



2016 REPORT CYCLE  
DODD-FRANK STRESS TESTS  
SUMMARY INSTRUCTIONS AND GUIDANCE

March 2, 2016

Accompanying Order Nos.

*2016-OR-B-1, 2016-OR-FNMA-1, AND 2016-OR-FHLMC-1*



Federal Housing Finance Agency

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# Introduction

Section 165(i)(2) of the Dodd-Frank Act requires certain financial companies with total consolidated assets of more than \$10 billion, and which are regulated by a primary federal financial regulatory agency, to conduct annual stress tests to determine whether the companies have the capital necessary to absorb losses as a result of adverse economic conditions. The Federal Housing Finance Agency (FHFA) is the primary federal financial regulator of Fannie Mae, Freddie Mac, and the eleven Federal Home Loan Banks (Banks) referred to herein as each of the Banks (any of the Banks singularly, Bank; Fannie Mae and Freddie Mac collectively, the Enterprises; the Enterprises and the Banks collectively, regulated entities; any of the regulated entities singularly, regulated entity).

Each regulated entity has total consolidated assets of more than \$10 billion, and therefore, is required to conduct the annual stress test. The Enterprises' capital positions, supported and restricted by the Senior Preferred Stock Purchase Agreements with the Department of the Treasury are unique. Nonetheless, the Enterprises incorporate capital into their business decision making processes. FHFA expects the Enterprises to have processes and procedures for managing their businesses notwithstanding Treasury's support. Therefore, FHFA's rule on Stress Testing of Regulated Entities, 12 C.F.R. pt. 1238, and these instructions and guidance apply equally to the Enterprises and the Banks.

FHFA's stress testing rule establishes the basic requirements for each regulated entity to conduct Dodd-Frank Stress Tests and report the results. This summary instructions and guidance document supplements the rule. FHFA expects each regulated entity to follow the instructions and guidance in conducting stress tests and reporting and publishing results under the rule. FHFA may communicate specific instructions to address particular issues relevant only to some of the regulated entities' completion of the stress tests. Each regulated entity is also expected to adhere to such individualized instructions.

General instructions and guidance are provided relating to:

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

## Stress Test Scenarios

The stress tests are based on portfolios as of December 31, 2015. The planning horizon for the stress test is nine quarters starting with the first quarter of 2016 and extending through the first quarter of 2018. The regulated entities are required to submit the results of stress tests based on three scenarios: Baseline, Adverse, and Severely Adverse. Assumptions for the

variables in each scenario may be found in Appendices 4 through 9.

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

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

### **Global Market Shock Assumptions**

The global market assumptions provided by FHFA are to be applied to the regulated entities' trading securities, available-for-sale securities and other fair value assets as of December 31, 2015, for the Adverse and Severely Adverse scenarios.

The result of the global market shock is to be taken as an instantaneous loss and reduction of capital in the first quarter of the planning horizon. The global market shock should be treated as an add-on that is exogenous to the macroeconomic and financial market

environment specified in the supervisory stress scenarios. The regulated entities 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 a regulated entity can demonstrate that its loss-estimation methodology stresses identical positions under both the global market shock and the macroeconomic scenario, the regulated entity 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 shocks should be treated as an add-on to the macroeconomic and financial market scenarios specified in the Adverse and Severely Adverse scenarios. The counterparty default scenario component involves an instantaneous and unexpected default of one of the following:

- a regulated entity's largest counterparty across the regulated entity's secured and unsecured lending, securities lending, repurchase/reverse repurchase agreements (collectively Securities Financing Transactions or SFTs) and derivative exposures, and the potential losses and effects on capital associated with such a default,
- a regulated entity's largest counterparty across the regulated

entity's single-family mortgage insurance providers, and the potential losses and effects on capital associated with such a default; or

- a regulated entity's largest counterparty across the regulated entity's providers of multifamily credit enhancements, and the potential losses and effects on capital associated with such a default.

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

The as-of-date for the counterparty default scenario component is December 31, 2015 – 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.

More detailed instructions for implementing certain assumptions follow:

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

## **House Prices**

The House Price Index assumptions provided by FHFA describe the path of national house prices. Each regulated entity should extrapolate the national house price path beyond the projection date as needed. Each regulated entity should also translate the national house price path in each scenario to regional house price paths as appropriate for each regulated entity's models and interpolate the house price paths to accommodate the frequency of data required by their models.

## **Missing Variables**

Each regulated entity should use their internal assumptions for variables that their models consume but that FHFA does not provide.

## **Balance Sheet Evolution**

Each regulated entity should also use their internal assumptions to roll their balance sheets forward through the nine-quarter projection period. The assumptions should reflect reasonable expectations for future business and should conform to the regulated entity's internal strategic plans. The Enterprises should ensure that the size and composition of their books of business during the stress test are consistent with the goals in FHFA's Conservatorship Scorecard.

## **Capital Actions**

For capital actions, the Banks should take into account their actual capital actions as of the end of the calendar quarter preceding the first quarter of the nine-quarter planning horizon. For each succeeding quarter, they should either assume payment of stock dividends equal to those paid in the year ending immediately prior to the first quarter



of the planning horizon or follow any established rules they have for dividends payments.

The Banks should either assume that they do not redeem or repurchase any capital instrument over the planning horizon or that their capital actions will accord with their established capital plans.

They should also assume that they will redeem all mandatorily redeemable capital stock per their usual practice unless restricted from doing so by FHFA actions.

Finally, they should assume that they will cease dividend payments, capital redemptions, or repurchases (as applicable) when retained earnings fall to zero.

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

### **Operational Risk Losses**

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

### **Reporting Format and Timing**

The Enterprises must submit results of the Baseline, Adverse, and Severely Adverse scenarios to FHFA and the Board on or before May 20 and publish results of only the Severely Adverse scenario between August 1 and August 15. The Banks are to report results of the Baseline, Adverse, and Severely

Adverse scenarios to FHFA and the Board by August 31 and publish results of only the Severely Adverse scenario between November 15 and November 30.

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

The regulated entities are required to report the results using the Dodd Frank Act (DFA) schedules provided in Appendices 2 and 3.

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

Each regulated entity must submit its results and any supporting information to FHFA through a secure site. The Enterprises must use the secure server. The Banks must use the secure bank portal.

### **Stress Test Governance**

The board of directors of each regulated entity or a designated committee thereof is responsible for reviewing and approving policies and procedures established to comply with the rule. The board should also receive and review the results of the stress tests for compliance with the rule and

established policies and procedures. Senior management of each regulated entity is responsible for establishing and testing controls. Senior management and each member of the board of directors are to receive a summary of the stress test results.

### **Use of Stress Test Results**

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

Results should include effects on capital as required under the DFA stress testing rule. Specifically, and in accordance with the rule, each regulated entity must calculate how each of the following is affected during each quarter of the stress test planning horizon, for each scenario:

- Potential losses, pre-provision net revenues, allowance for loan losses, and capital positions over the planning horizon; and
- Capital levels and capital ratios, including regulatory capital and net worth, each Bank's leverage and permanent capital ratios, and any other capital ratios, as specified by FHFA.

### **Incomplete Data**

All regulated entities are required to report all data elements in the attached FHFA DFA schedules. Failure to submit complete data to FHFA in a timely manner may result in any remedy or penalty authorized under the Federal Housing Enterprises Financial Safety and Soundness Act of 1992, as amended (12 U.S.C. 4501 et seq.) (Safety and Soundness Act) and the Federal Home Loan Bank Act, as amended (12 U.S.C. 1421 through 1449).

### **Evaluation of Stress Test Processes and Results**

FHFA will focus particular attention on the processes surrounding the implementation of the scenarios to ensure that these processes are robust and that they capture and stress key vulnerabilities and idiosyncratic risks facing the firm; and that the translation of the scenario into loss, revenue, and capital projections is conceptually sound and implemented in a well-controlled manner. FHFA will evaluate the extent to which stress testing processes at the regulated entities adhere to the regulatory principles outlined in Appendix 1. FHFA will also review the stress results for reasonableness.

FHFA will review those assumptions for reasonableness and consistency with the assumptions used by other regulated entities. In all cases, FHFA may require a regulated entity to adjust assumptions or resubmit results where it deems the stress test results, assumptions, or processes are unacceptable.

