											
11 (Provision) benefit for credit losses											
12 Derivatives gains (losses)											
13 Trading gains (losses)											
14 Other gains (losses) ³											
15 Global market shock impact on trading securities and held-for-sale loans											
16 Counterparty default losses											
17 Pre-Tax income (loss)											
18 (Provision) benefit for federal income taxes											
19 Extraordinary gains (losses), net of tax effect											
20 Net income (loss)											
21 Global market shock impact on available-for-sale securities											
22 Other comprehensive income											
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¹ Includes guaranty fees received for managing credit risk on mortgage loans of consolidated trusts/PCs, amortization income, and TCCA fees.

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

³ If applicable includes Security Impairments.



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
Capital Roll Forward (without establishing DTA VA)											
CAPITAL											
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										
8	Ending capital (deficit)										
9	Beginning PSPA funding commitment available										
10	Treasury draw required										
11	Remaining PSPA funding commitment available										
OTHER											
12	Deferred tax assets, net of allowance										
13	Total Assets										



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

Capital Roll Forward (with establishing DTA VA)	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Quarter Cumulative Total
CAPITAL											
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											
8 Ending capital (deficit)											
9 Beginning PSPA funding commitment available											
10 Treasury draw required											
11 Remaining PSPA funding commitment available											
OTHER											
12 Deferred tax assets, net of allowance											
13 Total Assets											



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

	Most Recent Quarter									
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Capital Summary (without establishing DTA VA)										
BALANCE SHEET ITEMS										
1	Senior preferred stock									
2	Junior preferred stock									
3	Common equity									
4	Retained earnings									
5	Accumulated other comprehensive income									
6	Treasury stock									
7	Net worth									
8	Loan loss reserves									
STATUTORY CAPITAL										
9	Core capital (statutory)									
10	Total capital (statutory) = (9 + 8)									
ASSETS										
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)									
ERCF RISK-BASED CAPITAL REQUIREMENTS										
17	Common equity Tier 1 (CET1)									
18	Additional Tier 1 capital (AT1)									
19	Tier 1 capital									
20	Tier 2 capital									
21	RBC Minimum Requirement = (19 + 20)									
22	Stress capital buffer									
23	Stability capital buffer									
24	Countercyclical buffer									
25	Prescribed capital conservation buffer amount (PCCBA) = (22 + 23 + 24)									
26	Total Capital Requirement (RBC Minimum Requirement + PCCBA = 21 + 25)									
LEVERAGE CAPITAL REQUIREMENTS										
27	Leverage capital requirement									
28	Prescribed leverage buffer amount (PLBA)									
29	Total Leverage Requirement and PLBA = (27 + 28)									
30 BINDING CAPITAL REQUIREMENT										
AVAILABLE CAPITAL										
31	CET1 capital									
32	Additional Tier 1 capital									
33	Tier 2 capital									
34	Total capital = (31 + 32 + 33)									



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

	Most Recent Quarter									
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Capital Summary (with establishing DTA VA)										
BALANCE SHEET ITEMS										
1	Senior preferred stock									
2	Junior preferred stock									
3	Common equity									
4	Retained earnings									
5	Accumulated other comprehensive income									
6	Treasury stock									
7	Net worth									
8	Loan loss reserves									
STATUTORY CAPITAL										
9	Core capital (statutory)									
10	Total capital (statutory) = (9 + 8)									
ASSETS										
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)									
ERCF RISK-BASED CAPITAL REQUIREMENTS										
17	Common equity Tier 1 (CET1)									
18	Additional Tier 1 capital (AT1)									
19	Tier 1 capital									
20	Tier 2 capital									
21	RBC Minimum Requirement = (19 + 20)									
22	Stress capital buffer									
23	Stability capital buffer									
24	Countercyclical buffer									
25	Prescribed capital conservation buffer amount (PCCBA) = (22 + 23 + 24)									
26	Total Capital Requirement (RBC Minimum Requirement + PCCBA = 21 + 25)									
LEVERAGE CAPITAL REQUIREMENTS										
27	Leverage capital requirement									
28	Prescribed leverage buffer amount (PLBA)									
29	Total Leverage Requirement and PLBA = (27 + 28)									
30 BINDING CAPITAL REQUIREMENT										
AVAILABLE CAPITAL										
31	CET1 capital									
32	Additional Tier 1 capital									
33	Tier 2 capital									
34	Total capital = (31 + 32 + 33)									



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

Adjusted Total Assets Detail (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									
6	Total on-balance sheet exposures									
OFF-BALANCE SHEET EXPOSURES										
7	Total derivatives exposures									
8	Total exposures for repo-style transactions									
9	Other-off balance sheet exposures									
10	Total off-balance sheet exposures (7 + 8 + 9)									
11	Adjusted Total Assets (6 + 10)									



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

Adjusted Total Assets Detail (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										
6 Total on-balance sheet exposures										
OFF-BALANCE SHEET EXPOSURES										
7 Total derivatives exposures										
8 Total exposures for repo-style transactions										
9 Other-off balance sheet exposures										
10 Total off-balance sheet exposures (7 + 8 + 9)										
11 Adjusted Total Assets (6 + 10)										



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

Portfolio Balances	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 ¹ Whole loans 6 Single-family 7 Multifamily 8 Total retained portfolio 9 Single-family guaranty book of business									

¹ Other includes mortgage revenue bonds and other.



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

Global Market Shock

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	



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

Global Market Shock

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 Exploratory Analysis Template
(Disclosure to FHFA ONLY)**

Trading & Other Fair Value Assets Template
Agencies

	MV (\$MM) Available-for-Sale Securities	MV (\$MM) Trading Securities	Profit/Loss from OAS Widening (AFS)	Profit/Loss from OAS Widening (Trading Secs)
US Residential Agency Products				
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				
Total	\$0	\$0	\$0	\$0
US Commercial Agency Products				
Cash Agency CMBS				
Agency CMBS Derivatives				
Commercial Other / Unspecified				
Total	\$0	\$0	\$0	\$0
Non-US Agency Products				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
Total	\$0	\$0	\$0	\$0



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

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

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
TOTAL PORTFOLIO											
CREDIT EXPENSES (\$s in millions)											
1											
2											
3											
4											
5	Credit Expenses										
LOAN LOSS RESERVE (\$s in millions)											
6											
7											
8											
9											
10	Ending Loan Loss Reserve										
11	Unpaid Principal Balance (\$s in millions)										

¹ Amount depicts the summation of foreclosed property expense and provision for credit losses.



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

Single-Family Credit Overview - Quarterly	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total	
	TOTAL PORTFOLIO											
CREDIT EXPENSES (\$s in millions)												
1	Foreclosed property expense (REO)											
2	Net charge-offs											
3	Credit losses											
4	(Provision) benefit for credit losses											
5	Credit Expenses ¹											
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											
10	Ending Loan Loss Reserve											
11	Unpaid Principal Balance (\$s in millions)											
CURRENT BOOK (as of 12/31/23)												
CREDIT EXPENSES (\$s in millions)												
12	Foreclosed property expense (REO)											
13	Net charge-offs											
14	Credit losses											
15	(Provision) benefit for credit losses											
16	Credit Expenses ¹											
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											
21	Ending Loan Loss Reserve - Current Book											
22	Unpaid Principal Balance (\$s in millions)											
NEW BUSINESS												
CREDIT EXPENSES (\$s in millions)												
23	Foreclosed property expense (REO)											
24	Net charge-offs											
25	Credit losses											
26	(Provision) benefit for credit losses											
27	Credit Expenses ¹											
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											
32	Ending Loan Loss Reserve - New Business											
33	Unpaid Principal Balance (\$s in millions)											

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



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

(\$s in millions)

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

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

² Includes operational risk losses, administrative expenses, gains from partnership investments.

³ Includes counterparty default risk losses.



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

<u>Multifamily Credit Overview - Quarterly</u>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
TOTAL PORTFOLIO											
CREDIT EXPENSES (\$s in millions)											
1											
2											
3											
4											
5	Credit Expenses ¹										
LOAN LOSS RESERVE (\$s in millions)											
6											
7											
8											
9											
10	Ending Loan Loss Reserve										
11	Unpaid Principal Balance (\$s in millions)										

¹ Amount depicts the summation of foreclosed property expense and provision for credit losses.



Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

Multifamily Key Metrics

(\$s in millions)

- 1 Total multifamily market volume (industry)
- 2 Enterprise market share percentage
- 3 New acquisition volume
- 4 Liquidation volume¹
- 5 Securitization volume
- 6 Effective guaranty fee rate² (bps)
- 7 Guaranty portfolio balance
- 8 Loans and securities held in portfolio

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
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¹ Includes property sales and other run-off/prepayments.
² Guaranty fee income divided by weighted average portfolio balance.



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

Credit Risk Transfers - Quarterly	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
(\$s in millions)											
Single-Family											
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										
14	Total Single-Family Income (Loss)										
Multifamily											
MCAS/MSCR ¹											
15	Interest Expense										
16	Other Expenses										
17	Benefits										
MCIRT/MCIP											
18	Premium Expense										
19	Other Expenses										
20	Benefits										
Other ²											
21	Credit Expense										
22	Other Expenses										
23	Benefits										
24	Total Multifamily Income (Loss)										
25	Total Income (Loss)										
NEW CRT ISSUANCES - Single-Family											
26	New SF Reinsurance Transactions (Risk-In-Force)										
27	New SF Capital Markets Transactions (Risk-In-Force)										
28	SF Other New Transactions (Risk-In Force)										
29	Reference Pool Related to New SF CRT Issuances (Quarter)										
30	Total Outstanding SF Reference Pool at End of Quarter										
NEW CRT ISSUANCES - Multifamily											
31	New MF Reinsurance Transactions (Risk-In-Force)										
32	New MF Capital Markets Transactions (Risk-In-Force)										
33	MF Other New Transactions (Risk-In Force)										
34	Reference Pool Related to New MF CRT Issuances (Quarter)										
35	Total Outstanding MF Reference Pool at End of Quarter										

1. Multifamily Capital Markets transactions exclude K-Deals and similar transactions.
2. Includes DUS, K-Deals, SB, and other similar multifamily transactions.



Exploratory Analysis of Risk to the Enterprises

Enterprise Exploratory Analysis Template (Disclosure to FHFA ONLY)

CRT Benefits - Quarterly

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
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(\$s in millions)

Single-Family

CAS/STACR

- 1 2024 and future (prospective) transactions
- 2 2023 transactions
- 3 2022 transactions
- 4 2021 transactions
- 5 2020 and prior transactions

CIRT/ACIS

- 6 2024 and future (prospective) transactions
- 7 2023 transactions
- 8 2022 transactions
- 9 2021 transactions
- 10 2020 and prior transactions

OTHER (Lender Risk Share/Senior Sub)

- 11 All transactions

12 Total Single-Family Benefits*

* These figures should tie to the sum of lines 4, 7, 10, and 13 on the existing "CRT Summary" template.



Enterprise Exploratory Analysis Template (Disclosure to FHFA)

Cumulative Projected Financial Metrics (Q1 2024 - Q1 2026)

Results without establishing valuation allowance on deferred tax assets		Impact of establishing valuation allowance on deferred tax assets	Results with establishing valuation allowance on deferred tax assets	
Billions of dollars	Percent of average assets ⁶		Billions of dollars	Percent of average assets ⁶

- 1 Pre-provision net revenue¹
- 2 (Provision) benefit for credit losses
- 3 Mark-to-market gains (losses)²
- 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)³
- 8 Total comprehensive income (loss)

- 9 Net Worth as of March 31, 2026
- 10 CET1 Capital as of March 31, 2026

- 11 Credit losses⁴
- 12 Credit losses (% of average portfolio balance)⁵

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

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

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

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

⁵ Average portfolio balance over the nine-quarter planning horizon.

⁶ Average total assets over the nine-quarter planning horizon.



Appendix 2: Exploratory Analysis Conditions - 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)
2009 Q1	-4.5	-4.8	-0.3	-3.0	8.3	-2.7	0.2	1.9	3.2	9.1	5.1	3.3	8,044	139	207	56.7
2009 Q2	-0.7	-1.4	2.7	4.3	9.3	2.1	0.2	2.3	3.7	8.1	5.0	3.3	9,343	139	170	42.3
2009 Q3	1.4	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	165	31.3
2009 Q4	4.4	5.7	0.6	3.7	9.9	3.2	0.1	2.3	3.7	5.8	4.9	3.3	11,385	141	154	30.7
2010 Q1	2.0	3.1	2.4	4.0	9.8	0.6	0.1	2.4	3.9	5.6	5.0	3.3	12,033	139	159	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	140	171	45.8
2010 Q3	3.1	4.4	2.2	3.0	9.5	1.2	0.2	1.6	2.9	4.8	4.4	3.3	11,814	137	170	32.9
2010 Q4	2.1	4.5	1.5	4.2	9.5	3.3	0.1	1.5	3.0	4.7	4.4	3.3	13,132	136	172	23.5
2011 Q1	-0.9	1.1	4.1	7.6	9.0	4.3	0.1	2.1	3.5	5.0	4.8	3.3	13,909	133	178	29.4
2011 Q2	2.7	5.5	-0.8	3.2	9.1	4.6	0.0	1.8	3.3	4.8	4.7	3.3	13,844	134	175	22.7
2011 Q3	-0.1	2.3	2.1	4.1	9.0	2.6	0.0	1.1	2.5	4.5	4.3	3.3	11,677	134	172	48.0
2011 Q4	4.6	5.1	0.9	2.2	8.6	1.8	0.0	1.0	2.1	4.8	4.0	3.3	13,019	134	183	45.5
2012 Q1	3.4	5.8	6.3	9.1	8.3	2.3	0.1	0.9	2.1	4.4	3.9	3.3	14,628	135	183	23.0
2012 Q2	1.8	3.5	2.7	3.7	8.2	0.8	0.1	0.8	1.8	4.3	3.8	3.3	14,100	139	182	26.7
2012 Q3	0.6	2.8	-3.1	-2.0	8.0	1.8	0.1	0.7	1.6	3.9	3.6	3.3	14,895	142	185	20.5
2012 Q4	0.5	2.5	11.6	14.1	7.8	2.7	0.1	0.7	1.7	3.6	3.4	3.3	14,835	145	188	22.7
2013 Q1	4.0	5.7	-14.9	-13.7	7.7	1.6	0.1	0.8	1.9	3.7	3.5	3.3	16,396	149	190	19.0
2013 Q2	1.1	1.9	3.1	3.3	7.5	-0.4	0.1	0.9	2.0	3.8	3.7	3.3	16,771	152	201	20.5
2013 Q3	3.4	5.5	1.4	3.1	7.2	2.2	0.0	1.5	2.7	4.7	4.4	3.3	17,718	156	213	17.0
2013 Q4	3.5	5.7	0.6	2.0	6.9	1.5	0.1	1.4	2.8	4.5	4.3	3.3	19,413	159	212	20.3
2014 Q1	-1.4	0.1	4.7	6.7	6.7	2.5	0.0	1.6	2.8	4.4	4.4	3.3	19,711	161	209	21.4
2014 Q2	5.3	7.7	5.1	7.0	6.2	2.1	0.0	1.7	2.7	4.0	4.2	3.3	20,569	162	219	17.0
2014 Q3	5.0	6.7	3.8	5.0	6.1	1.0	0.0	1.7	2.5	3.9	4.1	3.3	20,459	165	223	17.0
2014 Q4	2.0	2.4	5.8	5.3	5.7	-1.0	0.0	1.6	2.3	4.0	4.0	3.3	21,425	167	230	26.3
2015 Q1	3.7	3.4	5.6	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	2.5	4.9	1.2	3.2	5.4	2.8	0.0	1.5	2.2	3.9	3.8	3.3	21,631	171	246	18.9
2015 Q3	1.6	2.7	2.2	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	0.7	0.7	2.3	2.0	5.0	0.0	0.1	1.6	2.2	4.4	3.9	3.3	21,101	176	244	24.4
2016 Q1	2.3	2.0	3.3	3.5	4.9	-0.2	0.3	1.4	2.0	4.5	3.7	3.5	21,179	178	239	28.1
2016 Q2	1.3	4.1	-0.8	1.7	4.9	3.2	0.3	1.3	1.8	3.9	3.6	3.5	21,622	180	248	25.8
2016 Q3	2.9	3.9	2.3	3.7	4.9	1.7	0.3	1.2	1.6	3.5	3.4	3.5	22,469	183	256	18.1
2016 Q4	2.2	4.2	2.6	4.5	4.8	2.6	0.4	1.7	2.2	3.9	3.8	3.5	23,277	186	257	22.5
2017 Q1	2.0	4.1	4.2	6.7	4.6	2.8	0.6	2.0	2.5	4.0	4.2	3.8	24,508	188	252	13.1
2017 Q2	2.3	3.3	4.4	5.3	4.4	0.5	0.9	1.8	2.3	3.8	4.0	4.0	25,125	191	272	16.0
2017 Q3	3.2	5.3	2.8	4.3	4.3	1.9	1.0	1.8	2.3	3.7	3.9	4.3	26,149	194	267	16.0
2017 Q4	4.6	7.2	2.5	5.0	4.2	3.2	1.2	2.1	2.4	3.7	3.9	4.3	27,673	197	271	13.1