## Appendix 1: Regulatory Expectations for a Stress Testing Process

A regulated entity's stress testing process should adhere to the following principles:

**Principle 1:** The regulated entity has a sound risk measurement and management infrastructure that supports the identification, measurement, assessment, and control of all material risks arising from its exposures and business activities.

- A satisfactory stress testing process requires (1) a comprehensive risk identification process, and (2) complete and accurate measurement and assessment of all material risks.
- A regulated entity should measure or assess the full spectrum of risks that face the regulated entity, using both quantitative and qualitative methods, where applicable.
- The regulated entity should have data capture and retention systems that allow for the input, use, and storage of information required for sound risk identification and measurement and to produce reliable inputs for assessments of capital adequacy.
- Quantitative processes for measuring risks should meet supervisory expectations for model effectiveness and be supported by robust model development, documentation, validation, and overall model governance practices.

Both qualitative and quantitative processes for assessing risk should be transparent, repeatable, and reviewable by an independent party.

- Any identified weaknesses in risk measures used as inputs to the stress testing process should be documented and reported to relevant parties, with an assessment of the potential impact of risk-measurement weaknesses on the reliability of the stress test results.

**Principle 2:** The regulated entity has effective processes for translating risk measures into estimates of potential losses over a range of stressful scenarios and environments and for aggregating those estimated losses across the regulated entity.

- Stress tests should include methodologies that generate estimates of potential losses for all material risk exposures, one of which should be an enterprise-wide stress test using scenario analysis. Methodologies should be complementary, not suffer from common limitations, and minimize reliance on common assumptions.
- Using the loss estimation methodologies for its various risk exposures, a regulated entity should develop consistent and repeatable processes to aggregate its loss estimates on an enterprise-wide basis.
- A regulated entity should demonstrate that its loss estimation tools are developed



using sound modeling approaches, appropriate for the manner in which they are being employed, and that the most relevant limitations are clearly identified, well documented, and appropriately communicated.

- A regulated entity should recognize that its loss projections are estimates and should have a good understanding of the uncertainty around those estimates, including the potential margin of error and the sensitivity of the estimates to changes in inputs and key assumptions.

**Principle 3:** The regulated entity has a clear definition of available capital resources and an effective process for estimating available capital resources (including any projected revenues) over the same range of stressful scenarios and environments used for estimating losses.

- Management and the Board of Directors should understand the loss absorption capabilities of the components of the regulated entity's capital base, and maintain projection methodologies for each of the capital components included in relevant capital adequacy metrics.
- In estimating available capital resources, a regulated entity will need to consider not only its current positions and mix of capital instruments, but also how its capital resources may evolve over time under varying circumstances and stress scenarios.
- As part of a comprehensive enterprise-wide stress testing program, projections of

pre-provision net revenue (PPNR) should be consistent with balance sheet and other exposure assumptions used for related loss estimation. Projections should estimate all key elements of PPNR, including net interest income, non-interest income, and non-interest expense at a level of granularity consistent with material revenue and expense components.

- A regulated entity should demonstrate that its capital resource estimation tools are developed using sound modeling approaches, appropriate for the manner in which they are being employed, and that the most relevant limitations are clearly identified, well documented, and appropriately communicated.

- A regulated entity should recognize that its projections of capital resources are estimates and should have a good understanding of the uncertainty around those estimates, including the potential margin of error and the sensitivity of the estimates to changes in inputs and key assumptions.

**Principle 4:** The regulated entity has processes for bringing together estimates of losses and capital resources to assess the combined impact on capital adequacy in relation to the regulated entity's stated goals for the level and composition of capital.

- A regulated entity should have a comprehensive and consistently executed process for combining loss, resource, and balance sheet estimates to assess the

baseline and post-stress impact of those estimates on capital measures.

- A regulated entity should calculate and use several capital measures that represent both leverage and risk at specified time horizons under both baseline and stressful conditions, consistent with its capital policy framework. Measures should include quarterly estimates for the impact on capital and leverage ratios as well as other capital and risk measures useful in assessing overall capital adequacy.
- The processes for bringing together estimates of losses and capital resources should ensure that appropriately stressful conditions over the regulated entity's planning horizon have been incorporated to properly address the institution's unique vulnerabilities.
- The processes should provide for the presentation of any information that may have material bearing on the regulated entity's capital adequacy assessment, including all relevant risks and strategic factors, as well as key uncertainties and process limitations.

**Principle 5:** The regulated entity has a comprehensive capital policy and robust capital planning practices for establishing capital goals, determining appropriate capital levels and composition of capital, making decisions about capital actions, and maintaining capital contingency plans.

#### *Capital Policy*

- A capital policy is defined as a regulated entity's written assessment of the

principles and guidelines used for capital planning, capital issuance, and usage and distributions, including internal capital goals, the quantitative or qualitative guidelines for dividend and stock repurchase decisions, the strategies for addressing potential capital shortfalls, and the internal governance procedures around capital policy principles and guidelines.

- A regulated entity should establish capital goals aligned with its risk appetite and risk profile as well as expectations of stakeholders, providing specific targets for the level and composition of capital. The regulated entity should ensure that maintaining its internal capital goals will allow it to continue its operations under stressful conditions.
- The capital policy should describe the decision making processes regarding capital goals, the level and composition of capital, capital actions, and capital contingency plans, including an explanation of the roles and responsibilities of key decision makers and information and analysis used to make decisions.
- The regulated entity should outline in its policy specific capital contingency actions it would consider to remedy any current or prospective deficiencies in its capital position, including any triggers and escalation procedures. The policy should also include a detailed explanation of the circumstances in which it will reduce or suspend a dividend or repurchase program, or will not execute a previously planned capital action.
- A regulated entity should establish a minimum frequency with which its capital

plan is reevaluated (at least annually). In addition, a regulated entity should review its capital policy at least annually to ensure it remains relevant and current.

### *Capital Planning Practices*

- At regular intervals, a regulated entity should compare the estimates of baseline and post-stress capital measures (see Principle 4) to the capital goals established in the capital policy for purposes of informing capital decisions.
- For capital decisions, consideration should be given to any information that may have material bearing on the regulated entity's capital adequacy assessment, including all relevant risks and strategic factors, key uncertainties, and limitations of the stress test.
- Assessments of capital adequacy and decisions about capital should be supported by high quality data and information, informed by current and relevant analysis, and subject to challenge by senior management and the Board of directors.
- Periodically, the regulated entity should conduct a thorough assessment of its capital contingency strategies, including their feasibility under stress, impact, timing, and potential stakeholder reactions.
- A regulated entity should administer its capital planning activities and capital decision processes in conformance with its policy framework, documenting and, justifying any divergence from policy.

**Principle 6:** The regulated entity has robust internal controls governing capital adequacy process components, including

policies and procedures, change control, model validation and independent review, comprehensive documentation, and review by internal audit.

- The internal control framework should encompass the entire stress test, including the risk measurement and management systems used to produce input data, the models and other techniques used to estimate loss and resource estimates, the process for making capital adequacy decisions, and the aggregation and reporting framework used to produce management and board reporting. The set of control functions in place should provide confirmation that all aspects of the stress test are functioning as intended.
- Policies and procedures should ensure a consistent and repeatable process and provide transparency to third parties for their understanding of a regulated entity's stress test processes and practices. Policies and procedures should be comprehensive, relevant to their use in the stress test, periodically updated and approved, and cover the entire stress test and all of its components.
- Specific to the stress test, a regulated entity should have internal controls that ensure the integrity of reported results and that all material changes to the stress test and its components are appropriately documented, reviewed, and approved. A regulated entity should have controls to ensure that management information systems are robust enough to support stress tests with sufficient flexibility to run ad hoc analysis as needed.

- Expectations for validation and independent review for components of the stress test are consistent with existing supervisory guidance on model risk management. Models should be independently validated or otherwise reviewed in line with model risk management and model governance expectations.
- A regulated entity should have clear and comprehensive documentation for all aspects of its stress test, including its risk measurement and management infrastructure, loss- and resource-estimation methodologies, the process for making capital decisions, and efficacy of control and governance functions.
- A regulated entity's internal audit should play a strong role in evaluating the stress test and its components. A full review of the capital adequacy process component should be done by audit periodically to ensure that as a whole the stress test is functioning as expected and in accordance with the regulated entity's policies and procedures. Internal audit should review the manner in which stress test deficiencies are identified, tracked, and remediated.

**Principle 7:** The regulated entity has effective board and senior management oversight of the stress test, including periodic review of the regulated entity's risk infrastructure and loss and resource estimation methodologies; evaluation of capital goals, assessment of the appropriateness of stressful scenarios considered, regular review of any limitations and uncertainties in all aspects of the stress test, and approval of capital decisions.

- The Board of directors should make informed decisions on capital adequacy for its regulated entity by receiving sufficient information detailing the risks the regulated entity faces, its exposures and activities, and the impact that loss and resource estimates may have on its capital position.
- Information provided to the board about capital adequacy should be framed against the capital goals established by the regulated entity and by obligations to external stakeholders, and consider capital adequacy for the regulated entity with respect to the current circumstances as well as on a pro forma, post-stress basis.
- The information the board of directors reviews should include a representation of key limitations, assumptions, and uncertainties within the stress test, enabling the board to have the perspective to effectively understand and challenge reported results. The board should take action when weaknesses in the stress test are identified, giving full consideration to the impact of those weaknesses in their capital decisions.
- Senior management should ensure that all weaknesses in the stress test are identified, as well as key assumptions, limitations, and uncertainties, and evaluate them for materiality (both individually and collectively). Senior management also should have remediation plans for any weaknesses affecting stress test reliability or results.
- Using appropriate information, senior management should make informed recommendations to the Board of

directors about the regulated entity's capital, including capital goals and distribution decisions. Senior management should include supporting information to highlight key assumptions, limitations, and uncertainties in the stress test that may affect capital decisions.

- A regulated entity should appropriately document the key decisions about capital adequacy – including capital actions – made by the Board of directors and senior management, and describe the information used to make those decisions.



## Appendix 2: FHFA DFA Reporting Schedules - Enterprises

### Scenario Schedule Cover Sheet

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

**Institution Name:**

**Date of Data Submission:**

**Institution Contact Name:**

**Institution Contact Phone Number:**

**Institution Contact Email Address:**

## Supplied Scenario Variables

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

### Domestic Variables

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

### International Variables

- Euro Area Real GDP Growth
- Euro Area Inflation
- Euro Area Bilateral Dollar Exchange Rate (\$/euro)
- Developing Asia Real GDP Growth
- Developing Asia Inflation
- Developing Asia Bilateral Dollar Exchange Rate (F/USD, index, base = 2000, Q1)
- Japan Real GDP Growth
- Japan Inflation
- Japan Bilateral Dollar Exchange Rate (yen/USD)
- U.K. Real GDP Growth
- U.K. Inflation
- U.K. Bilateral Dollar Exchange Rate (USD/pound)

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

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

- 1
- 2
- 3
- 4
- 5

## Scenario Variables Beyond Those Supplied

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

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Variable Number	Variable Name	Variable Definition
1		
2		
3		
4		
5		

---

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

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Variable Number	Variable Name	Variable Definition
1		
2		
3		
4		
5		

---

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

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Variable Number	Variable Name	Variable Definition
1		
2		
3		
4		
5		

## Baseline

### Spread Assumptions

#### Spread to Benchmark

Category	Benchmark	Actual			Projected							
		4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
Example: Advance	3-Month LIBOR	10.0	10.0	10.0	10.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0

### Variables Used Beyond Those Supplied

Variable Name	Actual			Projected						
	4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9

### Forward Curve

Maturity	Actual				Projected						
	4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
3-Month Treasury	0.1	0.4	0.6	0.9	1.0	1.3	1.5	1.9	2.2	2.4	
6-Month											
1 year											
2 year											
5 year Treasury	1.6	1.8	2.0	2.2	2.4	2.6	2.7	2.9	3.0	3.1	
10 year Treasury	2.2	2.4	2.6	2.7	2.9	3.0	3.1	3.3	3.4	3.5	
15 year											
30 year											

### House Price Index

*(NOTE: For printing purposes dates only goes to Oct-16. However, the underlying excel spreadsheet collects 30 years of data.)*

Region	Actual				Projected						
	4Q 2015	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Region 1											
Region 2											

Region 1  
Region 2

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## Adverse

### Spread Assumptions

Category	Benchmark	Spread to Benchmark									
		Actual			Projected						
		4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Example: Advance	3-Month LIBOR	10.0	10.0	10.0	10.0	15.0	15.0	15.0	15.0	15.0	15.0

### Variables Used Beyond Those Supplied

Variable Name	Actual			Projected						
	4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9

### Forward Curve

Maturity	Actual			Projected						
	4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
3-Month Treasury	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
6-Month										
1 year										
2 year										
5 year Treasury	1.6	0.5	0.7	0.8	1.0	1.2	1.3	1.5	1.6	1.8
10 year Treasury	2.2	1.3	1.4	1.5	1.7	1.8	1.9	2.2	2.3	2.4
15 year										
30 year										

### House Price Index

*(NOTE: For printing purposes dates only goes to Oct-16. However, the underlying excel spreadsheet collects 30 years of data.)*

Region	Actual			Projected							
	4Q 2015	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Region 1											
Region 2											
.											
.											
.											
.											
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### **Stress Test Template Instructions**

1. All numbers should be reported in millions
2. Reported numbers should reflect the 12/31/2015 start date.

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

(\$s in millions)

Income Statement (BASELINE)	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1 Net interest income (excluding management and guaranty fee income)											
2 Management and guaranty fee income <sup>1</sup>											
<b>3 Total net interest income</b>											
4 Other income											
<b>5 Total revenue</b>											
6 REO (foreclosed property expense)											
7 SOP 03-3 losses, net											
8 Security impairments											
9 Operational risk losses											
10 Administrative expenses											
11 Other expenses											
<b>12 Pre-provision net revenue</b>											
13 (Provision) benefit for credit losses											
14 Derivatives gains (losses)											
15 Trading gains (losses)											
16 Other gains (losses)											
17 Global market shock impact on trading securities											
18 Counterparty default losses											
<b>19 Pre-Tax income (loss)</b>											
20 Provision (benefit) for federal income taxes											
21 Extraordinary gains (losses), net of tax effect											
<b>22 Net income (loss)</b>											
23 Global market shock impact on available-for-sale securities											
24 Other comprehensive income											
<b>25 Comprehensive income (loss)</b>											

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

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

(\$s in millions)

<b><u>Balance Sheet (BASELINE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>ASSETS</b>										
1 Cash and cash equivalents										
2 Investments in securities										
3 Available-for-sale, at fair value										
4 Trading, at fair value										
5 Mortgage loans, excluding loss allowance										
6 Allowance for loan losses										
7 Deferred tax assets, net of allowance										
8 Other assets										
<b>9 Total assets</b>										
<b>LIABILITIES</b>										
10 Short-term debt										
11 Long-term debt										
12 Debt of consolidated trusts/PCs										
13 Guarantee fee obligation										
14 Reserve for guaranty losses										
15 Other liabilities										
<b>16 Total liabilities</b>										
17 Minority interest										
<b>CAPITAL</b>										
18 Senior preferred stock										
19 Preferred stock										
20 Common stock										
21 Retained earnings (deficit)										
22 Accumulated other comprehensive income (loss)										
23 Treasury stock										
24 Total stockholders' equity (deficit)										
<b>25 Total capital (deficit)</b>										
<b>26 Total liabilities, minority interest and capital</b>										

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

(\$s in millions)

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



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

(\$s in millions)

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

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

### Single-Family Credit Overview - Cumulative Results (BASELINE)

	Provision for Credit Losses	Credit Losses			Loan Loss Reserve		
		Foreclosed Property Expense	Net Charge-offs	Total	Beginning	Ending	Change
(\$s in millions)							
1 Current Book (as of 12/31/15)							
2 New Business							
3 Total Portfolio							
Memo:							
4 FAS 5 Loan Loss Reserve							
5 FAS114 Loan Loss Reserve							
6 Concessions in FAS 114 Loan Loss Reserve <sup>(1)</sup>							

(1) - amount includes the impact of all troubled debt restructuring (TDR) related impairments.