Appendix 2: Exploratory Analysis Conditions - 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)
2018 Q1	3.3	5.9	4.3	7.2	4.0	3.4	1.6	2.5	2.8	4.1	4.3	4.5	27,383	200	274	37.3
2018 Q2	2.1	5.1	3.6	5.8	3.9	2.2	1.8	2.8	2.9	4.5	4.5	4.8	28,314	202	275	23.6
2018 Q3	2.5	4.3	4.3	5.7	3.8	1.6	2.0	2.8	2.9	4.5	4.6	5.0	30,190	204	275	16.1
2018 Q4	0.6	2.3	3.9	5.5	3.8	1.6	2.3	2.9	3.0	4.8	4.8	5.3	25,725	206	272	36.1
2019 Q1	2.2	3.6	4.7	5.6	3.9	1.1	2.4	2.5	2.7	4.5	4.4	5.5	29,194	207	284	25.5
2019 Q2	3.4	5.4	-0.3	1.8	3.6	2.9	2.3	2.1	2.4	4.0	4.0	5.5	30,244	209	297	20.6
2019 Q3	4.6	5.9	2.8	3.8	3.6	1.4	2.0	1.7	1.8	3.4	3.7	5.3	30,442	212	294	24.6
2019 Q4	2.6	3.9	2.3	3.9	3.6	2.8	1.6	1.6	1.8	3.3	3.7	4.8	33,035	215	291	20.6
2020 Q1	-5.3	-3.5	2.4	3.7	3.8	1.4	1.1	1.2	1.4	3.4	3.5	4.4	25,985	218	296	82.7
2020 Q2	-28.0	-29.2	45.7	43.2	13.0	-3.8	0.1	0.4	0.7	3.4	3.2	3.3	31,577	220	289	57.1
2020 Q3	34.8	39.7	-13.3	-10.4	8.8	4.6	0.1	0.3	0.6	2.4	3.0	3.3	34,306	227	295	33.6
2020 Q4	4.2	7.1	-7.7	-5.8	6.7	2.8	0.1	0.4	0.9	2.3	2.8	3.3	39,220	236	305	40.3
2021 Q1	5.2	10.9	56.0	63.5	6.2	4.2	0.1	0.6	1.4	2.4	2.9	3.3	41,603	243	309	37.2
2021 Q2	6.2	12.8	-27.6	-23.1	5.9	7.5	0.0	0.8	1.6	2.6	3.0	3.3	44,904	255	317	27.6
2021 Q3	3.3	9.5	-5.2	0.1	5.1	6.6	0.0	0.8	1.4	2.4	2.9	3.3	44,706	266	341	25.7
2021 Q4	7.0	14.6	-5.6	0.7	4.2	8.8	0.1	1.2	1.6	2.7	3.1	3.3	48,634	276	354	31.1
2022 Q1	-2.0	6.2	-9.8	-2.9	3.8	9.2	0.3	1.9	2.0	3.5	3.8	3.3	45,847	290	346	36.5
2022 Q2	-0.6	8.5	-1.4	5.7	3.6	9.7	1.1	3.0	3.0	4.9	5.3	3.9	37,977	298	345	34.8
2022 Q3	2.7	7.2	3.6	8.5	3.5	5.5	2.7	3.3	3.2	5.3	5.6	5.4	36,098	296	351	32.6
2022 Q4	2.6	6.5	2.2	6.4	3.6	4.2	4.0	4.1	3.9	6.1	6.7	6.8	38,521	296	350	33.6
2023 Q1	2.2	6.3	10.8	15.5	3.5	3.8	4.6	3.8	3.7	5.6	6.4	7.7	41,137	299	347	26.5
2023 Q2	2.1	3.8	3.3	5.8	3.6	2.7	5.1	3.7	3.7	5.7	6.5	8.2	44,412	303	354	20.1
2023 Q3	4.9	8.3	0.3	2.9	3.7	3.6	5.3	4.3	4.2	6.0	7.0	8.4	42,789	309	349	18.9
2023 Q4	1.5	3.6	2.2	4.4	3.7	2.8	5.3	4.5	4.5	6.2	7.3	8.5	47,788	311	349	21.7
2024 Q1	-3.8	-2.4	1.0	4.1	4.5	3.4	5.9	4.9	5.0	9.7	7.9	8.9	26,123	261	338	65.0
2024 Q2	-1.8	2.1	-0.5	4.4	5.0	5.1	6.2	5.3	5.1	10.7	8.1	9.2	22,753	241	327	70.0
2024 Q3	-13.2	-8.6	-8.1	-2.9	7.1	6.0	5.9	4.9	5.0	10.8	8.0	8.9	21,791	225	313	61.4
2024 Q4	-7.0	-1.4	-4.5	0.9	8.3	5.9	5.7	4.6	4.8	10.6	7.8	8.7	21,309	214	290	54.5
2025 Q1	-4.4	1.3	-2.8	2.5	9.1	5.6	4.7	4.5	4.7	9.8	7.6	7.7	22,272	207	267	49.1
2025 Q2	-1.8	3.5	-1.7	3.5	9.7	5.4	3.6	4.4	4.6	9.2	7.1	6.6	23,716	202	244	44.8
2025 Q3	0.6	5.8	0.2	5.2	9.8	5.2	3.4	4.3	4.6	8.8	6.8	6.4	25,642	199	223	41.5
2025 Q4	0.9	5.8	0.9	5.7	10.0	5.1	3.3	4.3	4.5	8.4	6.6	6.3	28,049	204	209	38.8
2026 Q1	6.5	12.0	4.7	9.7	9.5	4.9	3.2	4.3	4.5	8.0	6.4	6.2	30,938	210	211	36.6
2026 Q2	6.1	11.2	4.9	9.8	9.0	4.7	3.2	4.2	4.5	7.8	6.3	6.2	33,826	216	213	34.9
2026 Q3	5.7	10.3	4.7	9.5	8.5	4.6	3.1	4.2	4.5	7.5	6.2	6.1	38,159	221	215	33.6
2026 Q4	5.4	9.8	4.5	9.1	8.1	4.4	3.1	4.2	4.5	7.4	6.1	6.1	42,973	227	217	32.5
2027 Q1	5.1	9.0	4.2	8.6	7.8	4.3	3.1	4.2	4.4	7.2	6.1	6.1	47,788	232	219	31.7

Appendix 3: Exploratory Analysis Conditions - 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)
2009 Q1	-11.9	-1.0	1.326	4.2	-1.4	94.3	-18.0	-3.4	99.2	-7.9	-0.2	1.430
2009 Q2	-0.2	0.0	1.402	15.0	2.3	92.3	8.1	-1.7	96.4	-1.3	2.3	1.645
2009 Q3	1.6	1.1	1.463	12.6	4.1	91.3	-0.1	-1.5	89.5	0.2	3.6	1.600
2009 Q4	1.9	1.6	1.433	9.7	5.0	90.7	5.0	-1.4	93.1	1.2	2.8	1.617
2010 Q1	1.5	1.8	1.353	9.6	4.4	89.8	4.2	1.0	93.4	3.8	4.2	1.519
2010 Q2	3.9	1.9	1.229	9.5	3.4	91.1	5.0	-1.4	88.5	4.4	3.3	1.495
2010 Q3	1.8	1.6	1.360	8.8	4.2	88.4	7.4	-2.0	83.5	2.2	2.2	1.573
2010 Q4	2.4	2.6	1.327	9.6	7.5	87.4	-3.2	1.3	81.7	0.4	3.9	1.539
2011 Q1	3.5	3.7	1.418	9.6	6.2	86.5	-4.2	-0.1	82.8	1.0	7.0	1.605
2011 Q2	0.0	3.1	1.452	6.8	5.4	85.3	-3.4	-0.8	80.6	0.5	4.6	1.607
2011 Q3	0.5	1.3	1.345	5.6	5.3	87.4	10.1	0.4	77.0	1.2	3.5	1.562
2011 Q4	-1.6	3.5	1.297	6.5	3.0	87.3	-0.5	-0.6	77.0	0.6	3.4	1.554
2012 Q1	-1.0	2.9	1.333	7.6	3.2	86.3	5.6	2.3	82.4	3.5	2.3	1.599
2012 Q2	-0.9	2.2	1.267	5.8	3.9	88.1	-3.6	-1.4	79.8	-0.5	1.9	1.569
2012 Q3	-0.4	1.5	1.286	6.6	2.2	86.3	-1.5	-2.0	77.9	3.9	2.1	1.613
2012 Q4	-1.8	2.5	1.319	7.2	3.5	86.0	-0.2	0.1	86.6	-0.4	4.2	1.626
2013 Q1	-1.4	1.3	1.282	6.7	4.5	86.3	5.6	0.6	94.2	1.1	3.0	1.519
2013 Q2	2.2	0.2	1.301	6.2	2.8	87.2	3.7	0.0	99.2	2.9	1.5	1.521
2013 Q3	1.2	1.1	1.354	7.7	3.7	86.6	3.9	2.7	98.3	3.4	2.1	1.618
2013 Q4	1.2	0.5	1.378	6.8	3.8	85.8	-0.4	2.4	105.3	2.8	1.7	1.657
2014 Q1	1.6	0.9	1.378	6.1	1.4	86.9	3.2	1.1	103.0	3.3	1.8	1.668
2014 Q2	0.9	-0.4	1.369	7.4	2.6	86.7	-7.0	8.2	101.3	3.6	1.4	1.711
2014 Q3	1.9	0.1	1.263	6.6	2.5	87.0	0.4	1.9	109.7	3.0	0.8	1.622
2014 Q4	1.4	0.0	1.210	5.8	0.9	88.1	1.9	-0.8	119.9	2.9	-0.3	1.558
2015 Q1	2.6	-0.8	1.074	6.3	0.9	88.1	6.2	0.1	120.0	1.2	-1.3	1.485
2015 Q2	1.9	2.4	1.115	6.9	2.8	88.5	0.6	1.2	122.1	2.4	0.8	1.573
2015 Q3	1.6	-0.2	1.116	6.5	2.8	91.1	0.4	0.1	119.8	1.6	0.7	1.512
2015 Q4	1.8	-0.4	1.086	5.7	1.1	92.3	-0.7	-0.8	120.3	2.3	0.0	1.475
2016 Q1	2.4	-1.4	1.139	6.9	3.1	91.8	2.9	-0.5	112.4	1.5	0.0	1.438
2016 Q2	0.9	1.5	1.103	7.0	2.9	94.2	-0.5	0.0	102.8	2.3	0.7	1.324
2016 Q3	1.9	1.3	1.124	6.6	1.2	93.7	0.8	-0.4	101.2	1.5	2.0	1.302
2016 Q4	3.2	1.7	1.055	5.8	1.7	97.6	0.6	2.2	116.8	2.6	2.1	1.234
2017 Q1	2.8	2.6	1.070	6.2	1.3	95.2	3.2	-0.7	111.4	3.4	3.8	1.254
2017 Q2	3.2	0.5	1.141	6.7	2.2	94.7	1.6	0.7	112.4	2.6	3.1	1.300
2017 Q3	3.0	1.1	1.181	5.8	2.3	93.7	3.3	0.4	112.6	2.6	2.2	1.340
2017 Q4	3.2	1.6	1.202	6.0	2.5	91.1	0.5	1.8	112.7	2.9	3.0	1.353

Appendix 3: Exploratory Analysis Conditions - 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)
2018 Q1	0.0	1.8	1.232	8.4	2.5	89.1	0.3	1.9	106.2	0.2	2.5	1.403
2018 Q2	2.3	2.3	1.168	6.4	1.8	93.5	1.4	-1.1	110.7	0.7	1.9	1.320
2018 Q3	-0.1	2.8	1.162	2.9	3.0	97.2	-2.2	1.9	113.5	1.3	2.6	1.305
2018 Q4	2.7	0.9	1.146	5.3	1.2	96.3	-0.5	0.7	109.7	0.5	2.1	1.276
2019 Q1	2.5	-0.4	1.123	8.2	1.1	94.5	0.9	-0.4	110.7	2.9	1.0	1.303
2019 Q2	1.4	2.3	1.137	6.4	4.9	96.4	1.5	1.1	107.8	1.3	2.5	1.270
2019 Q3	0.7	1.1	1.091	0.6	3.5	99.8	0.6	0.0	108.1	2.9	1.8	1.231
2019 Q4	0.2	1.1	1.123	3.9	6.7	98.0	-10.6	1.5	108.7	-0.1	0.4	1.327
2020 Q1	-12.9	-0.3	1.102	-23.5	3.8	101.7	2.1	0.0	107.5	-10.4	2.2	1.245
2020 Q2	-38.0	-1.1	1.124	35.8	-2.1	97.5	-27.6	-0.9	107.8	-59.7	-2.0	1.237
2020 Q3	57.5	0.2	1.172	20.5	2.0	95.7	24.0	-0.5	105.6	86.0	1.9	1.292
2020 Q4	-0.1	0.1	1.223	12.8	0.2	92.9	7.6	-2.2	103.2	5.5	0.1	1.366
2021 Q1	1.9	4.9	1.174	5.6	3.2	93.6	1.1	1.6	110.6	-4.0	2.7	1.380
2021 Q2	8.6	2.2	1.185	5.6	1.9	91.6	1.5	-1.7	111.1	32.7	3.3	1.381
2021 Q3	8.6	4.3	1.158	0.7	0.9	92.9	-1.7	1.8	111.5	7.0	5.0	1.347
2021 Q4	2.0	7.2	1.132	7.2	3.6	92.4	4.6	0.4	115.2	6.2	8.6	1.350
2022 Q1	2.7	10.9	1.109	4.2	2.0	92.9	-2.4	3.1	121.4	2.1	8.1	1.315
2022 Q2	3.3	9.9	1.047	-1.1	6.1	98.3	4.4	4.3	135.7	0.3	14.9	1.216
2022 Q3	1.8	9.3	0.978	6.7	2.2	103.9	-0.4	3.7	144.7	-0.3	8.6	1.113
2022 Q4	-0.4	9.7	1.070	1.9	0.7	101.5	1.0	4.5	131.8	0.4	11.4	1.208
2023 Q1	0.4	3.2	1.087	9.3	0.3	100.9	5.0	2.1	132.8	1.0	6.0	1.237
2023 Q2	0.5	2.8	1.092	6.6	1.0	104.7	3.6	3.2	144.5	0.2	7.6	1.271
2023 Q3	-0.5	4.4	1.058	2.5	2.8	106.7	-2.9	2.8	149.4	-0.5	2.0	1.221
2023 Q4	0.0	0.6	1.106	4.6	2.0	104.4	-0.8	2.6	140.9	1.1	3.3	1.274
2024 Q1	-5.8	4.9	1.097	0.2	4.0	105.3	-9.9	4.4	139.8	-4.9	5.5	1.264
2024 Q2	-5.2	5.2	1.089	0.7	4.4	106.1	-7.5	4.6	139.5	-5.3	5.7	1.254
2024 Q3	-4.3	5.0	1.067	1.6	4.4	108.3	-5.7	4.3	139.4	-4.5	5.4	1.229
2024 Q4	-4.1	4.3	1.050	1.7	4.0	110.0	-5.3	3.6	139.2	-4.3	4.7	1.210
2025 Q1	-3.9	3.6	1.046	2.5	3.8	110.5	-4.8	3.0	139.0	-4.1	4.0	1.205
2025 Q2	-3.7	3.1	1.042	2.8	3.6	110.9	-4.4	2.6	139.0	-3.9	3.5	1.200
2025 Q3	1.0	2.7	1.044	4.3	3.4	110.7	1.0	2.2	139.0	1.0	3.1	1.202
2025 Q4	3.6	2.2	1.046	5.1	3.1	110.5	4.5	2.0	139.1	3.5	2.6	1.205
2026 Q1	4.5	1.9	1.054	5.4	2.8	109.6	5.5	1.8	139.2	4.4	2.3	1.214
2026 Q2	5.4	1.7	1.071	5.6	2.6	107.8	6.5	1.7	139.3	5.3	2.1	1.234
2026 Q3	6.3	1.6	1.080	5.8	2.5	107.0	7.0	1.6	139.4	6.2	1.9	1.244
2026 Q4	7.2	1.5	1.089	5.9	2.4	106.1	7.5	1.5	139.5	7.0	1.8	1.254
2027 Q1	8.1	1.4	1.097	5.8	2.4	105.3	8.5	1.5	139.6	7.9	1.8	1.264

Appendix 4: Exploratory Analysis Conditions - Global Market Shocks

Securitized Products

Trading, PE & Other Fair Value Assets

Securitized Products

	RMBS														
	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
Relative MV Shock Based on Current Rating (%)															
AAA Total															
> 9Y	-25.2%	-25.2%	-25.2%	-25.2%	-25.2%	-25.2%	-31.5%	-21.4%	-21.4%	-21.4%	-21.4%	-40.8%	-52.6%	-27.7%	-31.5%
> 6Y and <= 9Y	-26.6%	-26.6%	-26.6%	-26.6%	-26.6%	-26.6%	-33.2%	-22.6%	-22.6%	-22.6%	-22.6%	-33.9%	-45.4%	-29.2%	-33.2%
> 3Y and <= 6Y	-26.9%	-26.9%	-26.9%	-26.9%	-26.9%	-26.9%	-33.6%	-22.8%	-22.8%	-22.8%	-22.8%	-34.2%	-45.6%	-29.5%	-33.6%
<= 3Y	-29.3%	-29.3%	-29.3%	-29.3%	-29.3%	-29.3%	-36.6%	-24.9%	-24.9%	-24.9%	-24.9%	-36.3%	-47.7%	-32.2%	-36.6%
Unspecified Vintage	-29.3%	-29.3%	-29.3%	-29.3%	-29.3%	-29.3%	-36.6%	-24.9%	-24.9%	-24.9%	-24.9%	-40.8%	-52.6%	-32.2%	-36.6%
AA Total															
> 9Y	-29.5%	-29.5%	-29.5%	-29.5%	-29.5%	-29.5%	-36.8%	-25.1%	-25.1%	-25.1%	-25.1%	-40.8%	-52.6%	-32.4%	-36.8%
> 6Y and <= 9Y	-31.5%	-31.5%	-31.5%	-31.5%	-31.5%	-31.5%	-39.4%	-26.8%	-26.8%	-26.8%	-26.8%	-33.9%	-45.4%	-34.7%	-39.4%
> 3Y and <= 6Y	-36.2%	-36.2%	-36.2%	-36.2%	-36.2%	-36.2%	-45.3%	-30.8%	-30.8%	-30.8%	-30.8%	-34.2%	-45.6%	-39.8%	-45.3%
<= 3Y	-29.3%	-29.3%	-29.3%	-29.3%	-29.3%	-29.3%	-36.6%	-24.9%	-24.9%	-24.9%	-24.9%	-36.3%	-47.7%	-32.2%	-36.6%
Unspecified Vintage	-36.2%	-36.2%	-36.2%	-36.2%	-36.2%	-36.2%	-45.3%	-30.8%	-30.8%	-30.8%	-30.8%	-40.8%	-52.6%	-39.8%	-45.3%
A Total															
> 9Y	-36.2%	-36.2%	-36.2%	-36.2%	-36.2%	-36.2%	-45.3%	-30.8%	-30.8%	-30.8%	-30.8%	-40.8%	-52.6%	-39.8%	-45.3%
> 6Y and <= 9Y	-41.0%	-41.0%	-41.0%	-41.0%	-41.0%	-41.0%	-51.3%	-34.9%	-34.9%	-34.9%	-34.9%	-33.9%	-45.4%	-45.1%	-51.3%
> 3Y and <= 6Y	-49.6%	-49.6%	-49.6%	-49.6%	-49.6%	-49.6%	-62.0%	-42.1%	-42.1%	-42.1%	-42.1%	-34.2%	-45.6%	-54.5%	-62.0%
<= 3Y	-39.1%	-39.1%	-39.1%	-39.1%	-39.1%	-39.1%	-48.9%	-33.2%	-33.2%	-33.2%	-33.2%	-36.3%	-47.7%	-43.0%	-48.9%
Unspecified Vintage	-49.6%	-49.6%	-49.6%	-49.6%	-49.6%	-49.6%	-62.0%	-42.1%	-42.1%	-42.1%	-42.1%	-40.8%	-52.6%	-54.5%	-62.0%
BBB Total															
> 9Y	-49.6%	-49.6%	-49.6%	-49.6%	-49.6%	-49.6%	-62.0%	-42.1%	-42.1%	-42.1%	-42.1%	-40.8%	-52.6%	-54.5%	-62.0%
> 6Y and <= 9Y	-49.6%	-49.6%	-49.6%	-49.6%	-49.6%	-49.6%	-62.0%	-42.1%	-42.1%	-42.1%	-42.1%	-33.9%	-45.4%	-54.5%	-62.0%
> 3Y and <= 6Y	-57.2%	-57.2%	-57.2%	-57.2%	-57.2%	-57.2%	-71.5%	-48.6%	-48.6%	-48.6%	-48.6%	-34.2%	-45.6%	-62.9%	-71.5%
<= 3Y	-58.5%	-58.5%	-58.5%	-58.5%	-58.5%	-58.5%	-73.1%	-49.7%	-49.7%	-49.7%	-49.7%	-36.3%	-47.7%	-64.3%	-73.1%
Unspecified Vintage	-58.5%	-58.5%	-58.5%	-58.5%	-58.5%	-58.5%	-73.1%	-49.7%	-49.7%	-49.7%	-49.7%	-40.8%	-52.6%	-64.3%	-73.1%
BB Total															
> 9Y	-58.5%	-58.5%	-58.5%	-58.5%	-58.5%	-58.5%	-73.1%	-49.7%	-49.7%	-49.7%	-49.7%	-40.8%	-52.6%	-64.3%	-73.1%
> 6Y and <= 9Y	-61.9%	-61.9%	-61.9%	-61.9%	-61.9%	-61.9%	-77.4%	-52.6%	-52.6%	-52.6%	-52.6%	-33.9%	-45.4%	-68.1%	-77.4%
> 3Y and <= 6Y	-59.7%	-59.7%	-59.7%	-59.7%	-59.7%	-59.7%	-74.6%	-50.7%	-50.7%	-50.7%	-50.7%	-34.2%	-45.6%	-65.6%	-74.6%
<= 3Y	-58.5%	-58.5%	-58.5%	-58.5%	-58.5%	-58.5%	-73.1%	-49.7%	-49.7%	-49.7%	-49.7%	-36.3%	-47.7%	-64.3%	-73.1%
Unspecified Vintage	-61.9%	-61.9%	-61.9%	-61.9%	-61.9%	-61.9%	-77.4%	-52.6%	-52.6%	-52.6%	-52.6%	-40.8%	-52.6%	-68.1%	-77.4%
B Total															
> 9Y	-61.9%	-61.9%	-61.9%	-61.9%	-61.9%	-61.9%	-77.4%	-52.6%	-52.6%	-52.6%	-52.6%	-40.8%	-52.6%	-68.1%	-77.4%
> 6Y and <= 9Y	-65.2%	-65.2%	-65.2%	-65.2%	-65.2%	-65.2%	-81.6%	-55.5%	-55.5%	-55.5%	-55.5%	-33.9%	-45.4%	-71.8%	-81.6%
> 3Y and <= 6Y	-65.2%	-65.2%	-65.2%	-65.2%	-65.2%	-65.2%	-81.6%	-55.5%	-55.5%	-55.5%	-55.5%	-34.2%	-45.6%	-71.8%	-81.6%
<= 3Y	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-36.3%	-47.7%	-85.0%	-85.0%
Unspecified Vintage	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-40.8%	-52.6%	-85.0%	-85.0%
<B Total															
> 9Y	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-40.8%	-52.6%	-85.0%	-85.0%
> 6Y and <= 9Y	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-33.9%	-45.4%	-85.0%	-85.0%
> 3Y and <= 6Y	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-34.2%	-45.6%	-85.0%	-85.0%
<= 3Y	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-36.3%	-47.7%	-85.0%	-85.0%
Unspecified Vintage	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-40.8%	-52.6%	-85.0%	-85.0%
NR Total															
> 9Y	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-40.8%	-52.6%	-85.0%	-85.0%
> 6Y and <= 9Y	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-33.9%	-45.4%	-85.0%	-85.0%
> 3Y and <= 6Y	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-34.2%	-45.6%	-85.0%	-85.0%
<= 3Y	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-36.3%	-47.7%	-85.0%	-85.0%
Unspecified Vintage	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-84.1%	-85.0%	-71.5%	-71.5%	-71.5%	-71.5%	-40.8%	-52.6%	-85.0%	-85.0%

Exploratory Analysis of Risk to the Enterprises

Securitized Products

Trading, PE & Other Fair Value Assets

Securitized Products

	ABS							CMBS							Corporate CDO / CLO		Warehouse		Other / Unspecified
	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	
Relative MV Shock Based on Current Rating (%)																			
AAA Total																			
> 9Y	-3.8%	-5.8%	-16.1%	-16.1%	-16.1%	-16.1%	-16.1%	-15.8%	-13.4%	-19.7%	-13.4%	-13.4%	-32.6%	-19.7%	-11.7%	-11.7%	-52.6%	52.6%	-31.5%
> 6Y and <= 9Y	-3.8%	-5.8%	-10.3%	-10.3%	-10.3%	-10.3%	-10.3%	-19.1%	-16.2%	-23.9%	-16.2%	-16.2%	-35.3%	-23.9%	-14.5%	-14.5%	-45.4%	45.4%	-33.2%
> 3Y and <= 6Y	-3.8%	-5.8%	-10.3%	-10.3%	-10.3%	-10.3%	-10.3%	-29.8%	-25.3%	-37.2%	-25.3%	-25.3%	-43.8%	-37.2%	-13.6%	-13.6%	-45.6%	45.6%	-37.2%
<= 3Y	-11.4%	-5.8%	-10.3%	-11.4%	-11.4%	-11.4%	-11.4%	-36.0%	-30.6%	-45.0%	-30.6%	-30.6%	-48.8%	-45.0%	-17.6%	-17.6%	-48.8%	48.8%	-45.0%
Unspecified Vintage	-11.4%	-5.8%	-16.1%	-16.1%	-16.1%	-16.1%	-16.1%	-36.0%	-30.6%	-45.0%	-30.6%	-30.6%	-48.8%	-45.0%	-17.6%	-17.6%	-52.6%	52.6%	-45.0%
AA Total																			
> 9Y	-11.4%	-5.8%	-16.1%	-16.1%	-16.1%	-16.1%	-16.1%	-38.2%	-32.5%	-47.7%	-32.5%	-32.5%	-32.6%	-47.7%	-25.7%	-25.7%	-52.6%	52.6%	-47.7%
> 6Y and <= 9Y	-11.4%	-5.8%	-16.1%	-16.1%	-16.1%	-16.1%	-16.1%	-40.7%	-34.6%	-50.8%	-34.6%	-34.6%	-35.3%	-50.8%	-29.2%	-29.2%	-45.4%	45.4%	-50.8%
> 3Y and <= 6Y	-11.4%	-5.8%	-16.1%	-16.1%	-16.1%	-16.1%	-16.1%	-49.3%	-41.9%	-61.7%	-41.9%	-41.9%	-43.8%	-61.7%	-31.6%	-31.6%	-45.6%	45.6%	-61.7%
<= 3Y	-11.4%	-5.8%	-16.1%	-16.1%	-16.1%	-16.1%	-16.1%	-52.3%	-44.4%	-65.3%	-44.4%	-44.4%	-48.8%	-65.3%	-35.2%	-35.2%	-48.8%	48.8%	-65.3%
Unspecified Vintage	-11.4%	-5.8%	-16.1%	-16.1%	-16.1%	-16.1%	-16.1%	-52.3%	-44.4%	-65.3%	-44.4%	-44.4%	-48.8%	-65.3%	-35.2%	-35.2%	-52.6%	52.6%	-65.3%
A Total																			
> 9Y	-11.4%	-7.7%	-17.8%	-17.8%	-17.8%	-17.8%	-17.8%	-55.3%	-47.0%	-69.2%	-47.0%	-47.0%	-32.6%	-69.2%	-35.2%	-35.2%	-52.6%	52.6%	-69.2%
> 6Y and <= 9Y	-11.4%	-7.7%	-16.1%	-16.1%	-16.1%	-16.1%	-16.1%	-53.1%	-45.1%	-66.3%	-45.1%	-45.1%	-35.3%	-66.3%	-35.8%	-35.8%	-45.4%	45.4%	-66.3%
> 3Y and <= 6Y	-11.4%	-7.7%	-16.1%	-16.1%	-16.1%	-16.1%	-16.1%	-64.4%	-54.8%	-80.6%	-54.8%	-54.8%	-43.8%	-80.6%	-35.2%	-35.2%	-45.6%	45.6%	-80.6%
<= 3Y	-12.7%	-7.2%	-16.1%	-16.1%	-16.1%	-16.1%	-16.1%	-79.0%	-67.2%	-85.0%	-67.2%	-67.2%	-48.8%	-85.0%	-41.3%	-41.3%	-48.8%	48.8%	-85.0%
Unspecified Vintage	-12.7%	-7.7%	-17.8%	-17.8%	-17.8%	-17.8%	-17.8%	-79.0%	-67.2%	-85.0%	-67.2%	-67.2%	-48.8%	-85.0%	-41.3%	-41.3%	-52.6%	52.6%	-85.0%
BBB Total																			
> 9Y	-12.7%	-7.7%	-17.8%	-17.8%	-17.8%	-17.8%	-17.8%	-79.0%	-67.2%	-85.0%	-67.2%	-67.2%	-32.6%	-85.0%	-41.3%	-41.3%	-52.6%	52.6%	-85.0%
> 6Y and <= 9Y	-12.7%	-7.7%	-17.8%	-17.8%	-17.8%	-17.8%	-17.8%	-79.0%	-67.2%	-85.0%	-67.2%	-67.2%	-35.3%	-85.0%	-41.3%	-41.3%	-45.4%	45.4%	-85.0%
> 3Y and <= 6Y	-12.7%	-7.7%	-17.8%	-17.8%	-17.8%	-17.8%	-17.8%	-79.0%	-67.2%	-85.0%	-67.2%	-67.2%	-43.8%	-85.0%	-41.3%	-41.3%	-45.6%	45.6%	-85.0%
<= 3Y	-18.8%	-13.8%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-80.9%	-68.8%	-85.0%	-68.8%	-68.8%	-48.8%	-85.0%	-46.4%	-46.4%	-48.8%	48.8%	-85.0%
Unspecified Vintage	-18.8%	-13.8%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-80.9%	-68.8%	-85.0%	-68.8%	-68.8%	-48.8%	-85.0%	-46.4%	-46.4%	-52.6%	52.6%	-85.0%
BB Total																			
> 9Y	-18.8%	-13.8%	-19.2%	-19.2%	-19.2%	-19.2%	-19.2%	-80.9%	-68.8%	-85.0%	-68.8%	-68.8%	-32.6%	-85.0%	-49.9%	-49.9%	-52.6%	52.6%	-85.0%
> 6Y and <= 9Y	-18.8%	-13.8%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-80.9%	-68.8%	-85.0%	-68.8%	-68.8%	-35.3%	-85.0%	-52.8%	-52.8%	-45.4%	45.4%	-85.0%
> 3Y and <= 6Y	-18.8%	-13.8%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-81.4%	-69.2%	-85.0%	-69.2%	-69.2%	-43.8%	-85.0%	-54.1%	-54.1%	-45.6%	45.6%	-85.0%
<= 3Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-81.4%	-69.2%	-85.0%	-69.2%	-69.2%	-48.8%	-85.0%	-60.5%	-60.5%	-48.8%	48.8%	-85.0%
Unspecified Vintage	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-81.4%	-69.2%	-85.0%	-69.2%	-69.2%	-48.8%	-85.0%	-60.5%	-60.5%	-52.6%	52.6%	-85.0%
B Total																			
> 9Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-81.4%	-69.2%	-85.0%	-69.2%	-69.2%	-32.6%	-85.0%	-60.5%	-60.5%	-52.6%	52.6%	-85.0%
> 6Y and <= 9Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-80.0%	-85.0%	-80.0%	-80.0%	-35.3%	-85.0%	-60.5%	-60.5%	-45.4%	45.4%	-85.0%
> 3Y and <= 6Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-77.2%	-85.0%	-77.2%	-77.2%	-43.8%	-85.0%	-60.5%	-60.5%	-45.6%	45.6%	-85.0%
<= 3Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-77.2%	-85.0%	-77.2%	-77.2%	-48.8%	-85.0%	-68.4%	-68.4%	-48.8%	48.8%	-85.0%
Unspecified Vintage	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-80.0%	-85.0%	-80.0%	-80.0%	-48.8%	-85.0%	-68.4%	-68.4%	-52.6%	52.6%	-85.0%
<B Total																			
> 9Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-80.0%	-85.0%	-80.0%	-80.0%	-32.6%	-85.0%	-68.4%	-68.4%	-52.6%	52.6%	-85.0%
> 6Y and <= 9Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-81.1%	-85.0%	-81.1%	-81.1%	-35.3%	-85.0%	-72.9%	-72.9%	-45.4%	45.4%	-85.0%
> 3Y and <= 6Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-81.1%	-85.0%	-81.1%	-81.1%	-43.8%	-85.0%	-75.3%	-75.3%	-45.6%	45.6%	-85.0%
<= 3Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-81.1%	-85.0%	-81.1%	-81.1%	-48.8%	-85.0%	-75.3%	-75.3%	-48.8%	48.8%	-85.0%
Unspecified Vintage	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-81.1%	-85.0%	-81.1%	-81.1%	-48.8%	-85.0%	-75.3%	-75.3%	-52.6%	52.6%	-85.0%
NR Total																			
> 9Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-80.0%	-85.0%	-80.0%	-80.0%	-32.6%	-85.0%	-68.4%	-68.4%	-52.6%	52.6%	-85.0%
> 6Y and <= 9Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-81.1%	-85.0%	-81.1%	-81.1%	-35.3%	-85.0%	-72.9%	-72.9%	-45.4%	45.4%	-85.0%
> 3Y and <= 6Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-81.1%	-85.0%	-81.1%	-81.1%	-43.8%	-85.0%	-75.3%	-75.3%	-45.6%	45.6%	-85.0%
<= 3Y	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-81.1%	-85.0%	-81.1%	-81.1%	-48.8%	-85.0%	-75.3%	-75.3%	-48.8%	48.8%	-85.0%
Unspecified Vintage	-40.6%	-36.9%	-40.7%	-40.7%	-40.7%	-40.7%	-40.7%	-85.0%	-81.1%	-85.0%	-81.1%	-81.1%	-48.8%	-85.0%	-75.3%	-75.3%	-52.6%	52.6%	-85.0%