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

<b>Single-Family Credit Overview - Quarterly (BASELINE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
<b>TOTAL PORTFOLIO</b>											
CREDIT EXPENSES (\$s in millions)											
1	Foreclosed property expense (REO)										
2	Net charge-offs										
3	Credit losses										
4	Provision for credit losses										
<b>5</b>	<b>Credit Expenses<sup>(1)</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
6	Beginning loan loss reserve										
7	Net charge-offs										
8	Provision (benefit) for loan losses/guaranty losses										
9	Other										
<b>10</b>	<b>Ending Total Loan Loss Reserve</b>										
Memo:											
11	FAS 5 Loan Loss Reserve										
12	FAS 114 Loan Loss Reserve										
13	Concessions in FAS 114 Loan Loss Reserve <sup>(2)</sup>										
14	Unpaid Principal Balance (\$s in millions)										
<b>CURRENT BOOK (as of 12/31/15)</b>											
CREDIT EXPENSES (\$s in millions)											
15	Foreclosed property expense (REO)										
16	Net charge-offs										
17	Credit losses										
18	Provision for credit losses										
<b>19</b>	<b>Credit Expenses<sup>(1)</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
20	Beginning loan loss reserve										
21	Net charge-offs										
22	Provision (benefit) for loan losses/guaranty losses										
23	Other										
<b>24</b>	<b>Ending Loan Loss Reserve - Current Book</b>										
25	Unpaid Principal Balance (\$s in millions)										
<b>NEW BUSINESS</b>											
CREDIT EXPENSES (\$s in millions)											
26	Foreclosed property expense (REO)										
27	Net charge-offs										
28	Credit losses										
29	Provision for credit losses										
<b>30</b>	<b>Credit Expenses<sup>(1)</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
31	Beginning loan loss reserve										
32	Net charge-offs										
33	Provision (benefit) for loan losses/guaranty losses										
34	Other										
<b>35</b>	<b>Ending Loan Loss Reserve - New Business</b>										
36	Unpaid Principal Balance (\$s in millions)										

(1) - amount depicts the summation of foreclosed property expense, provision for credit losses, and SOP 03-3 losses.  
(2) - amount includes the impact of all troubled debt restructuring (TDR) related impairments.

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

<b>Single-Family Credit Overview - Quarterly (BASELINE)</b>	Most Recent Quarter								
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>SERIOUSLY DELINQUENT LOAN ACTIVITY (count in '000s)</b>									
1									
2									
3									
4									
5									
6									
<b>7</b>									
<b>Ending Seriously Delinquent Loans</b>									
8									
9									
<b>Ending seriously delinquent rate (%)</b>									
<b>Aggregate UPB of seriously delinquent loans (\$s in millions)</b>									
<hr/>									
10									
<b>Loan modifications (count in 000s)</b>									
<b>PAYMENTS FROM PRIVATE MORTGAGE INSURERS (after haircut) (\$s in millions)</b>									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

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

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

### Single-Family Credit Summary (BASELINE)

#### Delinquency Status - CURRENT BOOK

(\$s in millions)

End of Quarter Unpaid Principal Balance (UPB)

		Most Recent Quarter									
Loan Status			Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>MODIFIED LOANS</b>											
1	Current										
2	Less than 90 days delinquent										
3	Seriously delinquent (90 days or more delinquent or in the process of foreclosure)										
4	Total										
<b>NON-MODIFIED LOANS</b>											
5	Current										
6	Less than 90 days delinquent										
7	Seriously delinquent (90 days or more delinquent or in the process of foreclosure)										
8	Total										

(\$s in millions)

Loan Loss Reserve

		Most Recent Quarter									
Loan Status			Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>MODIFIED LOANS</b>											
9	Current										
10	Less than 90 days delinquent										
11	Seriously delinquent (90 days or more delinquent or in the process of foreclosure)										
12	Total										
<b>NON-MODIFIED LOANS</b>											
13	Current										
14	Less than 90 days delinquent										
15	Seriously delinquent (90 days or more delinquent or in the process of foreclosure)										
16	Total										

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

### Single-Family Credit Summary (BASELINE)

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

(\$s in millions)

		End of Quarter Unpaid Principal Balance (UPB)								
Loan Status	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
1	<=80%									
2	>80% - 100%									
3	>100%									
4	Total									

(\$s in millions)

		Loan Loss Reserve								
Loan Status	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
5	<=80%									
6	>80% - 100%									
7	>100%									
8	Total									

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

### Single-Family Credit Summary (BASELINE)

Vintage Status - CURRENT BOOK

(\$s in millions)

		End of Quarter Unpaid Principal Balance (UPB)								
Loan Status	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
1	2004 and prior									
2	2005									
3	2006									
4	2007									
5	2008									
6	2009									
7	2010									
8	2011									
9	2012									
10	2013									
11	2014									
12	2015									

(\$s in millions)

		Loan Loss Reserve								
Loan Status	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
13	2004 and prior									
14	2005									
15	2006									
16	2007									
17	2008									
18	2009									
19	2010									
20	2011									
21	2012									
22	2013									
23	2014									
24	2015									

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

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

**Vintage and MTMLTV Status - CURRENT BOOK**

(\$s in millions)		End of Quarter Unpaid Principal Balance (UPB)								
Loan Status at 12/31/15		Most Recent Quarter	Q9	Cumulative Defaults <sup>1</sup>	Cumulative Prepays <sup>2</sup>	Run-off <sup>3</sup>	Other <sup>4</sup>	Migrate to <=80%	Migrate to 80% - 100%	Migrate to >100%
2004 and prior	<=80%									
	80% - 100%									
	>100%									
2005 - 2008	<=80%									
	80% - 100%									
	>100%									
2009 and Later	<=80%									
	80% - 100%									
	>100%									

(\$s in millions)		Loan Loss Reserves				
Loan Status at 12/31/15		Beginning	Cumulative Charge-offs	Provision for Credit Losses	Other	Ending
2004 and prior	<=80%					
	80% - 100%					
	>100%					
2005 - 2008	<=80%					
	80% - 100%					
	>100%					
2009 and Later	<=80%					
	80% - 100%					
	>100%					

1 - amount depicts principal balance of loans that are in the process of foreclosure  
2 - amount depicts principal balance of loans that have prepaid through refinance  
3 - amount depicts reduction in principal balance due to amortization  
4 - amount includes NPL sales and other miscellaneous items



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

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

**Vintage and Delinquency Status - CURRENT BOOK**

(\$s in millions)

Loan Status at 12/31/15	Most Recent Quarter	End of Quarter Unpaid Principal Balance (UPB)										
		Q9	Cumulative Defaults <sup>1</sup>	Cumulative Prepays <sup>2</sup>	Run-off <sup>3</sup>	Other <sup>4</sup>	Migrate to Modified Current	Migrate to Modified <90 Days	Migrate to Modified SDQ	Migrate to Non-Modified Current	Migrate to Non-Modified <90 Days	Migrate to Non-Modified SDQ
2004 and prior	Current											
	Modified <90 Days SDQ											
2005 - 2008	Current											
	Non-Modified <90 Days SDQ											
2009 and Later	Current											
	Modified <90 Days SDQ											
	Non-Modified <90 Days SDQ											

(\$s in millions)

Loan Status at 12/31/15		Loan Loss Reserves Provision				
		Beginning	Cumulative Charge-offs	for Credit Losses	Other	Ending
2004 and prior	Current					
	Modified <90 Days SDQ					
2005 - 2008	Current					
	Non-Modified <90 Days SDQ					
2009 and Later	Current					
	Modified <90 Days SDQ					
	Non-Modified <90 Days SDQ					

1 - amount depicts principal balance of loans that are in the process of foreclosure  
2 - amount depicts principal balance of loans that have prepaid through refinancing  
3 - amount depicts reduction in principal balance due to amortization  
4 - amount includes NPL sales and other miscellaneous items

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

### Single-Family Credit Summary (BASELINE)

#### MTMLTV and Delinquency Status - CURRENT BOOK

(\$s in millions)