Municipals

Trading, PE & Other Fair Value Assets

Munis

	Relative MV Shock (%)	Spread Widening (bps)
Bonds		
AAA		276.5
AA		288.4
A		305.5
BBB		365.5
BB		683.4
B		911.6
<B: Defaulted	-27.5%	
<B: Not Defaulted		1,321.4
<B: Default Status Unknown		1,321.4
NR		1,321.4
Loans		
AAA		276.5
AA		288.4
A		305.5
BBB		365.5
BB		683.4
B		911.6
<B: Defaulted	-27.5%	
<B: Not Defaulted		1,321.4
<B: Default Status Unknown		1,321.4
NR		1,321.4
CDS		
AAA		276.5
AA		288.4
A		305.5
BBB		365.5
BB		683.4
B		911.6
<B: Defaulted	-27.5%	
<B: Not Defaulted		1,321.4
<B: Default Status Unknown		1,321.4
NR		1,321.4
Indices		
AAA		276.5
AA		288.4
A		305.5
BBB		365.5
BB		683.4
B		911.6
<B: Defaulted	-27.5%	
<B: Not Defaulted		1,321.4
<B: Default Status Unknown		1,321.4
NR		1,321.4
Other / Unspecified Munis		
AAA		276.5
AA		288.4
A		305.5
BBB		365.5
BB		683.4
B		911.6
<B: Defaulted	-27.5%	
<B: Not Defaulted		1,321.4
<B: Default Status Unknown		1,321.4
NR		1,321.4

Agencies

Trading, PE & Other Fair Value Assets

Agencies

OAS Widening (bps)

US Residential Agency Products

IOs	351.0
POs	48.3
Other CMOs	77.8
Pass-Throughs	77.8
Agency Debt/Debentures	57.0
IOS Index	351.0
POS Index	48.3
MBX Index	57.8
Other Agency Derivatives	57.0
TBA's	57.8
Reverse Mortgages	78.0
Residential Other / Unspecified	57.8

US Commercial Agency Products

Cash Agency CMBS	91.0
Agency CMBS Derivatives	91.0
Commercial Other / Unspecified	91.0

Non-US Agency Products

AAA	208.0
AA	281.0
A	350.5
BBB	420.0
BB	481.0
B	1,055.0
<B	2,954.0
NR	2,954.0

Exploratory Analysis of Risk to the Enterprises

Rates DV01

2024 Exploratory Analysis Conditions Market Shocks

Rates DV01

Rates Shocks (bps)	MATURITY												
	1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	30Y
AUD Directional Risks													
Governments	(95.8)	(100.5)	(106.4)	(111.3)	(115.4)	(126.1)	(131.7)	(137.1)	(139.6)	(141.4)	(142.9)	(143.6)	(144.3)
Agencies	(95.8)	(100.5)	(106.4)	(111.3)	(115.4)	(126.1)	(131.7)	(137.1)	(139.6)	(141.4)	(142.9)	(143.6)	(144.3)
Municipals	(95.8)	(100.5)	(106.4)	(111.3)	(115.4)	(126.1)	(131.7)	(137.1)	(139.6)	(141.4)	(142.9)	(143.6)	(144.3)
Swaps / Discounting Curve	(99.0)	(103.1)	(108.4)	(112.6)	(116.0)	(124.5)	(128.4)	(131.1)	(131.7)	(131.7)	(131.4)	(131.2)	(130.9)
Instruments shocked by MV**													
Other	(99.0)	(103.1)	(108.4)	(112.6)	(116.0)	(124.5)	(128.4)	(131.1)	(131.7)	(131.7)	(131.4)	(131.2)	(130.9)

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	(68.5)	(70.9)	(74.3)	(77.4)	(80.3)	(89.4)	(96.0)	(104.4)	(109.3)	(113.4)	(116.8)	(118.5)	(120.2)
Agencies	(68.5)	(70.9)	(74.3)	(77.4)	(80.3)	(89.4)	(96.0)	(104.4)	(109.3)	(113.4)	(116.8)	(118.5)	(120.2)
Municipals	(68.5)	(70.9)	(74.3)	(77.4)	(80.3)	(89.4)	(96.0)	(104.4)	(109.3)	(113.4)	(116.8)	(118.5)	(120.2)
Swaps / Discounting Curve	(71.3)	(72.7)	(74.7)	(76.5)	(78.2)	(83.9)	(88.2)	(94.1)	(97.6)	(100.6)	(103.2)	(104.5)	(105.8)
Instruments shocked by MV**													
Other	(71.3)	(72.7)	(74.7)	(76.5)	(78.2)	(83.9)	(88.2)	(94.1)	(97.6)	(100.6)	(103.2)	(104.5)	(105.8)

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	(62.0)	(62.9)	(64.2)	(65.4)	(66.5)	(70.6)	(73.8)	(78.5)	(81.7)	(84.8)	(87.6)	(89.1)	(90.6)
Agencies	(62.0)	(62.9)	(64.2)	(65.4)	(66.5)	(70.6)	(73.8)	(78.5)	(81.7)	(84.8)	(87.6)	(89.1)	(90.6)
Municipals	(62.0)	(62.9)	(64.2)	(65.4)	(66.5)	(70.6)	(73.8)	(78.5)	(81.7)	(84.8)	(87.6)	(89.1)	(90.6)
Swaps / Discounting Curve	(64.5)	(63.9)	(63.2)	(62.8)	(62.6)	(62.8)	(63.9)	(66.6)	(68.8)	(71.1)	(73.4)	(74.6)	(75.8)
Instruments shocked by MV**													
Other	(64.5)	(63.9)	(63.2)	(62.8)	(62.6)	(62.8)	(63.9)	(66.6)	(68.8)	(71.1)	(73.4)	(74.6)	(75.8)

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	(90.6)	(92.0)	(94.0)	(95.8)	(97.6)	(103.7)	(108.6)	(115.8)	(120.6)	(125.3)	(129.6)	(131.8)	(134.2)
Agencies	(90.6)	(92.0)	(94.0)	(95.8)	(97.6)	(103.7)	(108.6)	(115.8)	(120.6)	(125.3)	(129.6)	(131.8)	(134.2)
Municipals	(90.6)	(92.0)	(94.0)	(95.8)	(97.6)	(103.7)	(108.6)	(115.8)	(120.6)	(125.3)	(129.6)	(131.8)	(134.2)
Swaps / Discounting Curve	(93.8)	(94.8)	(96.1)	(97.4)	(98.6)	(102.7)	(106.0)	(110.6)	(113.6)	(116.3)	(118.7)	(119.9)	(121.1)
Instruments shocked by MV**													
Other	(93.8)	(94.8)	(96.1)	(97.4)	(98.6)	(102.7)	(106.0)	(110.6)	(113.6)	(116.3)	(118.7)	(119.9)	(121.1)

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	(93.2)	(96.4)	(100.6)	(104.2)	(107.1)	(115.1)	(119.5)	(123.9)	(125.9)	(127.4)	(128.5)	(129.1)	(129.7)
Governments: Belgium	(79.6)	(81.2)	(83.4)	(85.5)	(87.3)	(93.5)	(98.0)	(103.9)	(107.4)	(110.4)	(112.9)	(114.1)	(115.4)
Governments: Finland	(112.9)	(114.7)	(117.2)	(119.3)	(121.1)	(126.2)	(129.2)	(132.2)	(133.7)	(134.8)	(135.6)	(136.1)	(136.5)
Governments: France	(76.0)	(77.5)	(79.7)	(81.7)	(83.6)	(89.9)	(94.6)	(100.9)	(104.8)	(108.2)	(111.1)	(112.6)	(114.1)
Governments: Germany	(112.1)	(113.9)	(116.4)	(118.8)	(120.9)	(128.1)	(133.5)	(140.6)	(145.0)	(148.8)	(152.0)	(153.7)	(155.3)
Governments: Greece	364.2	353.5	338.6	325.2	312.9	273.8	246.4	212.2	192.8	176.6	163.3	156.6	149.9
Governments: Ireland	223.0	215.1	204.2	194.1	184.9	154.8	133.0	104.8	88.3	74.2	62.5	56.6	50.7
Governments: Italy	367.9	357.9	344.0	331.4	319.9	283.4	257.8	225.9	207.9	192.9	180.6	174.4	168.3
Governments: Netherlands	(98.6)	(100.4)	(102.9)	(105.2)	(107.3)	(114.1)	(119.2)	(125.8)	(129.7)	(133.0)	(135.8)	(137.2)	(138.6)
Governments: Portugal	367.9	357.9	344.0	331.4	319.9	283.4	257.8	225.9	207.9	192.9	180.6	174.4	168.3
Governments: Spain	253.0	245.4	234.8	225.1	216.2	187.0	165.9	138.4	122.3	108.5	97.0	91.2	85.4
Governments: Other	(93.9)	(96.0)	(98.8)	(101.3)	(103.6)	(110.5)	(115.1)	(120.9)	(124.2)	(127.0)	(129.4)	(130.6)	(131.9)
Agencies	(93.9)	(96.0)	(98.8)	(101.3)	(103.6)	(110.5)	(115.1)	(120.9)	(124.2)	(127.0)	(129.4)	(130.6)	(131.9)
Municipals	(93.9)	(96.0)	(98.8)	(101.3)	(103.6)	(110.5)	(115.1)	(120.9)	(124.2)	(127.0)	(129.4)	(130.6)	(131.9)
Swaps / Discounting Curve	(116.8)	(118.3)	(120.4)	(122.3)	(124.1)	(129.7)	(133.7)	(138.5)	(140.9)	(142.5)	(143.1)	(143.0)	(142.7)
Instruments shocked by MV**													
Other	(116.8)	(118.3)	(120.4)	(122.3)	(124.1)	(129.7)	(133.7)	(138.5)	(140.9)	(142.5)	(143.1)	(143.0)	(142.7)

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	(140.6)	(143.4)	(147.2)	(150.6)	(153.5)	(162.7)	(168.6)	(175.4)	(179.0)	(181.8)	(184.0)	(185.2)	(186.3)
Agencies	(140.6)	(143.4)	(147.2)	(150.6)	(153.5)	(162.7)	(168.6)	(175.4)	(179.0)	(181.8)	(184.0)	(185.2)	(186.3)
Municipals	(140.6)	(143.4)	(147.2)	(150.6)	(153.5)	(162.7)	(168.6)	(175.4)	(179.0)	(181.8)	(184.0)	(185.2)	(186.3)
Swaps / Discounting Curve	(140.7)	(143.1)	(146.3)	(149.2)	(151.7)	(159.3)	(164.1)	(169.4)	(172.1)	(174.1)	(175.7)	(176.4)	(177.2)
Instruments shocked by MV**													
Other	(140.7)	(143.1)	(146.3)	(149.2)	(151.7)	(159.3)	(164.1)	(169.4)	(172.1)	(174.1)	(175.7)	(176.4)	(177.2)

GBP 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)

JPY Directional Risks

Governments	(2.3)	(2.5)	(2.7)	(3.0)	(3.2)	(3.9)	(4.5)	(5.4)	(6.0)	(6.6)	(7.2)	(7.5)	(7.8)
Agencies	(2.3)	(2.5)	(2.7)	(3.0)	(3.2)	(3.9)	(4.5)	(5.4)	(6.0)	(6.6)	(7.2)	(7.5)	(7.8)
Municipals	(2.3)	(2.5)	(2.7)	(3.0)	(3.2)	(3.9)	(4.5)	(5.4)	(6.0)	(6.6)	(7.2)	(7.5)	(7.8)
Swaps / Discounting Curve	(3.1)	(3.3)	(3.5)	(3.7)	(3.9)	(4.5)	(5.1)	(5.8)	(6.3)	(6.6)	(6.8)	(6.7)	(6.4)
Instruments shocked by MV**													
Other	(3.1)	(3.3)	(3.5)	(3.7)	(3.9)	(4.5)	(5.1)	(5.8)	(6.3)	(6.6)	(6.8)	(6.7)	(6.4)

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	(84.2)	(87.5)	(91.8)	(95.4)	(98.4)	(106.8)	(111.4)	(116.0)	(118.1)	(119.8)	(121.0)	(121.7)	(122.3)
Agencies	(84.2)	(87.5)	(91.8)	(95.4)	(98.4)	(106.8)	(111.4)	(116.0)	(118.1)	(119.8)	(121.0)	(121.7)	(122.3)
Municipals	(84.2)	(87.5)	(91.8)	(95.4)	(98.4)	(106.8)	(111.4)	(116.0)	(118.1)	(119.8)	(121.0)	(121.7)	(122.3)
Swaps / Discounting Curve	(85.6)	(85.6)	(86.5)	(87.8)	(89.4)	(94.7)	(98.3)	(102.0)	(103.8)	(105.1)	(106.2)	(106.7)	(107.2)
Instruments shocked by MV**													
Other	(85.6)	(85.6)	(86.5)	(87.8)	(89.4)	(94.7)	(98.3)	(102.0)	(103.8)	(105.1)	(106.2)	(106.7)	(107.2)

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	(79.2)	(82.8)	(87.4)	(91.2)	(94.3)	(102.4)	(106.5)	(110.4)	(112.2)	(113.5)	(114.5)	(115.0)	(115.5)
Agencies	(79.2)	(82.8)	(87.4)	(91.2)	(94.3)	(102.4)	(106.5)	(110.4)	(112.2)	(113.5)	(114.5)	(115.0)	(115.5)
Municipals	(79.2)	(82.8)	(87.4)	(91.2)	(94.3)	(102.4)	(106.5)	(110.4)	(112.2)	(113.5)	(114.5)	(115.0)	(115.5)
Swaps / Discounting Curve	(80.4)	(80.6)	(81.8)	(83.3)	(84.9)	(90.1)	(93.3)	(96.3)	(97.7)	(98.8)	(99.6)	(100.0)	(100.4)
Instruments shocked by MV**													
Other	(80.4)	(80.6)	(81.8)	(83.3)	(84.9)	(90.1)	(93.3)	(96.3)	(97.7)	(98.8)	(99.6)	(100.0)	(100.4)

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	(82.8)	(85.6)	(89.3)	(92.6)	(95.6)	(104.5)	(110.3)	(117.0)	(120.4)	(123.2)	(125.3)	(126.4)	(127.5)
Agencies	(82.8)	(85.6)	(89.3)	(92.6)	(95.6)	(104.5)	(110.3)	(117.0)	(120.4)	(123.2)	(125.3)	(126.4)	(127.5)
Municipals	(82.8)	(85.6)	(89.3)	(92.6)	(95.6)	(104.5)	(110.3)	(117.0)	(120.4)	(123.2)	(125.3)	(126.4)	(127.5)
Swaps / Discounting Curve	(85.5)	(87.1)	(89.2)	(91.1)	(92.9)	(98.2)	(101.8)	(106.0)	(108.3)	(110.1)	(111.5)	(112.2)	(112.9)
Instruments shocked by MV**													
Other	(85.5)	(87.1)	(89.2)	(91.1)	(92.9)	(98.2)	(101.8)	(106.0)	(108.3)	(110.1)	(111.5)	(112.2)	(112.9)

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	(91.2)	(95.4)	(101.3)	(106.6)	(111.5)	(127.1)	(138.1)	(151.8)	(159.6)	(166.1)	(171.4)	(174.0)	(176.7)
Agencies	(91.2)	(95.4)	(101.3)	(106.6)	(111.5)	(127.1)	(138.1)	(151.8)	(159.6)	(166.1)	(171.4)	(174.0)	(176.7)
Municipals	(91.2)	(95.4)	(101.3)	(106.6)	(111.5)	(127.1)	(138.1)	(151.8)	(159.6)	(166.1)	(171.4)	(174.0)	(176.7)
Swaps / Discounting Curve	(98.6)	(102.4)	(107.7)	(112.4)	(116.7)	(130.2)	(139.4)	(150.0)	(155.3)	(159.0)	(161.2)	(161.9)	(162.3)
Instruments shocked by MV**													
Other	(98.6)	(102.4)	(107.7)	(112.4)	(116.7)	(130.2)	(139.4)	(150.0)	(155.3)	(159.0)	(161.2)	(161.9)	(162.3)

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

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

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	(91.2)	(95.4)	(101.3)	(106.6)	(111.5)	(127.1)	(138.1)	(151.8)	(159.6)	(166.1)	(171.4)	(174.0)	(176.7)
Agencies	(91.2)	(95.4)	(101.3)	(106.6)	(111.5)	(127.1)	(138.1)	(151.8)	(159.6)	(166.1)	(171.4)	(174.0)	(176.7)
Municipals	(91.2)	(95.4)	(101.3)	(106.6)	(111.5)	(127.1)	(138.1)	(151.8)	(159.6)	(166.1)	(171.4)	(174.0)	(176.7)
Swaps / Discounting Curve	(98.6)	(102.4)	(107.7)	(112.4)	(116.7)	(130.2)	(139.4)	(150.0)	(155.3)	(159.0)	(161.2)	(161.9)	(162.3)
Instruments shocked by MV**													
Other	(98.6)	(102.4)	(107.7)	(112.4)	(116.7)	(130.2)	(139.4)	(150.0)	(155.3)	(159.0)	(161.2)	(161.9)	(162.3)

Rates DV01 (Continued)

Directional Risks: Emerging Europe

BGN	191.4	185.0	176.0	167.7	160.0	134.4	115.4	89.9	74.5	61.0	49.6	43.8	37.9
CZK	191.4	185.0	176.0	167.7	160.0	134.4	115.4	89.9	74.5	61.0	49.6	43.8	37.9
HRK	191.4	185.0	176.0	167.7	160.0	134.4	115.4	89.9	74.5	61.0	49.6	43.8	37.9
HUF	191.4	185.0	176.0	167.7	160.0	134.4	115.4	89.9	74.5	61.0	49.6	43.8	37.9
PLN	79.6	76.1	71.2	66.7	62.4	48.0	37.0	21.7	12.0	3.1	(4.6)	(8.6)	(12.6)
RON	191.4	185.0	176.0	167.7	160.0	134.4	115.4	89.9	74.5	61.0	49.6	43.8	37.9
RUB	399.4	395.2	389.9	385.6	382.0	372.8	367.9	363.4	361.4	359.8	358.6	358.0	357.4
Other Emerging Europe	191.4	185.0	176.0	167.7	160.0	134.4	115.4	89.9	74.5	61.0	49.6	43.8	37.9

Directional Risks: Latin America & Caribbean

ARS	399.4	395.2	389.9	385.6	382.0	372.8	367.9	363.4	361.4	359.8	358.6	358.0	357.4
BRL	399.4	395.2	389.9	385.6	382.0	372.8	367.9	363.4	361.4	359.8	358.6	358.0	357.4
CLP	399.4	395.2	389.9	385.6	382.0	372.8	367.9	363.4	361.4	359.8	358.6	358.0	357.4
COP	399.4	395.2	389.9	385.6	382.0	372.8	367.9	363.4	361.4	359.8	358.6	358.0	357.4
MXN	399.4	395.2	389.9	385.6	382.0	372.8	367.9	363.4	361.4	359.8	358.6	358.0	357.4
PEN	399.4	395.2	389.9	385.6	382.0	372.8	367.9	363.4	361.4	359.8	358.6	358.0	357.4
VEF	399.4	395.2	389.9	385.6	382.0	372.8	367.9	363.4	361.4	359.8	358.6	358.0	357.4
Other Latam & Caribbean	399.4	395.2	389.9	385.6	382.0	372.8	367.9	363.4	361.4	359.8	358.6	358.0	357.4

Directional Risks: Asia Ex-Japan

CNY	(12.6)	(13.3)	(14.4)	(15.4)	(16.3)	(19.2)	(21.3)	(24.0)	(25.6)	(27.0)	(28.1)	(28.7)	(29.3)
HKD	(65.5)	(69.8)	(75.4)	(80.2)	(84.4)	(96.2)	(103.3)	(110.7)	(114.3)	(117.1)	(119.2)	(120.3)	(121.3)
IDR	(56.1)	(58.7)	(62.1)	(65.0)	(67.5)	(74.6)	(78.9)	(83.4)	(85.7)	(87.6)	(89.0)	(89.8)	(90.5)
INR	(56.1)	(58.7)	(62.1)	(65.0)	(67.5)	(74.6)	(78.9)	(83.4)	(85.7)	(87.6)	(89.0)	(89.8)	(90.5)
KRW	(42.1)	(43.0)	(44.2)	(45.4)	(46.4)	(49.9)	(52.4)	(55.8)	(57.8)	(59.5)	(61.0)	(61.7)	(62.4)
MYR	(56.1)	(58.7)	(62.1)	(65.0)	(67.5)	(74.6)	(78.9)	(83.4)	(85.7)	(87.6)	(89.0)	(89.8)	(90.5)
PHP	(56.1)	(58.7)	(62.1)	(65.0)	(67.5)	(74.6)	(78.9)	(83.4)	(85.7)	(87.6)	(89.0)	(89.8)	(90.5)
SGD	(52.1)	(53.9)	(56.3)	(58.5)	(60.6)	(67.0)	(71.6)	(77.3)	(80.5)	(83.1)	(85.3)	(86.4)	(87.5)
THB	(45.1)	(47.5)	(50.6)	(53.3)	(55.5)	(61.7)	(65.1)	(68.6)	(70.2)	(71.4)	(72.4)	(72.8)	(73.3)
TWD	(65.5)	(69.8)	(75.4)	(80.2)	(84.4)	(96.2)	(103.3)	(110.7)	(114.3)	(117.1)	(119.2)	(120.3)	(121.3)
Other Asia Ex-Japan	(56.1)	(58.7)	(62.1)	(65.0)	(67.5)	(74.6)	(78.9)	(83.4)	(85.7)	(87.6)	(89.0)	(89.8)	(90.5)

Directional Risks: Middle East/North Africa

ILS	(59.5)	(61.5)	(64.0)	(66.3)	(68.3)	(74.1)	(77.8)	(81.8)	(83.8)	(85.4)	(86.6)	(87.2)	(87.8)
TRY	126.7	126.3	125.9	125.6	125.3	124.5	124.0	123.5	123.3	123.1	123.0	122.9	122.9
Other Middle East/Africa	126.7	126.3	125.9	125.6	125.3	124.5	124.0	123.5	123.3	123.1	123.0	122.9	122.9

Directional Risks: Sub-Saharan Africa

ZAR	171.7	171.7	171.7	171.7	171.8	171.9	172.0	172.1	172.3	172.5	172.7	172.9	173.1
Other Sub-Saharan Africa	171.7	171.7	171.7	171.7	171.8	171.9	172.0	172.1	172.3	172.5	172.7	172.9	173.1

Relative Normal Interest Rate Shocks

2024 Exploratory Analysis Conditions Market Shocks
Rates Vega

Relative Normal Interest Rate Shocks (%)