Loan Status at 12/31/15		Most Recent Quarter	End of Quarter Unpaid Principal Balance (UPB)										
			Q9	Cumulative Defaults <sup>1</sup>	Cumulative Prepays <sup>2</sup>	Run-off <sup>3</sup>	Other <sup>4</sup>	Migrate to Modified Current	Migrate to Modified <90 Days	Migrate to Modified SDQ	Migrate to Non-Modified Current	Migrate to Non-Modified <90 Days	Migrate to Non-Modified SDQ
<=80%	Current												
	Modified <90 Days SDQ												
80% - 100%	Current												
	Modified <90 Days SDQ												
>100%	Current												
	Modified <90 Days SDQ												

(\$s in millions)

Loan Status at 12/31/15		Beginning	Loan Loss Reserves			Ending
			Cumulative Charge-offs	Provision for Credit Losses	Other	
<=80%	Current					
	Modified <90 Days SDQ					
80% - 100%	Current					
	Modified <90 Days SDQ					
>100%	Current					
	Modified <90 Days SDQ					

1 - amount depicts principal balance of loans that are in the process of foreclosure  
2 - amount depicts principal balance of loans that have prepaid through refinancing  
3 - amount depicts reduction in principal balance due to amortization  
4 - amount includes NPL sales and other miscellaneous items

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

### Single-Family Credit Summary (BASELINE)

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

(\$s in millions)

Loan Status	Most Recent Quarter	End of Quarter Projected Charge-Offs (Undiscounted \$s)									Nine Quarter Cumulative Total
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
1 <=80%											
2 >80% - 100%											
3 >100%											

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

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

**Vintage Table - CURRENT BOOK**

(\$s in millions)

End of Quarter Projected Charge-Offs (Undiscounted \$s)

Loan Status		Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1	2004 and prior											
2	2005											
3	2006											
4	2007											
5	2008											
6	2009											
7	2010											
8	2011											
9	2012											
10	2013											
11	2014											
12	2015											

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

(\$s in millions)

<b>Income Statement (ADVERSE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1 Net interest income (excluding management and guaranty fee income)											
2 Management and guaranty fee income <sup>1</sup>											
<b>3 Total net interest income</b>											
4 Other income											
<b>5 Total revenue</b>											
6 REO (foreclosed property expense)											
7 SOP 03-3 losses, net											
8 Security impairments											
9 Operational risk losses											
10 Administrative expenses											
11 Other expenses											
<b>12 Pre-provision net revenue</b>											
13 (Provision) benefit for credit losses											
14 Derivatives gains (losses)											
15 Trading gains (losses)											
16 Other gains (losses)											
17 Global market shock impact on trading securities											
18 Counterparty default losses											
<b>19 Pre-Tax income (loss)</b>											
20 Provision (benefit) for federal income taxes											
21 Extraordinary gains (losses), net of tax effect											
<b>22 Net income (loss)</b>											
23 Global market shock impact on available-for-sale securities											
24 Other comprehensive income											
<b>25 Comprehensive income (loss)</b>											

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

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

(\$s in millions)

<b>Balance Sheet (ADVERSE)</b>	Most Recent Quarter									
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<b>ASSETS</b>										
1 Cash and cash equivalents										
2 Investments in securities										
3 Available-for-sale, at fair value										
4 Trading, at fair value										
5 Mortgage loans, excluding loss allowance										
6 Allowance for loan losses										
7 Deferred tax assets, net of allowance										
8 Other assets										
<b>9 Total assets</b>										
<b>LIABILITIES</b>										
10 Short-term debt										
11 Long-term debt										
12 Debt of consolidated trusts/PCs										
13 Guarantee fee obligation										
14 Reserve for guaranty losses										
15 Other liabilities										
<b>16 Total liabilities</b>										
17 Minority interest										
<b>CAPITAL</b>										
18 Senior preferred stock										
19 Preferred stock										
20 Common stock										
21 Retained earnings (deficit)										
22 Accumulated other comprehensive income (loss)										
23 Treasury stock										
24 Total stockholders' equity (deficit)										
<b>25 Total capital (deficit)</b>										
<b>26 Total liabilities, minority interest and capital</b>										

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

(\$s in millions)

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

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

(\$s in millions)

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



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

(\$s in millions)

### Global Market Shock (ADVERSE)

Applicable  
UPB

---

Q1 Loss

---

- 1 Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS)
- 2 Commercial Mortgage-backed Securities (CMBS)
- 3 Asset-based Securities (ABS) and other collateral
- 4 Agency Securities Option-Adjusted Spread
- 5 Municipal Securities
- 6 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	
	Other	
	Total	

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

(\$s in millions)

Applicable  
UPB

Q1 Loss

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

### 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 Agency Securities Option-Adjusted Spread
- 5 Municipal Securities
- 6 Counterparty Default Risk\*

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

- 7 Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS)
- 8 Commercial Mortgage-backed Securities (CMBS)
- 9 Asset-based Securities (ABS) and other collateral
- 10 Agency Securities Option-Adjusted Spread
- 11 Municipal Securities

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

(\*Credit ratings should be as of December 31, 2015)

MV* (\$MM)	RMBS															RMBS SubTotal	
	Grand Total	Non-Agency Prime	Sub-prime	Option ARMS	Other AltA	Unspec Non-Prime	HELOC	RMBS CDO	RMBS CDS	Credit Basket	PrimeX	ABX / TABX	Prime Whole Loans	Non-Prime Whole Loans	European RMBS		Other / Unspecified
<b>AAA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>AA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>A Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>BBB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>BB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>&lt;B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>NR Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Profit/Loss (\$MM)																	
<b>AAA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>AA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>A Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>BBB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>BB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>&lt;B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>NR Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0



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

**Trading and Other Fair Value Assets**  
Munis (Adverse)

	MV (\$MM) Available-for-Sale Securities	MV (\$MM) Trading Securities	Profit/Loss from OAS Widening (AFS)	Profit/Loss from OAS Widening (Trading Secs)
<b>Bonds</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Bonds Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Bonds Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Loans</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Loans Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Loans Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>CDS</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>CDS Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>CDS Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

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

**Trading and Other Fair Value Assets**  
Munis (Adverse)

**Indices**

AAA		
AA		
A		
BBB		
BB		
B		
<B		
NR		
<b>Indices Total</b>	<b>\$0</b>	<b>\$0</b>
<b>1M</b>		
<b>3M</b>		
<b>6M</b>		
<b>9M</b>		
<b>1Y</b>		
<b>2Y</b>		
<b>3Y</b>		
<b>5Y</b>		
<b>7Y</b>		
<b>10Y</b>		
<b>15Y</b>		
<b>20Y</b>		
<b>30Y</b>		
<b>Indices Total</b>	<b>\$0</b>	<b>\$0</b>

<b>\$0</b>		<b>\$0</b>

**Other / Unspecified Munis**

AAA		
AA		
A		
BBB		
BB		
B		
<B		
NR		
<b>Other / Unspecified Munis Total</b>	<b>\$0</b>	<b>\$0</b>
<b>1M</b>		
<b>3M</b>		
<b>6M</b>		
<b>9M</b>		
<b>1Y</b>		
<b>2Y</b>		
<b>3Y</b>		
<b>5Y</b>		
<b>7Y</b>		
<b>10Y</b>		
<b>15Y</b>		
<b>20Y</b>		
<b>30Y</b>		
<b>Other / Unspecified Munis Total</b>	<b>\$0</b>	<b>\$0</b>

<b>\$0</b>		<b>\$0</b>

**Grand Total**

AAA	\$0	\$0
AA	\$0	\$0
A	\$0	\$0
BBB	\$0	\$0
BB	\$0	\$0
B	\$0	\$0
<B	\$0	\$0
NR	\$0	\$0
<b>Grand Total</b>	<b>\$0</b>	<b>\$0</b>
<b>1M</b>	\$0	\$0
<b>3M</b>	\$0	\$0
<b>6M</b>	\$0	\$0
<b>9M</b>	\$0	\$0
<b>1Y</b>	\$0	\$0
<b>2Y</b>	\$0	\$0
<b>3Y</b>	\$0	\$0
<b>5Y</b>	\$0	\$0
<b>7Y</b>	\$0	\$0
<b>10Y</b>	\$0	\$0
<b>15Y</b>	\$0	\$0
<b>20Y</b>	\$0	\$0
<b>30Y</b>	\$0	\$0
<b>Grand Total</b>	<b>\$0</b>	<b>\$0</b>

	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
	\$0	\$0
<b>\$0</b>		<b>\$0</b>

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

**Trading & Other Fair Value Assets Schedule**  
Agencies (Adverse)

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

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

(\$s in millions)

<b>Income Statement (SEVERELY ADVERSE) (without re-establishing DTA)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1 Net interest income (excluding management and guaranty fee income)											
2 Management and guaranty fee income <sup>1</sup>											
<b>3 Total net interest income</b>											
4 Other income											
<b>5 Total revenue</b>											
6 REO (foreclosed property expense)											
7 SOP 03-3 losses, net											
8 Security impairments											
9 Operational risk losses											
10 Administrative expenses											
11 Other expenses											
<b>12 Pre-provision net revenue</b>											
13 (Provision) benefit for credit losses											
14 Derivatives gains (losses)											
15 Trading gains (losses)											
16 Other gains (losses)											
17 Global market shock impact on trading securities											
18 Counterparty default losses											
<b>19 Pre-Tax income (loss)</b>											
20 Provision (benefit) for federal income taxes											
21 Extraordinary gains (losses), net of tax effect											
<b>22 Net income (loss)</b>											
23 Global market shock impact on available-for-sale securities											
24 Other comprehensive income											
<b>25 Comprehensive income (loss)</b>											

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



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

(\$s in millions)

<b>Income Statement (SEVERELY ADVERSE) (with re-establishing DTA)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1 Net interest income (excluding management and guaranty fee income)											
2 Management and guaranty fee income <sup>1</sup>											
<b>3 Total net interest income</b>											
4 Other income											
<b>5 Total revenue</b>											
6 REO (foreclosed property exp.)											
7 SOP 03-3 losses, net											
8 Security impairments											
9 Operational risk losses											
10 Administrative expenses											
11 Other expenses											
<b>12 Pre-provision net revenue</b>											
13 (Provision) benefit for credit losses											
14 Derivatives gains (losses)											
15 Trading gains (losses)											
16 Other gains (losses)											
17 Global market shock impact on trading securities											
18 Counterparty default losses											
<b>19 Pre-Tax income (loss)</b>											
20 Provision (benefit) for federal income taxes											
21 Extraordinary gains (losses), net of tax effect											
<b>22 Net income (loss)</b>											
23 Global market shock impact on available-for-sale securities											
24 Other comprehensive income											
<b>25 Comprehensive income (loss)</b>											

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

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

(\$s in millions)

### **Balance Sheet (SEVERELY ADVERSE)** **(without re-establishing DTA)**

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>ASSETS</b>										
1	Cash and cash equivalents									
2	Investments in securities									
3	Available-for-sale, at fair value									
4	Trading, at fair value									
5	Mortgage loans, excluding loss allowance									
6	Allowance for loan losses									
7	Deferred tax assets, net of allowance									
8	Other assets									
<b>9</b>	<b>Total assets</b>									
<b>LIABILITIES</b>										
10	Short-term debt									
11	Long-term debt									
12	Debt of consolidated trusts/PCs									
13	Guarantee fee obligation									
14	Reserve for guaranty losses									
15	Other liabilities									
<b>16</b>	<b>Total liabilities</b>									
17	Minority interest									
<b>CAPITAL</b>										
18	Senior preferred stock									
19	Preferred stock									
20	Common stock									
21	Retained earnings (deficit)									
22	Accumulated other comprehensive income (loss)									
23	Treasury stock									
24	Total stockholders' equity (deficit)									
<b>25</b>	<b>Total capital (deficit)</b>									
<b>26</b>	<b>Total liabilities, minority interest and capital</b>									

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

(\$s in millions)

### **Balance Sheet (SEVERELY ADVERSE)** **(with re-establishing DTA)**

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
	<b>ASSETS</b>									
1 Cash and cash equivalents										
2 Investments in securities										
3 Available-for-sale, at fair value										
4 Trading, at fair value										
5 Mortgage loans, excluding loss allowance										
6 Allowance for loan losses										
7 Deferred tax assets, net of allowance										
8 Other assets										
<b>9 Total assets</b>										
<b>LIABILITIES</b>										
10 Short-term debt										
11 Long-term debt										
12 Debt of consolidated trusts/PCs										
13 Guarantee fee obligation										
14 Reserve for guaranty losses										
15 Other liabilities										
<b>16 Total liabilities</b>										
17 Minority interest										
<b>CAPITAL</b>										
18 Senior preferred stock										
19 Preferred stock										
20 Common stock										
21 Retained earnings (deficit)										
22 Accumulated other comprehensive income (loss)										
23 Treasury stock										
24 Total stockholders' equity (deficit)										
<b>25 Total capital (deficit)</b>										
<b>26 Total liabilities, minority interest and capital</b>										

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

(\$s in millions)

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

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

(\$s in millions)

<b><u>Capital Roll Forward (SEVERELY ADVERSE)</u></b> <b><u>(with re-establishing DTA)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
<b>CAPITAL</b>											
1 Beginning capital											
2 Senior preferred Treasury draw (prior period)											
3 Net income											
4 Less: Dividends											
5 Other capital actions											
6 Change in AOCI											
7 Change in non-controlling/minority interest											
8 Other											
<b>9 Ending capital</b>											
10 Beginning PSPA funding commitment available											
11 Treasury draw required											
<b>12 Remaining PSPA funding commitment available</b>											

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

(\$s in millions)

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

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

(\$s in millions)

Applicable  
UPB

Q1 Loss

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

- 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 Agency Securities Option-Adjusted Spread
- 5 Municipal Securities
- 6 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	
	Other	
	Total	

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

(\$s in millions)

Applicable  
UPB

Q1 Loss

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

### 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 Agency Securities Option-Adjusted Spread
- 5 Municipal Securities
- 6 Counterparty Default Risk\*

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

- 7 Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS)
- 8 Commercial Mortgage-backed Securities (CMBS)
- 9 Asset-based Securities (ABS) and other collateral
- 10 Agency Securities Option-Adjusted Spread
- 11 Municipal Securities



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

(\*Credit ratings should be as of December 31, 2015)

MV* (\$MM)	Grand Total	RMBS														RMBS SubTotal	
		Non-Agency Prime	Sub-prime	Option ARMS	Other AltA	Unspec Non-Prime	HELOC	RMBS CDO	RMBS CDS	Credit Basket	PrimeX	ABX / TABX	Prime Whole Loans	Non-Prime Whole Loans	European RMBS		Other / Unspecified
<b>AAA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>AA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>A Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>BBB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>BB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>&lt;B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>NR Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Profit/Loss (\$MM)	Grand Total	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	RMBS SubTotal
<b>AAA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>AA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>A Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>BBB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>BB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>&lt;B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>NR Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																
2006	\$0																
2007	\$0																
Post 2007	\$0																
Unspecified Vintage	\$0																
<b>Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0



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

**Trading and Other Fair Value Assets**  
Munis (Severely Adverse)

	MV (\$MM) Available-for-Sale Securities	MV (\$MM) Trading Securities	Profit/Loss from OAS Widening (AFS)	Profit/Loss from OAS Widening (Trading Secs)
<b>Bonds</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Bonds Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Bonds Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Loans</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Loans Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Loans Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>CDS</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>CDS Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>CDS Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

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

**Trading and Other Fair Value Assets**  
Munis (Severely Adverse)

	MV (\$MM) Available-for-Sale Securities	MV (\$MM) Trading Securities	Profit/Loss from OAS Widening (AFS)	Profit/Loss from OAS Widening (Trading Secs)
<b>Indices</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Indices Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Indices Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Other / Unspecified Munis</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Other / Unspecified Munis Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Other / Unspecified Munis Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Grand Total</b>				
AAA	\$0	\$0	\$0	\$0
AA	\$0	\$0	\$0	\$0
A	\$0	\$0	\$0	\$0
BBB	\$0	\$0	\$0	\$0
BB	\$0	\$0	\$0	\$0
B	\$0	\$0	\$0	\$0
<B	\$0	\$0	\$0	\$0
NR	\$0	\$0	\$0	\$0
<b>Grand Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M	\$0	\$0	\$0	\$0
3M	\$0	\$0	\$0	\$0
6M	\$0	\$0	\$0	\$0
9M	\$0	\$0	\$0	\$0
1Y	\$0	\$0	\$0	\$0
2Y	\$0	\$0	\$0	\$0
3Y	\$0	\$0	\$0	\$0
5Y	\$0	\$0	\$0	\$0
7Y	\$0	\$0	\$0	\$0
10Y	\$0	\$0	\$0	\$0
15Y	\$0	\$0	\$0	\$0
20Y	\$0	\$0	\$0	\$0
30Y	\$0	\$0	\$0	\$0
<b>Grand Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

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

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

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

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

### Single-Family Credit Overview - Cumulative Results (SEVERELY ADVERSE)

	Provision for Credit Losses	Credit Losses			Loan Loss Reserve		
		Foreclosed Property Expense	Net Charge-offs	Total	Beginning	Ending	Change
(\$s in millions)							
1 Current Book (as of 12/31/15)							
2 New Business							
3 Total Portfolio							
Memo:							
4 FAS 5 Loan Loss Reserve							
5 FAS114 Loan Loss Reserve							
6 Concessions in FAS 114 Loan Loss Reserve <sup>(1)</sup>							

(1) - amount includes the impact of all troubled debt restructuring (TDR) related impairments.