		MATURITY														
		1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	25Y	30Y	
AUD	EXPIRY	1M	95.8%	94.6%	92.9%	91.3%	89.8%	71.8%	61.1%	52.6%	50.5%	49.0%	47.4%	46.7%	46.4%	46.2%
		3M	85.6%	84.5%	82.9%	81.4%	80.1%	67.5%	59.8%	52.9%	50.5%	49.5%	47.9%	47.1%	46.8%	46.5%
		6M	75.9%	74.9%	73.5%	72.1%	70.8%	62.2%	55.4%	49.9%	47.3%	46.0%	44.4%	43.7%	43.3%	43.0%
		9M	70.2%	69.2%	67.8%	66.5%	65.2%	57.8%	52.5%	47.3%	44.6%	43.2%	41.6%	40.9%	40.4%	40.3%
		1Y	65.1%	64.1%	62.8%	61.5%	60.3%	54.1%	49.5%	44.7%	42.0%	40.9%	39.2%	38.5%	38.1%	38.0%
		2Y	54.2%	53.3%	52.0%	50.7%	49.5%	44.7%	41.2%	37.4%	35.8%	35.0%	33.1%	32.4%	32.0%	31.8%
		3Y	49.9%	48.9%	47.6%	46.2%	45.1%	40.8%	38.6%	34.6%	32.9%	31.6%	29.6%	28.8%	28.3%	28.0%
		5Y	48.9%	47.7%	46.2%	44.6%	43.3%	37.5%	33.7%	29.4%	27.0%	25.0%	22.9%	21.9%	21.5%	21.1%
		7Y	46.4%	45.3%	43.6%	42.1%	40.5%	36.1%	32.5%	27.6%	24.7%	22.5%	20.0%	18.9%	18.4%	18.1%
		10Y	45.9%	44.7%	42.9%	41.2%	39.6%	34.3%	30.2%	24.7%	21.5%	18.9%	16.3%	15.2%	14.6%	14.3%
		15Y	42.7%	41.5%	39.7%	38.0%	36.4%	31.2%	27.0%	21.4%	18.1%	15.5%	12.8%	11.7%	11.1%	10.9%
		20Y	41.2%	39.9%	38.1%	36.5%	34.8%	29.7%	25.6%	19.9%	16.5%	13.8%	11.3%	10.2%	9.6%	9.2%
	30Y	39.8%	38.5%	36.7%	35.1%	33.4%	28.1%	24.0%	18.4%	15.1%	12.3%	9.6%	8.5%	7.9%	7.7%	
EUR	EXPIRY	1M	159.4%	159.8%	160.3%	160.7%	161.0%	91.5%	82.4%	73.5%	70.7%	67.7%	63.9%	62.0%	64.5%	68.8%
		3M	106.9%	107.2%	107.5%	107.8%	108.0%	77.1%	71.8%	66.4%	65.0%	63.4%	62.1%	61.5%	62.8%	64.5%
		6M	77.0%	77.1%	77.3%	77.6%	77.8%	65.2%	63.5%	61.2%	60.5%	59.5%	58.9%	58.7%	59.6%	60.6%
		9M	65.2%	65.4%	65.6%	65.8%	65.9%	59.4%	59.2%	57.8%	57.2%	56.3%	56.4%	56.6%	57.1%	57.4%
		1Y	58.8%	59.0%	59.2%	59.3%	59.5%	55.8%	56.3%	55.7%	54.8%	53.9%	54.5%	54.8%	55.1%	54.9%
		2Y	45.9%	46.0%	46.2%	46.4%	46.5%	46.1%	46.9%	46.6%	46.9%	46.0%	46.7%	47.0%	47.0%	46.6%
		3Y	38.8%	39.0%	39.2%	39.3%	39.4%	39.7%	40.6%	40.8%	40.7%	40.3%	40.8%	40.9%	41.0%	40.7%
		5Y	30.1%	30.2%	30.4%	30.6%	30.8%	31.2%	31.6%	32.1%	32.1%	31.7%	31.7%	31.5%	31.4%	31.1%
		7Y	24.4%	24.5%	24.7%	24.9%	25.0%	25.5%	26.1%	26.4%	26.4%	26.1%	25.7%	25.2%	24.9%	24.6%
		10Y	18.9%	19.2%	19.4%	19.5%	19.7%	20.1%	20.7%	21.1%	21.0%	20.5%	19.8%	18.8%	18.2%	17.6%
		15Y	13.8%	14.0%	14.2%	14.4%	14.7%	15.2%	15.7%	16.2%	15.9%	15.1%	13.8%	12.5%	11.6%	10.9%
		20Y	11.0%	11.2%	11.5%	11.6%	11.9%	12.4%	12.9%	13.3%	13.0%	12.0%	8.5%	7.4%	6.5%	
	30Y	7.8%	8.1%	8.4%	8.6%	8.9%	9.5%	9.9%	10.3%	9.9%	8.5%	6.2%	3.9%	2.3%	1.1%	
GBP	EXPIRY	1M	125.1%	123.1%	120.1%	117.4%	114.7%	93.6%	82.0%	69.3%	66.2%	66.2%	64.5%	65.3%	65.2%	65.5%
		3M	120.9%	118.9%	115.9%	113.2%	110.5%	89.9%	79.3%	66.0%	62.8%	62.6%	60.7%	61.5%	61.4%	61.6%
		6M	112.1%	110.1%	107.2%	104.5%	101.9%	83.8%	75.2%	64.6%	60.4%	58.7%	57.0%	57.2%	57.3%	57.2%
		9M	99.3%	97.4%	94.7%	92.3%	89.9%	77.7%	70.8%	62.8%	57.8%	55.0%	52.9%	53.2%	53.5%	54.2%
		1Y	87.9%	86.2%	83.7%	81.4%	79.2%	72.4%	67.6%	61.0%	55.2%	51.5%	49.1%	49.4%	49.2%	49.2%
		2Y	74.8%	73.1%	70.7%	68.4%	66.3%	60.0%	55.4%	50.7%	44.6%	39.8%	37.0%	36.4%	35.9%	35.7%
		3Y	68.4%	66.7%	64.2%	61.9%	59.7%	53.2%	49.0%	43.6%	37.1%	31.7%	28.7%	27.8%	27.5%	27.4%
		5Y	62.2%	60.4%	57.8%	55.4%	53.1%	45.8%	41.1%	34.8%	29.1%	24.4%	20.7%	19.5%	19.2%	19.1%
		7Y	64.9%	62.9%	60.0%	57.3%	54.7%	45.9%	40.3%	32.4%	26.4%	21.3%	17.3%	15.7%	15.3%	15.1%
		10Y	68.9%	66.6%	63.4%	60.3%	57.4%	48.1%	41.6%	32.3%	25.6%	20.0%	15.6%	14.0%	13.6%	13.5%
		15Y	76.4%	73.8%	70.1%	66.5%	63.2%	52.5%	44.1%	32.1%	24.0%	17.0%	12.5%	10.7%	10.3%	10.1%
		20Y	82.6%	79.7%	75.6%	71.8%	68.1%	56.3%	47.1%	33.9%	24.4%	16.4%	11.5%	9.6%	9.1%	8.8%
	30Y	88.8%	85.7%	81.2%	77.0%	73.0%	60.4%	50.0%	35.3%	24.9%	16.1%	10.9%	8.9%	8.2%	7.8%	
JPY	EXPIRY	1M	36.7%	37.8%	39.2%	40.2%	41.6%	37.7%	34.4%	28.5%	28.5%	28.1%	27.1%	26.0%	26.0%	26.0%
		3M	26.8%	27.6%	28.7%	29.5%	30.6%	30.2%	28.5%	25.0%	25.4%	25.5%	24.9%	24.1%	24.1%	24.1%
		6M	20.2%	20.9%	21.8%	22.4%	23.3%	24.6%	23.9%	23.2%	23.9%	24.3%	23.8%	23.7%	23.7%	23.7%
		9M	18.4%	19.0%	19.6%	20.5%	21.1%	22.4%	22.5%	22.6%	23.2%	23.7%	23.7%	22.9%	22.9%	23.0%
		1Y	16.7%	17.3%	17.9%	18.8%	19.4%	20.6%	21.2%	22.0%	22.5%	23.0%	22.8%	22.1%	22.1%	22.2%
		2Y	11.2%	11.8%	12.3%	13.0%	13.6%	15.3%	16.7%	18.3%	19.0%	19.7%	19.7%	19.3%	19.3%	19.5%
		3Y	8.3%	8.8%	9.6%	10.1%	10.6%	12.6%	13.8%	15.6%	16.8%	17.6%	17.6%	17.5%	17.7%	17.7%
		5Y	4.9%	5.4%	6.1%	6.7%	7.2%	9.5%	11.0%	12.9%	14.3%	14.9%	15.5%	15.4%	15.6%	15.6%
		7Y	3.3%	3.9%	4.6%	5.2%	5.7%	7.9%	9.4%	11.7%	13.1%	13.7%	14.3%	14.2%	14.4%	14.4%
		10Y	1.8%	2.4%	2.9%	3.7%	4.2%	6.2%	8.0%	10.4%	11.7%	12.6%	13.0%	13.2%	13.2%	13.4%
		15Y	0.6%	1.2%	1.9%	2.5%	3.3%	5.3%	6.9%	9.2%	10.7%	11.4%	12.0%	12.3%	12.3%	12.3%
		20Y	0.0%	0.6%	1.4%	2.1%	2.7%	4.9%	6.5%	9.2%	10.7%	11.3%	12.0%	12.2%	12.4%	12.4%
	30Y	-0.6%	0.0%	0.6%	1.4%	2.1%	4.1%	5.9%	8.5%	9.8%	10.6%	11.1%	11.4%	11.4%	11.7%	

Relative Normal Interest Rate Shocks (Continued)

USD																
EXPIRY	1M	108.8%	106.5%	103.2%	100.1%	97.3%	61.2%	54.1%	45.6%	42.7%	41.3%	41.3%	42.0%	43.4%	43.8%	
	3M	86.9%	85.0%	82.3%	79.8%	77.5%	57.0%	51.5%	44.3%	41.9%	40.4%	40.8%	42.1%	42.8%	43.4%	
	6M	68.6%	67.1%	64.9%	62.9%	61.0%	49.6%	45.2%	40.8%	38.8%	37.8%	38.4%	39.7%	40.5%	41.1%	
	9M	61.0%	59.5%	57.5%	55.6%	53.8%	45.7%	42.2%	38.4%	36.6%	35.7%	36.3%	37.7%	38.5%	39.2%	
	1Y	54.5%	53.2%	51.3%	49.6%	48.0%	42.3%	39.4%	36.2%	34.4%	33.8%	34.5%	35.9%	36.8%	37.4%	
	2Y	48.8%	47.4%	45.5%	43.7%	42.1%	37.1%	33.9%	30.0%	28.4%	27.5%	27.9%	29.1%	29.9%	30.4%	
	3Y	46.2%	44.8%	42.8%	41.0%	39.3%	34.1%	30.6%	26.3%	24.4%	23.4%	23.6%	24.4%	25.2%	25.7%	
	5Y	45.3%	43.7%	41.5%	39.5%	37.6%	31.6%	27.6%	22.6%	19.9%	18.5%	18.4%	19.0%	19.6%	19.9%	
	7Y	47.3%	45.6%	43.1%	40.8%	38.7%	32.1%	27.4%	21.5%	18.4%	16.5%	16.2%	16.8%	17.2%	17.5%	
	10Y	50.8%	48.8%	46.1%	43.6%	41.2%	34.0%	28.7%	22.0%	18.3%	16.2%	15.7%	16.1%	16.6%	16.7%	
	15Y	58.2%	56.0%	52.8%	49.8%	47.1%	38.2%	32.1%	24.2%	20.0%	17.6%	16.8%	17.1%	17.5%	17.5%	
20Y	64.6%	62.0%	58.4%	55.1%	52.0%	42.4%	35.6%	26.7%	22.1%	19.2%	18.2%	18.4%	18.8%	18.9%		
30Y	70.0%	67.2%	63.3%	59.7%	56.5%	45.8%	38.3%	28.7%	23.7%	21.0%	19.6%	19.8%	19.9%	20.1%		

US MBS Vega



Other Advanced Economies																
EXPIRY	1M	95.8%	94.6%	92.9%	91.3%	89.8%	71.8%	61.1%	52.6%	50.5%	49.0%	47.4%	46.7%	46.4%	46.2%	
	3M	85.6%	84.5%	82.9%	81.4%	80.1%	67.5%	59.8%	52.9%	50.5%	49.5%	47.9%	47.1%	46.8%	46.5%	
	6M	75.9%	74.9%	73.5%	72.1%	70.8%	62.2%	55.4%	49.9%	47.3%	46.0%	44.4%	43.7%	43.3%	43.0%	
	9M	70.2%	69.2%	67.8%	66.5%	65.2%	57.8%	52.5%	47.3%	44.6%	43.2%	41.6%	40.9%	40.4%	40.3%	
	1Y	65.1%	64.1%	62.8%	61.5%	60.3%	54.1%	49.5%	44.7%	42.0%	40.9%	39.2%	38.5%	38.1%	38.0%	
	2Y	54.2%	53.3%	52.0%	50.7%	49.5%	44.7%	41.2%	37.4%	35.8%	35.0%	33.1%	32.4%	32.0%	31.8%	
	3Y	49.9%	48.9%	47.6%	46.2%	45.1%	40.8%	38.6%	34.6%	32.9%	31.6%	29.6%	28.8%	28.3%	28.0%	
	5Y	48.9%	47.7%	46.2%	44.6%	43.3%	37.5%	33.7%	29.4%	27.0%	25.0%	22.9%	21.9%	21.5%	21.1%	
	7Y	46.4%	45.3%	43.6%	42.1%	40.5%	36.1%	32.5%	27.6%	24.7%	22.5%	20.0%	18.9%	18.4%	18.1%	
	10Y	45.9%	44.7%	42.9%	41.2%	39.6%	34.3%	30.2%	24.7%	21.5%	18.9%	16.3%	15.2%	14.6%	14.3%	
	15Y	42.7%	41.5%	39.7%	38.0%	36.4%	31.2%	27.0%	21.4%	18.1%	15.5%	12.8%	11.7%	11.1%	10.9%	
20Y	41.2%	39.9%	38.1%	36.5%	34.8%	29.7%	25.6%	19.9%	16.5%	13.8%	11.3%	10.2%	9.6%	9.2%		
30Y	39.8%	38.5%	36.7%	35.1%	33.4%	28.1%	24.0%	18.4%	15.1%	12.3%	9.6%	8.5%	7.9%	7.7%		

Total Emerging Europe

EXPIRY	1M	79.5%	78.2%	76.3%	74.6%	73.1%	80.7%	82.1%	81.1%	78.7%	76.8%	75.8%	80.2%	84.3%	88.1%
	3M	82.1%	80.7%	78.7%	76.8%	75.2%	80.6%	80.8%	78.4%	75.6%	73.2%	72.2%	76.2%	80.1%	83.7%
	6M	90.1%	88.5%	86.1%	84.0%	82.0%	81.5%	79.5%	75.1%	71.3%	68.4%	67.1%	70.8%	74.3%	77.6%
	9M	93.7%	91.8%	89.3%	86.9%	84.8%	80.8%	77.0%	71.1%	66.9%	63.5%	62.3%	65.6%	68.8%	71.8%
	1Y	99.2%	97.1%	94.3%	91.6%	89.1%	80.3%	74.5%	67.3%	62.8%	59.1%	58.0%	61.0%	63.9%	66.7%
	2Y	83.8%	81.7%	78.8%	76.2%	73.7%	64.5%	59.0%	50.9%	47.0%	43.8%	43.3%	45.5%	47.6%	49.7%
	3Y	73.1%	71.1%	68.2%	65.6%	63.1%	54.6%	48.7%	41.0%	36.9%	34.1%	34.1%	35.7%	37.3%	39.0%
	5Y	61.1%	59.1%	56.3%	53.7%	51.3%	41.5%	36.5%	29.6%	26.1%	23.7%	24.3%	25.2%	26.3%	27.4%
	7Y	55.9%	53.8%	51.0%	48.4%	46.1%	36.9%	31.2%	24.7%	21.3%	19.9%	20.0%	20.7%	21.5%	22.2%
	10Y	50.1%	48.1%	45.3%	42.9%	40.6%	32.8%	27.7%	21.5%	19.4%	18.1%	17.8%	18.1%	18.6%	19.1%
	15Y	68.6%	65.8%	61.9%	58.2%	54.9%	44.2%	37.1%	28.3%	23.6%	20.4%	18.7%	18.3%	18.4%	18.8%
20Y	78.7%	75.3%	70.7%	66.4%	62.4%	49.9%	41.4%	30.7%	25.2%	21.1%	18.9%	18.4%	18.2%	18.4%	
30Y	100.6%	96.2%	90.1%	84.4%	79.4%	62.6%	51.1%	36.8%	29.4%	23.8%	20.6%	19.7%	19.4%	19.2%	

Total Latam & Caribbean

EXPIRY	1M	157.6%	154.9%	151.2%	147.8%	144.7%	140.9%	145.7%	157.4%	150.1%	143.1%	137.9%	135.3%	134.1%	135.6%
	3M	147.0%	144.4%	140.9%	137.5%	134.5%	131.2%	135.2%	144.9%	137.7%	131.2%	127.0%	125.4%	125.0%	126.9%
	6M	141.7%	139.0%	135.3%	132.0%	128.9%	125.3%	127.7%	134.4%	127.1%	120.5%	116.3%	114.7%	114.5%	116.4%
	9M	139.0%	136.3%	132.5%	129.0%	125.8%	124.3%	123.5%	124.0%	117.2%	111.5%	107.4%	105.7%	105.6%	107.4%
	1Y	138.9%	135.9%	132.0%	128.2%	124.8%	124.7%	120.3%	115.1%	108.6%	103.6%	99.4%	97.7%	97.8%	99.7%
	2Y	126.8%	123.7%	119.3%	115.3%	111.6%	104.7%	98.1%	89.0%	83.1%	79.0%	75.2%	73.5%	73.9%	75.5%
	3Y	112.9%	109.7%	105.2%	101.2%	97.5%	89.7%	80.5%	70.8%	66.2%	62.9%	59.3%	57.8%	58.4%	59.8%
	5Y	93.6%	90.5%	86.2%	82.2%	78.6%	69.2%	60.6%	51.0%	46.4%	45.4%	42.1%	41.0%	41.6%	42.8%
	7Y	84.4%	81.3%	77.0%	73.1%	69.5%	59.9%	52.4%	41.1%	37.1%	35.4%	32.2%	31.8%	32.6%	33.5%
	10Y	72.4%	69.6%	65.7%	62.1%	58.8%	49.9%	42.9%	34.3%	30.1%	28.2%	25.5%	25.6%	26.6%	29.2%
	15Y	69.4%	66.5%	62.5%	58.9%	55.5%	46.4%	39.3%	30.4%	25.4%	23.9%	22.9%	25.3%	27.3%	29.1%
20Y	61.1%	58.5%	54.9%	51.6%	48.5%	42.0%	36.6%	29.7%	27.0%	26.4%	29.1%	31.8%	34.1%	36.4%	
30Y	377.2%	360.8%	337.7%	316.8%	297.4%	244.4%	202.4%	150.4%	126.4%	112.2%	98.3%	94.4%	93.7%	93.9%	

Relative Normal Interest Rate Shocks (Continued)

Total Asia Ex-Japan

EXPIRY	1M	68.2%	67.1%	65.5%	64.0%	62.6%	61.4%	54.9%	51.7%	51.7%	52.1%	50.4%	50.5%	51.8%	53.3%
	3M	64.7%	63.5%	61.9%	60.5%	59.2%	58.1%	51.9%	48.8%	48.7%	49.1%	47.4%	47.5%	48.7%	50.0%
	6M	63.7%	62.4%	60.8%	59.3%	57.9%	56.3%	47.8%	45.2%	44.9%	45.2%	43.0%	43.1%	44.3%	45.5%
	9M	62.1%	60.9%	59.2%	57.6%	56.2%	52.9%	47.1%	43.7%	43.1%	42.7%	40.2%	40.3%	41.4%	42.5%
	1Y	60.8%	59.6%	57.8%	56.2%	54.7%	49.9%	46.5%	42.4%	41.5%	40.4%	37.7%	37.8%	38.8%	39.9%
	2Y	59.6%	58.2%	56.1%	54.2%	52.5%	46.5%	42.0%	35.6%	36.8%	36.1%	32.5%	32.7%	33.5%	34.4%
	3Y	56.9%	55.3%	53.1%	51.0%	49.1%	42.1%	38.4%	34.6%	32.4%	31.1%	27.3%	27.5%	28.2%	29.0%
	5Y	56.2%	54.3%	51.8%	49.4%	47.2%	41.7%	36.0%	29.4%	26.9%	24.4%	20.7%	20.9%	21.4%	22.0%
	7Y	57.4%	55.3%	52.3%	49.7%	47.3%	40.0%	34.1%	26.9%	23.5%	20.5%	17.2%	17.4%	17.8%	18.2%
	10Y	54.5%	52.5%	49.5%	46.8%	44.4%	37.3%	31.4%	23.4%	19.9%	17.1%	14.8%	14.9%	15.0%	15.4%
	15Y	53.9%	51.6%	48.6%	45.7%	43.1%	36.0%	30.3%	22.2%	18.8%	16.3%	13.8%	13.5%	13.7%	13.9%
	20Y	66.1%	63.4%	59.4%	55.9%	52.6%	43.5%	36.3%	26.4%	21.4%	17.6%	14.4%	13.9%	13.8%	13.9%
30Y	82.9%	79.2%	74.3%	69.6%	65.3%	53.4%	43.9%	31.0%	24.4%	19.7%	15.6%	14.7%	14.5%	14.5%	

Total ME/N. Africa

EXPIRY	1M	49.0%	48.1%	47.0%	45.9%	45.0%	49.6%	50.5%	49.8%	48.4%	47.3%	46.7%	49.3%	51.9%	54.2%
	3M	50.5%	49.6%	48.4%	47.3%	46.2%	49.6%	49.7%	48.2%	46.5%	45.0%	44.4%	46.9%	49.2%	51.6%
	6M	55.5%	54.4%	53.0%	51.6%	50.4%	50.2%	48.9%	46.2%	43.9%	42.1%	41.3%	43.6%	45.7%	47.8%
	9M	57.7%	56.5%	54.9%	53.5%	52.1%	49.7%	47.3%	43.7%	41.2%	39.1%	38.4%	40.3%	42.4%	44.2%
	1Y	61.0%	59.8%	58.0%	56.3%	54.9%	49.4%	45.8%	41.5%	38.6%	36.3%	35.6%	37.5%	39.3%	41.0%
	2Y	51.6%	50.3%	48.5%	46.8%	45.3%	39.6%	36.3%	31.4%	28.9%	27.0%	26.7%	28.0%	29.3%	30.6%
	3Y	45.0%	43.7%	41.9%	40.4%	38.9%	33.6%	29.9%	25.2%	22.7%	21.0%	21.0%	21.9%	23.0%	24.0%
	5Y	37.6%	36.4%	34.6%	33.0%	31.5%	25.5%	22.5%	18.3%	16.1%	14.6%	14.9%	15.5%	16.2%	16.9%
	7Y	34.4%	33.2%	31.4%	29.8%	28.3%	22.7%	19.2%	15.2%	13.2%	12.3%	12.4%	12.7%	13.3%	13.7%
	10Y	30.8%	29.6%	27.9%	26.4%	25.0%	20.2%	17.1%	13.2%	11.9%	11.1%	10.9%	11.2%	11.4%	11.9%
	15Y	42.2%	40.4%	38.0%	35.9%	33.8%	27.2%	22.8%	17.4%	14.5%	12.5%	11.5%	11.3%	11.4%	11.5%
	20Y	48.4%	46.3%	43.5%	40.9%	38.4%	30.6%	25.4%	18.9%	15.5%	13.0%	11.7%	11.2%	11.3%	11.3%
30Y	62.0%	59.2%	55.5%	51.9%	48.7%	38.4%	31.4%	22.7%	18.1%	14.8%	12.8%	12.1%	12.0%	11.8%	

Total Sub-Saharan Africa

EXPIRY	1M	160.5%	157.8%	154.0%	150.6%	147.5%	120.6%	110.7%	89.0%	83.7%	81.4%	79.6%	79.0%	78.6%	78.3%
	3M	146.2%	143.6%	140.0%	136.7%	133.8%	109.1%	98.0%	75.7%	70.7%	68.1%	66.6%	66.0%	65.7%	65.5%
	6M	126.2%	123.9%	120.6%	117.6%	114.8%	95.3%	85.2%	69.8%	63.7%	59.4%	57.9%	57.3%	57.1%	56.9%
	9M	109.5%	107.3%	104.3%	101.5%	99.0%	87.2%	77.6%	64.5%	59.3%	56.0%	54.5%	53.9%	53.6%	53.3%
	1Y	99.9%	97.8%	95.0%	92.3%	89.9%	80.3%	71.2%	59.9%	55.4%	52.7%	51.3%	50.6%	50.3%	50.1%
	2Y	85.1%	82.9%	80.0%	77.3%	74.8%	65.5%	57.8%	48.1%	43.7%	40.6%	39.1%	38.4%	38.1%	37.8%
	3Y	71.6%	69.6%	66.8%	64.2%	61.8%	53.6%	47.6%	40.2%	36.0%	32.6%	31.1%	30.4%	30.0%	29.8%
	5Y	57.3%	55.5%	52.8%	50.4%	48.1%	40.9%	36.0%	29.9%	26.5%	23.8%	22.2%	21.5%	21.2%	20.9%
	7Y	52.6%	50.7%	48.0%	45.6%	43.4%	36.1%	31.1%	25.0%	21.9%	19.9%	18.1%	17.5%	17.1%	16.8%
	10Y	52.6%	50.6%	47.7%	45.1%	42.7%	34.9%	28.8%	21.4%	17.7%	15.3%	13.6%	12.9%	12.6%	12.3%
	15Y	49.7%	47.6%	44.8%	42.2%	39.8%	32.0%	25.9%	18.5%	15.0%	12.5%	10.8%	10.1%	9.8%	9.5%
	20Y	48.2%	46.2%	43.3%	40.7%	38.4%	30.5%	24.5%	17.2%	13.6%	11.2%	9.4%	8.8%	8.4%	8.2%
30Y	46.8%	44.8%	41.9%	39.3%	36.9%	29.1%	23.1%	15.8%	12.3%	9.8%	8.1%	7.4%	7.0%	6.8%	

Absolute Normal Interest Rate Shocks

2024 Exploratory Analysis Conditions Market Shocks
Rates Vega

Absolute Normal Interest Rate Shocks (bps)

		M A T U R I T Y													
		1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	25Y	30Y
AUD	1M	80.1	79.1	77.7	76.3	75.1	70.8	67.5	62.9	60.1	57.7	55.8	55.0	54.6	54.4
	3M	77.6	76.6	75.1	73.8	72.6	68.3	65.0	60.4	57.6	55.1	53.3	52.5	52.1	51.8
	6M	74.0	73.0	71.6	70.3	69.0	64.8	61.5	56.9	54.0	51.6	49.8	49.0	48.6	48.3
	9M	70.8	69.8	68.4	67.1	65.8	61.6	58.3	53.7	50.8	48.4	46.6	45.8	45.3	45.1
	1Y	67.9	66.9	65.5	64.1	62.9	58.6	55.3	50.7	47.9	45.5	43.6	42.8	42.4	42.2
	2Y	58.5	57.5	56.1	54.7	53.5	49.2	45.9	41.3	38.5	36.1	34.2	33.4	33.0	32.8
	3Y	51.9	50.9	49.5	48.1	46.9	42.6	39.3	34.7	31.9	29.4	27.6	26.8	26.4	26.1
	5Y	43.8	42.8	41.4	40.0	38.8	34.5	31.2	26.6	23.8	21.3	19.5	18.7	18.3	18.0
	7Y	39.4	38.4	37.0	35.7	34.4	30.1	26.8	22.2	19.4	17.0	15.1	14.3	13.9	13.7
	10Y	36.0	35.0	33.6	32.3	31.0	26.7	23.4	18.8	16.0	13.6	11.7	10.9	10.5	10.3
	15Y	33.5	32.5	31.1	29.8	28.5	24.3	20.9	16.3	13.5	11.1	9.2	8.4	8.0	7.8
	20Y	32.3	31.3	29.9	28.6	27.3	23.1	19.8	15.2	12.3	9.9	8.1	7.3	6.9	6.6
30Y	31.2	30.2	28.8	27.5	26.2	21.9	18.6	14.0	11.2	8.8	6.9	6.1	5.7	5.5	
EUR	1M	69.0	69.2	69.4	69.6	69.7	70.1	70.3	70.0	69.4	68.4	66.8	65.6	64.7	64.2
	3M	66.9	67.1	67.3	67.5	67.6	68.0	68.1	67.9	67.3	66.2	64.6	63.4	62.6	62.0
	6M	63.9	64.0	64.2	64.4	64.6	65.0	65.1	64.9	64.3	63.2	61.6	60.4	59.6	59.0
	9M	61.0	61.2	61.4	61.6	61.7	62.1	62.2	62.0	61.4	60.3	58.7	57.5	56.7	56.1
	1Y	58.3	58.5	58.7	58.8	59.0	59.4	59.5	59.3	58.7	57.6	56.0	54.8	54.0	53.4
	2Y	48.9	49.1	49.3	49.5	49.6	50.0	50.1	49.9	49.3	48.2	46.6	45.4	44.6	44.0
	3Y	41.4	41.6	41.8	42.0	42.1	42.5	42.7	42.4	41.8	40.8	39.2	38.0	37.2	36.6
	5Y	30.7	30.8	31.0	31.2	31.4	31.8	31.9	31.7	31.1	30.0	28.4	27.2	26.4	25.8
	7Y	23.7	23.8	24.0	24.2	24.3	24.7	24.9	24.6	24.0	23.0	21.4	20.2	19.4	18.8
	10Y	17.1	17.3	17.5	17.6	17.8	18.2	18.3	18.1	17.5	16.4	14.8	13.6	12.8	12.2
	15Y	11.4	11.5	11.7	11.9	12.1	12.5	12.6	12.4	11.8	10.7	9.1	7.9	7.1	6.5
	20Y	8.4	8.6	8.8	8.9	9.1	9.5	9.6	9.4	8.8	7.7	6.1	4.9	4.1	3.5
30Y	5.4	5.6	5.8	5.9	6.1	6.5	6.6	6.4	5.8	4.7	3.1	1.9	1.1	0.5	
GBP	1M	151.7	149.2	145.6	142.3	139.1	128.2	119.6	107.5	99.9	93.3	88.5	86.6	85.6	85.1
	3M	146.6	144.1	140.5	137.2	134.0	123.1	114.5	102.4	94.8	88.3	83.4	81.5	80.6	80.0
	6M	139.7	137.2	133.6	130.2	127.0	116.1	107.5	95.4	87.8	81.3	76.5	74.5	73.6	73.0
	9M	133.4	130.9	127.3	124.0	120.8	109.9	101.3	89.2	81.6	75.1	70.2	68.3	67.4	66.8
	1Y	127.8	125.3	121.7	118.4	115.2	104.3	95.7	83.6	76.0	69.5	64.6	62.7	61.8	61.2
	2Y	110.6	108.1	104.5	101.1	98.0	87.0	78.4	66.3	58.8	52.2	47.4	45.4	44.5	44.0
	3Y	99.3	96.8	93.2	89.8	86.6	75.7	67.1	55.0	47.4	40.9	36.1	34.1	33.2	32.6
	5Y	86.6	84.1	80.5	77.2	74.0	63.1	54.5	42.4	34.8	28.3	23.4	21.5	20.6	20.0
	7Y	80.7	78.2	74.6	71.2	68.0	57.1	48.5	36.4	28.8	22.3	17.5	15.5	14.6	14.0
	10Y	76.6	74.1	70.5	67.1	63.9	53.0	44.4	32.3	24.7	18.2	13.4	11.4	10.5	9.9
	15Y	73.9	71.4	67.8	64.4	61.2	50.3	41.7	29.6	22.0	15.5	10.7	8.7	7.8	7.2
	20Y	72.7	70.2	66.6	63.2	60.0	49.1	40.5	28.4	20.8	14.3	9.5	7.5	6.6	6.0
30Y	71.5	69.0	65.4	62.0	58.8	47.9	39.3	27.2	19.6	13.1	8.3	6.3	5.4	4.8	
JPY	1M	10.5	10.8	11.2	11.5	11.9	12.9	13.6	14.5	15.0	15.3	15.5	15.6	15.6	15.6
	3M	10.0	10.3	10.7	11.0	11.4	12.4	13.1	14.0	14.5	14.8	15.0	15.1	15.1	15.1
	6M	9.3	9.6	10.0	10.3	10.7	11.7	12.4	13.3	13.8	14.1	14.3	14.4	14.4	14.4
	9M	8.7	9.0	9.3	9.7	10.0	11.0	11.8	12.7	13.1	13.5	13.7	13.7	13.7	13.8
	1Y	8.1	8.4	8.7	9.1	9.4	10.4	11.2	12.1	12.5	12.9	13.0	13.1	13.1	13.2
	2Y	6.1	6.4	6.7	7.1	7.4	8.4	9.2	10.1	10.5	10.9	11.0	11.1	11.1	11.2
	3Y	4.6	4.9	5.3	5.6	5.9	7.0	7.7	8.6	9.1	9.4	9.6	9.6	9.7	9.7
	5Y	2.8	3.1	3.5	3.8	4.1	5.2	5.9	6.8	7.3	7.6	7.8	7.8	7.9	7.9
	7Y	1.8	2.1	2.5	2.8	3.1	4.2	4.9	5.8	6.3	6.6	6.8	6.8	6.9	6.9
	10Y	1.0	1.3	1.6	2.0	2.3	3.3	4.1	5.0	5.4	5.8	5.9	6.0	6.0	6.1
	15Y	0.3	0.6	1.0	1.3	1.7	2.7	3.4	4.3	4.8	5.1	5.3	5.4	5.4	5.4
	20Y	0.0	0.3	0.7	1.0	1.3	2.4	3.1	4.0	4.5	4.8	5.0	5.0	5.1	5.1
30Y	(0.3)	0.0	0.3	0.7	1.0	2.0	2.8	3.7	4.1	4.5	4.6	4.7	4.7	4.8	

Absolute Normal Interest Rate Shocks (Continued)