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

<b>Single-Family Credit Overview - Quarterly (SEVERELY ADVERSE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
<b>TOTAL PORTFOLIO</b>											
CREDIT EXPENSES (\$s in millions)											
1	Foreclosed property expense (REO)										
2	Net charge-offs										
3	Credit losses										
4	Provision for credit losses										
<b>5</b>	<b>Credit Expenses<sup>(1)</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
6	Beginning loan loss reserve										
7	Net charge-offs										
8	Provision (benefit) for loan losses/guaranty losses										
9	Other										
<b>10</b>	<b>Ending Total Loan Loss Reserve</b>										
Memo:											
11	FAS 5 Loan Loss Reserve										
12	FAS 114 Loan Loss Reserve										
13	Concessions in FAS 114 Loan Loss Reserve <sup>(2)</sup>										
14	Unpaid Principal Balance (\$s in millions)										
<b>CURRENT BOOK (as of 12/31/15)</b>											
CREDIT EXPENSES (\$s in millions)											
15	Foreclosed property expense (REO)										
16	Net charge-offs										
17	Credit losses										
18	Provision for credit losses										
<b>19</b>	<b>Credit Expenses<sup>(1)</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
20	Beginning loan loss reserve										
21	Net charge-offs										
22	Provision (benefit) for loan losses/guaranty losses										
23	Other										
<b>24</b>	<b>Ending Loan Loss Reserve - Current Book</b>										
25	Unpaid Principal Balance (\$s in millions)										
<b>NEW BUSINESS</b>											
CREDIT EXPENSES (\$s in millions)											
26	Foreclosed property expense (REO)										
27	Net charge-offs										
28	Credit losses										
29	Provision for credit losses										
<b>30</b>	<b>Credit Expenses<sup>(1)</sup></b>										
LOAN LOSS RESERVE (\$s in millions)											
31	Beginning loan loss reserve										
32	Net charge-offs										
33	Provision (benefit) for loan losses/guaranty losses										
34	Other										
<b>35</b>	<b>Ending Loan Loss Reserve - New Business</b>										
36	Unpaid Principal Balance (\$s in millions)										

(1) - amount depicts the summation of foreclosed property expense, provision for credit losses, and SOP 03-3 losses.  
(2) - amount includes the impact of all troubled debt restructuring (TDR) related impairments.

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

<b>Single-Family Credit Overview - Quarterly (SEVERELY ADVERSE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
	<hr/>									
<b>SERIOUSLY DELINQUENT LOAN ACTIVITY (count in '000s)</b>										
1	Beginning seriously delinquent loans									
2	Seriously delinquent inflows									
3	Seriously delinquent cured by modification									
4	Seriously delinquent - self cured									
5	Seriously delinquent to default									
6	Seriously delinquent to payoff									
7	<b>Ending Seriously Delinquent Loans</b>									
<hr/>										
8	Ending seriously delinquent rate (%)									
9	Aggregate UPB of seriously delinquent loans (\$s in millions)									
<hr/>										
10	Loan modifications (count in 000s)									
<hr/>										
<b>PAYMENTS FROM PRIVATE MORTGAGE INSURERS (after haircut) (\$s in millions)</b>										
11	Mortgage Guaranty Insurance Corporation									
12	Triad Guaranty Insurance Corporation									
13	Radian Guaranty Inc.									
14	United Guaranty Residential Insurance Co.									
15	Genworth Mortgage Insurance Corporation									
16	PMI Mortgage Insurance Co.									
17	Republic Mortgage Insurance Company									
18	Essent Guaranty, Inc.									
19	Arch Mortgage Insurance Company									
20	Other									

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



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

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

**Delinquency Status - CURRENT BOOK**

(\$s in millions)

End of Quarter Unpaid Principal Balance (UPB)

Loan Status	Most Recent Quarter	End of Quarter Unpaid Principal Balance (UPB)								
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>MODIFIED LOANS</b>										
1 Current										
2 Less than 90 days delinquent										
3 Seriously delinquent (90 days or more delinquent or in the process of foreclosure)										
4 Total										
<b>NON-MODIFIED LOANS</b>										
5 Current										
6 Less than 90 days delinquent										
7 Seriously delinquent (90 days or more delinquent or in the process of foreclosure)										
8 Total										

(\$s in millions)

Loan Loss Reserve

Loan Status	Most Recent Quarter	Loan Loss Reserve								
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>MODIFIED LOANS</b>										
9 Current										
10 Less than 90 days delinquent										
11 Seriously delinquent (90 days or more delinquent or in the process of foreclosure)										
12 Total										
<b>NON-MODIFIED LOANS</b>										
13 Current										
14 Less than 90 days delinquent										
15 Seriously delinquent (90 days or more delinquent or in the process of foreclosure)										
16 Total										

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

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

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

(\$s in millions)		End of Quarter Unpaid Principal Balance (UPB)								
Loan Status	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
1 <=80%										
2 >80% - 100%										
3 >100%										
4 Total										



(\$s in millions)		Loan Loss Reserve								
Loan Status	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
5 <=80%										
6 >80% - 100%										
7 >100%										
8 Total										

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

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

Vintage Status - CURRENT BOOK

(\$s in millions)

End of Quarter Unpaid Principal Balance (UPB)

		Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<u>Loan Status</u>											
1	2004 and prior										
2	2005										
3	2006										
4	2007										
5	2008										
6	2009										
7	2010										
8	2011										
9	2012										
10	2013										
11	2014										
12	2015										

(\$s in millions)

Loan Loss Reserve

		Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<u>Loan Status</u>											
13	2004 and prior										
14	2005										
15	2006										
16	2007										
17	2008										
18	2009										
19	2010										
20	2011										
21	2012										
22	2013										
23	2014										
24	2015										

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

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

**Vintage and MTMLTV Status - CURRENT BOOK**

(\$s in millions)		End of Quarter Unpaid Principal Balance (UPB)								
		Most Recent Quarter	Q9	Cumulative Defaults <sup>1</sup>	Cumulative Prepays <sup>2</sup>	Run-off <sup>3</sup>	Other <sup>4</sup>	Migrate to <=80%	Migrate to 80% - 100%	Migrate to >100%
Loan Status at 12/31/15	<=80%									
	2004 and prior 80% - 100%									
	>100%									
2005 - 2008	<=80%									
	80% - 100%									
	>100%									
2009 and Later	<=80%									
	80% - 100%									
	>100%									

(\$s in millions)		Loan Loss Reserves				
		Beginning	Cumulative Charge-offs	Provision for Credit Losses	Other	Ending
Loan Status at 12/31/15	<=80%					
	2004 and prior 80% - 100%					
	>100%					
2005 - 2008	<=80%					
	80% - 100%					
	>100%					
2009 and Later	<=80%					
	80% - 100%					
	>100%					

1 - amount depicts principal balance of loans that are in the process of foreclosure  
2 - amount depicts principal balance of loans that have prepaid through refinance  
3 - amount depicts reduction in principal balance due to amortization  
4 - amount includes NPL sales and other miscellaneous items

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

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

(\$s in millions)