USD															
EXPIRY	1M	89.1	87.2	84.5	82.0	79.7	72.2	66.7	59.7	56.1	53.6	52.5	52.4	52.5	52.6
	3M	86.6	84.7	82.1	79.6	77.3	69.7	64.2	57.3	53.6	51.2	50.1	50.0	50.1	50.1
	6M	83.2	81.3	78.7	76.2	73.9	66.4	60.8	53.9	50.2	47.8	46.7	46.6	46.7	46.7
	9M	80.2	78.3	75.6	73.1	70.8	63.3	57.8	50.8	47.2	44.7	43.6	43.5	43.6	43.7
	1Y	77.3	75.4	72.8	70.3	68.0	60.4	54.9	48.0	44.3	41.9	40.8	40.7	40.8	40.8
	2Y	68.4	66.5	63.8	61.3	59.0	51.5	46.0	39.0	35.4	32.9	31.8	31.7	31.8	31.9
	3Y	62.2	60.3	57.6	55.1	52.8	45.3	39.8	32.8	29.2	26.7	25.6	25.5	25.6	25.7
	5Y	54.9	53.0	50.4	47.9	45.6	38.0	32.5	25.6	21.9	19.5	18.4	18.3	18.4	18.4
	7Y	51.5	49.6	46.9	44.4	42.1	34.6	29.1	22.1	18.5	16.0	14.9	14.8	14.9	15.0
	10Y	49.3	47.4	44.8	42.3	40.0	32.5	26.9	20.0	16.3	13.9	12.8	12.7	12.8	12.8
	15Y	48.4	46.5	43.9	41.4	39.1	31.5	26.0	19.1	15.4	13.0	11.9	11.8	11.9	11.9
20Y	48.3	46.4	43.7	41.2	38.9	31.4	25.9	18.9	15.3	12.8	11.7	11.6	11.7	11.8	
30Y	48.2	46.3	43.6	41.1	38.9	31.3	25.8	18.9	15.2	12.7	11.6	11.6	11.6	11.7	

US MBS Vega

Other Advanced Economies

EXPIRY	1M	80.1	79.1	77.7	76.3	75.1	70.8	67.5	62.9	60.1	57.7	55.8	55.0	54.6	54.4
	3M	77.6	76.6	75.1	73.8	72.6	68.3	65.0	60.4	57.6	55.1	53.3	52.5	52.1	51.8
	6M	74.0	73.0	71.6	70.3	69.0	64.8	61.5	56.9	54.0	51.6	49.8	49.0	48.6	48.3
	9M	70.8	69.8	68.4	67.1	65.8	61.6	58.3	53.7	50.8	48.4	46.6	45.8	45.3	45.1
	1Y	67.9	66.9	65.5	64.1	62.9	58.6	55.3	50.7	47.9	45.5	43.6	42.8	42.4	42.2
	2Y	58.5	57.5	56.1	54.7	53.5	49.2	45.9	41.3	38.5	36.1	34.2	33.4	33.0	32.8
	3Y	51.9	50.9	49.5	48.1	46.9	42.6	39.3	34.7	31.9	29.4	27.6	26.8	26.4	26.1
	5Y	43.8	42.8	41.4	40.0	38.8	34.5	31.2	26.6	23.8	21.3	19.5	18.7	18.3	18.0
	7Y	39.4	38.4	37.0	35.7	34.4	30.1	26.8	22.2	19.4	17.0	15.1	14.3	13.9	13.7
	10Y	36.0	35.0	33.6	32.3	31.0	26.7	23.4	18.8	16.0	13.6	11.7	10.9	10.5	10.3
	15Y	33.5	32.5	31.1	29.8	28.5	24.3	20.9	16.3	13.5	11.1	9.2	8.4	8.0	7.8
20Y	32.3	31.3	29.9	28.6	27.3	23.1	19.8	15.2	12.3	9.9	8.1	7.3	6.9	6.6	
30Y	31.2	30.2	28.8	27.5	26.2	21.9	18.6	14.0	11.2	8.8	6.9	6.1	5.7	5.5	

Total Emerging Europe

EXPIRY	1M	124.3	122.2	119.3	116.6	114.2	106.2	100.5	93.5	89.7	86.9	85.1	84.4	84.0	83.7
	3M	119.2	117.1	114.2	111.5	109.1	101.1	95.4	88.3	84.6	81.8	80.0	79.3	78.9	78.6
	6M	112.2	110.2	107.2	104.6	102.1	94.1	88.4	81.4	77.6	74.9	73.0	72.3	71.9	71.6
	9M	106.1	104.0	101.1	98.4	96.0	88.0	82.3	75.2	71.5	68.7	66.9	66.2	65.8	65.5
	1Y	100.7	98.6	95.7	93.0	90.5	82.6	76.9	69.8	66.1	63.3	61.5	60.8	60.4	60.1
	2Y	84.5	82.4	79.5	76.8	74.3	66.4	60.7	53.6	49.9	47.1	45.3	44.6	44.1	43.9
	3Y	74.3	72.2	69.3	66.6	64.1	56.1	50.5	43.4	39.6	36.9	35.1	34.3	33.9	33.7
	5Y	63.2	61.1	58.2	55.5	53.0	45.0	39.3	32.3	28.5	25.8	24.0	23.2	22.8	22.6
	7Y	57.8	55.7	52.8	50.1	47.7	39.7	34.0	27.0	23.2	20.4	18.6	17.9	17.5	17.2
	10Y	53.9	51.8	48.8	46.2	43.7	35.7	30.0	23.0	19.2	16.5	14.7	13.9	13.5	13.2
	15Y	50.9	48.8	45.9	43.2	40.7	32.7	27.0	20.0	16.2	13.5	11.7	10.9	10.5	10.3
20Y	49.4	47.3	44.4	41.7	39.2	31.3	25.6	18.5	14.8	12.0	10.2	9.5	9.0	8.8	
30Y	47.9	45.8	42.9	40.2	37.8	29.8	24.1	17.0	13.3	10.5	8.7	8.0	7.6	7.3	

Total Latam & Caribbean

EXPIRY	1M	317.9	312.6	305.1	298.3	292.0	271.6	257.0	239.0	229.4	222.3	217.7	215.8	214.8	214.1
	3M	304.8	299.4	292.0	285.1	278.9	258.5	243.9	225.9	216.3	209.2	204.6	202.7	201.6	201.0
	6M	287.0	281.7	274.2	267.4	261.1	240.7	226.1	208.1	198.5	191.4	186.8	184.9	183.9	183.2
	9M	271.3	266.0	258.5	251.7	245.4	225.0	210.5	192.4	182.8	175.7	171.1	169.2	168.2	167.5
	1Y	257.5	252.1	244.7	237.8	231.5	211.1	196.6	178.6	168.9	161.9	157.2	155.4	154.3	153.7
	2Y	216.0	210.7	203.2	196.4	190.1	169.7	155.1	137.1	127.5	120.4	115.8	113.9	112.9	112.2
	3Y	189.9	184.6	177.1	170.3	164.0	143.6	129.0	111.0	101.4	94.3	89.7	87.8	86.8	86.1
	5Y	161.5	156.2	148.7	141.9	135.6	115.2	100.6	82.6	73.0	65.9	61.3	59.4	58.4	57.7
	7Y	147.9	142.5	135.0	128.2	121.9	101.5	87.0	68.9	59.3	52.2	47.6	45.7	44.7	44.0
	10Y	137.7	132.4	124.9	118.1	111.8	91.4	76.8	58.8	49.2	42.1	37.5	35.6	34.6	33.9
	15Y	130.1	124.7	117.2	110.4	104.1	83.7	69.2	51.1	41.5	34.4	29.8	27.9	26.9	26.2
20Y	126.3	120.9	113.5	106.6	100.3	80.0	65.4	47.4	37.8	30.7	26.0	24.2	23.1	22.5	
30Y	122.5	117.2	109.7	102.9	96.6	76.2	61.6	43.6	34.0	26.9	22.3	20.4	19.4	18.7	

Absolute Normal Interest Rate Shocks (Continued)

Total Asia Ex-Japan

EXPIRY	1M	105.1	103.3	100.9	98.6	96.5	89.8	85.0	79.0	75.8	73.5	72.0	71.4	71.0	70.8
	3M	100.8	99.0	96.5	94.3	92.2	85.4	80.6	74.7	71.5	69.2	67.6	67.0	66.7	66.4
	6M	94.9	93.1	90.7	88.4	86.3	79.6	74.8	68.8	65.6	63.3	61.8	61.1	60.8	60.6
	9M	89.7	87.9	85.5	83.2	81.1	74.4	69.6	63.6	60.4	58.1	56.6	55.9	55.6	55.4
	1Y	85.1	83.4	80.9	78.6	76.5	69.8	65.0	59.0	55.9	53.5	52.0	51.4	51.0	50.8
	2Y	71.4	69.7	67.2	64.9	62.8	56.1	51.3	45.3	42.2	39.8	38.3	37.7	37.3	37.1
	3Y	62.8	61.0	58.6	56.3	54.2	47.5	42.7	36.7	33.5	31.2	29.6	29.0	28.7	28.5
	5Y	53.4	51.6	49.2	46.9	44.8	38.1	33.3	27.3	24.1	21.8	20.3	19.6	19.3	19.1
	7Y	48.9	47.1	44.6	42.4	40.3	33.6	28.7	22.8	19.6	17.3	15.7	15.1	14.8	14.6
	10Y	45.5	43.8	41.3	39.0	37.0	30.2	25.4	19.4	16.3	13.9	12.4	11.8	11.4	11.2
	15Y	43.0	41.2	38.8	36.5	34.4	27.7	22.9	16.9	13.7	11.4	9.9	9.2	8.9	8.7
	20Y	41.7	40.0	37.5	35.3	33.2	26.4	21.6	15.7	12.5	10.1	8.6	8.0	7.6	7.4
30Y	40.5	38.7	36.3	34.0	31.9	25.2	20.4	14.4	11.2	8.9	7.4	6.7	6.4	6.2	

Total ME/N. Africa

EXPIRY	1M	76.5	75.2	73.4	71.8	70.3	65.3	61.8	57.5	55.2	53.5	52.4	51.9	51.7	51.5
	3M	73.3	72.0	70.3	68.6	67.1	62.2	58.7	54.3	52.0	50.3	49.2	48.8	48.5	48.4
	6M	69.1	67.8	66.0	64.3	62.8	57.9	54.4	50.1	47.8	46.1	44.9	44.5	44.2	44.1
	9M	65.3	64.0	62.2	60.6	59.0	54.1	50.6	46.3	44.0	42.3	41.2	40.7	40.5	40.3
	1Y	61.9	60.7	58.9	57.2	55.7	50.8	47.3	43.0	40.6	38.9	37.8	37.4	37.1	37.0
	2Y	52.0	50.7	48.9	47.2	45.7	40.8	37.3	33.0	30.7	29.0	27.9	27.4	27.2	27.0
	3Y	45.7	44.4	42.6	41.0	39.5	34.5	31.0	26.7	24.4	22.7	21.6	21.1	20.9	20.7
	5Y	38.9	37.6	35.8	34.1	32.6	27.7	24.2	19.9	17.6	15.9	14.7	14.3	14.0	13.9
	7Y	35.6	34.3	32.5	30.8	29.3	24.4	20.9	16.6	14.3	12.6	11.5	11.0	10.8	10.6
	10Y	33.1	31.8	30.0	28.4	26.9	22.0	18.5	14.1	11.8	10.1	9.0	8.6	8.3	8.2
	15Y	31.3	30.0	28.2	26.6	25.1	20.1	16.6	12.3	10.0	8.3	7.2	6.7	6.5	6.3
	20Y	30.4	29.1	27.3	25.7	24.1	19.2	15.7	11.4	9.1	7.4	6.3	5.8	5.6	5.4
30Y	29.5	28.2	26.4	24.7	23.2	18.3	14.8	10.5	8.2	6.5	5.4	4.9	4.7	4.5	

Total Sub-Saharan Africa

EXPIRY	1M	181.1	178.1	173.8	169.9	166.4	154.7	146.4	136.2	130.7	126.7	124.0	123.0	122.4	122.0
	3M	173.6	170.6	166.3	162.4	158.9	147.2	138.9	128.7	123.2	119.2	116.5	115.5	114.9	114.5
	6M	163.5	160.5	156.2	152.3	148.7	137.1	128.8	118.6	113.1	109.0	106.4	105.3	104.8	104.4
	9M	154.6	151.5	147.3	143.4	139.8	128.2	119.9	109.6	104.1	100.1	97.5	96.4	95.8	95.4
	1Y	146.7	143.6	139.4	135.5	131.9	120.3	112.0	101.7	96.3	92.2	89.6	88.5	87.9	87.5
	2Y	123.1	120.0	115.8	111.9	108.3	96.7	88.4	78.1	72.6	68.6	66.0	64.9	64.3	63.9
	3Y	108.2	105.1	100.9	97.0	93.4	81.8	73.5	63.2	57.8	53.7	51.1	50.0	49.4	49.0
	5Y	92.0	89.0	84.7	80.8	77.2	65.6	57.3	47.1	41.6	37.5	34.9	33.8	33.3	32.9
	7Y	84.2	81.2	76.9	73.0	69.5	57.8	49.5	39.3	33.8	29.8	27.1	26.1	25.5	25.1
	10Y	78.4	75.4	71.2	67.3	63.7	52.1	43.8	33.5	28.0	24.0	21.3	20.3	19.7	19.3
	15Y	74.1	71.0	66.8	62.9	59.3	47.7	39.4	29.1	23.7	19.6	17.0	15.9	15.3	14.9
	20Y	71.9	68.9	64.6	60.7	57.2	45.5	37.3	27.0	21.5	17.5	14.8	13.8	13.2	12.8
30Y	69.8	66.8	62.5	58.6	55.0	43.4	35.1	24.8	19.4	15.3	12.7	11.6	11.0	10.6	

Other Rates

2024 Exploratory Analysis Conditions Market Shocks

Other Rates

Absolute Change in Inflation (bps)

Currency	MATURITY												
	1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	30Y
AUD	(114.0)	(114.0)	(114.0)	(114.0)	(114.0)	(103.0)	(92.0)	(78.6)	(65.1)	(45.0)	(44.0)	(44.0)	(42.0)
EUR	(130.0)	(130.0)	(130.0)	(130.0)	(130.0)	(106.0)	(82.0)	(70.9)	(59.7)	(43.0)	(38.0)	(37.0)	(36.0)
GBP	(149.0)	(149.0)	(149.0)	(149.0)	(149.0)	(124.0)	(99.0)	(88.7)	(78.4)	(63.0)	(61.0)	(50.0)	(42.0)
JPY	(1.9)	(1.9)	(1.9)	(1.9)	(1.9)	(2.0)	(2.0)	(2.1)	(2.2)	(2.2)	(2.3)	(2.4)	(2.4)
USD	(119.0)	(119.0)	(119.0)	(119.0)	(119.0)	(94.5)	(70.0)	(63.4)	(56.9)	(47.0)	(43.0)	(40.0)	(40.0)
Other	(119.0)	(119.0)	(119.0)	(119.0)	(119.0)	(94.5)	(70.0)	(63.4)	(56.9)	(47.0)	(43.0)	(40.0)	(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	(18.9)	(18.9)	(17.3)	(15.6)	(14.0)	(13.9)	(13.7)	(13.4)	(13.1)	(12.6)	(11.9)	(11.0)	(9.5)
EUR	(34.1)	(34.1)	(28.9)	(23.7)	(18.5)	(18.2)	(17.9)	(17.3)	(16.6)	(15.7)	(14.2)	(12.6)	(9.5)
GBP	(23.6)	(23.6)	(20.5)	(17.3)	(14.2)	(14.1)	(14.0)	(13.8)	(13.6)	(13.3)	(12.8)	(12.4)	(11.4)
JPY	(35.7)	(35.7)	(31.6)	(27.5)	(23.4)	(23.1)	(22.8)	(22.3)	(21.8)	(21.1)	(19.8)	(18.5)	(15.9)
Other	(34.1)	(34.1)	(28.9)	(23.7)	(18.5)	(18.2)	(17.9)	(17.3)	(16.6)	(15.7)	(14.2)	(12.6)	(9.5)

Appendix 5: Data Notes

The following are descriptions of data through 2023:Q4 (as released through January 12, 2024). The 2023:Q4 values of variables marked with an asterisk (*) are estimates.

U.S. real GDP growth*: Quarterly percent change in real gross domestic product (chained 2017 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/U.S. 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/U.S. 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 L.P.

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 L.P.

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 22 2024 Stress Test Scenarios 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 real 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 real 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.