Loan Status at 12/31/15	Most Recent Quarter	End of Quarter Unpaid Principal Balance (UPB)										
		Q9	Cumulative Defaults <sup>1</sup>	Cumulative Prepays <sup>2</sup>	Run-off <sup>3</sup>	Other <sup>4</sup>	Migrate to Modified Current	Migrate to Modified <90 Days	Migrate to Modified SDQ	Migrate to Non-Modified Current	Migrate to Non-Modified <90 Days	Migrate to Non-Modified SDQ
2004 and prior	Modified	Current <90 Days SDQ										
	Non-Modified	Current <90 Days SDQ										
2005 - 2008	Modified	Current <90 Days SDQ										
	Non-Modified	Current <90 Days SDQ										
2009 and Later	Modified	Current <90 Days SDQ										
	Non-Modified	Current <90 Days SDQ										

(\$s in millions)

Loan Status at 12/31/15		Loan Loss Reserves Provision				
		Beginning	Cumulative Charge-offs	for Credit Losses	Other	Ending
2004 and prior	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				
2005 - 2008	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				
2009 and Later	Modified	Current <90 Days SDQ				
	Non-Modified	Current <90 Days SDQ				

1 - amount depicts principal balance of loans that are in the process of foreclosure  
2 - amount depicts principal balance of loans that have prepaid through refinancing  
3 - amount depicts reduction in principal balance due to amortization  
4 - amount includes NPL sales and other miscellaneous items

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

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

(\$s in millions)

Loan Status at 12/31/15	Most Recent Quarter	End of Quarter Unpaid Principal Balance (UPB)										
		Q9	Cumulative Defaults <sup>1</sup>	Cumulative Prepays <sup>2</sup>	Run-off <sup>3</sup>	Other <sup>4</sup>	Migrate to Modified Current	Migrate to Modified <90 Days	Migrate to Modified SDQ	Migrate to Non-Modified Current	Migrate to Non-Modified <90 Days	Migrate to Non-Modified SDQ
<=80%	Modified Current <90 Days SDQ											
	Non-Modified Current <90 Days SDQ											
80% - 100%	Modified Current <90 Days SDQ											
	Non-Modified Current <90 Days SDQ											
>100%	Modified Current <90 Days SDQ											
	Non-Modified Current <90 Days SDQ											

(\$s in millions)

Loan Status at 12/31/15	Beginning	Loan Loss Reserves Provision for				Ending
		Cumulative Charge-offs	Credit Losses	Other		
<=80%	Modified Current <90 Days SDQ					
	Non-Modified Current <90 Days SDQ					
80% - 100%	Modified Current <90 Days SDQ					
	Non-Modified Current <90 Days SDQ					
>100%	Modified Current <90 Days SDQ					
	Non-Modified Current <90 Days SDQ					

1 - amount depicts principal balance of loans that are in the process of foreclosure  
2 - amount depicts principal balance of loans that have prepaid through refinance  
3 - amount depicts reduction in principal balance due to amortization  
4 - amount includes NPL sales and other miscellaneous items

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

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

Mark-to-Market Loan to Value - CURRENT BOOK

(\$s in millions)

End of Quarter Projected Charge-Offs (Undiscounted \$s)
---------------------------------------------------------

Loan Status	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1 <=80%											
2 >80% - 100%											
3 >100%											

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

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

**Vintage Table - CURRENT BOOK**

(\$s in millions)

End of Quarter Projected Charge-Offs (Undiscounted \$s)

Loan Status		Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Nine Quarter Cumulative Total
1	2004 and prior											
2	2005											
3	2006											
4	2007											
5	2008											
6	2009											
7	2010											
8	2011											
9	2012											
10	2013											
11	2014											
12	2015											



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

## Cumulative Projected Financial Metrics (Q1 2016 - Q1 2018)

(\$s in billions)

	Results without re-establishing valuation allowance on deferred tax assets	Impact of re-establishing valuation allowance on deferred tax assets	Results with re-establishing valuation allowance on deferred tax assets
--	-------------------------------------------------------------------------------------	----------------------------------------------------------------------------	----------------------------------------------------------------------------------

- |    |                                                                      |  |  |
|----|----------------------------------------------------------------------|--|--|
| 1  | Pre-provision net revenue <sup>1</sup>                               |  |  |
| 2  | (Provision) benefit for credit losses                                |  |  |
| 3  | Mark-to-market gains (losses) <sup>2</sup>                           |  |  |
| 4  | Global market shock impact on trading securities<br>and counterparty |  |  |
| 5  | Net income before taxes                                              |  |  |
| 6  | (Provision) benefit for taxes                                        |  |  |
| 7  | Other comprehensive income (loss) <sup>3</sup>                       |  |  |
| 8  | Total comprehensive income (loss)                                    |  |  |
| 9  | Dividends paid                                                       |  |  |
| 10 | PSPA funding commitment as of December 31, 2015                      |  |  |
| 11 | Treasury draws required                                              |  |  |
| 12 | Remaining PSPA funding commitment                                    |  |  |
| 13 | Credit losses <sup>4</sup>                                           |  |  |
| 14 | Credit losses (% of average portfolio balance)                       |  |  |

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

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

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

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

## Appendix 3: FHFA DFA Reporting Schedules - FHLBanks

### Stress Test Template Instructions

1. All numbers should be report in millions to two decimal places
2. Reported numbers should reflect the 12/31/2015 start date.

### Scenario Schedule Cover Sheet

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

**Institution Name:**

**Date of Data Submission:**

**Institution Contact Name:**

**Institution Contact Phone Number:**

**Institution Contact Email Address:**

## Supplied Scenario Variables

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

### Domestic Variables

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

### International Variables

- Euro Area Real GDP Growth
- Euro Area Inflation
- Euro Area Bilateral Dollar Exchange Rate (\$/euro)
- Developing Asia Real GDP Growth
- Developing Asia Inflation
- Developing Asia Bilateral Dollar Exchange Rate (F/USD, 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

## Scenario Variables Beyond Those Supplied

---

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

---

Variable Number	Variable Name	Variable Definition
1		
2		
3		
4		
5		

---

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

---

Variable Number	Variable Name	Variable Definition
1		
2		
3		
4		
5		

---

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

---

Variable Number	Variable Name	Variable Definition
1		
2		
3		
4		
5		

## Baseline

### Spread Assumptions

Category	Benchmark	Spread to Benchmark									
		Actual					Projected				
		4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Example: Advance	3-Month LIBOR	10.0	10.0	10.0	10.0	15.0	15.0	15.0	15.0	15.0	15.0

### Variables Used Beyond Those Supplied

Variable Name	Actual					Projected				
	4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9

### Forward Curve

Maturity	Actual					Projected					
	4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
3-Month Treasury	0.1	0.4	0.6	0.9	1.0	1.3	1.5	1.9	2.2	2.4	
6-Month											
1 year											
2 year											
5 year Treasury	1.6	1.8	2.0	2.2	2.4	2.6	2.7	2.9	3.0	3.1	
10 year Treasury	2.2	2.4	2.6	2.7	2.9	3.0	3.1	3.3	3.4	3.5	
15 year											
30 year											

### House Price Index

*(NOTE: For printing purposes dates only goes to Oct-16. However, the underlying excel spreadsheet collects 30 years of data.)*

Region	Actual					Projected					
	4Q 2015	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Region 1											
Region 2											
.											
.											
.											
.											
.											

## Adverse

### Spread Assumptions

Category	Benchmark	Spread to Benchmark									
		Actual				Projected					
		4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Example: Advance	3-Month LIBOR	10.0	10.0	10.0	10.0	15.0	15.0	15.0	15.0	15.0	15.0

### Variables Used Beyond Those Supplied

Variable Name	Actual				Projected					
	4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9

### Forward Curve

Maturity	Actual				Projected						
	4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
3-Month Treasury	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
6-Month											
1 year											
2 year											
5 year Treasury	1.6	0.5	0.7	0.8	1.0	1.2	1.3	1.5	1.6	1.8	
10 year Treasury	2.2	1.3	1.4	1.5	1.7	1.8	1.9	2.2	2.3	2.4	
15 year											
30 year											

### House Price Index

*(NOTE: For printing purposes dates only goes to Oct-16. However, the underlying excel spreadsheet collects 30 years of data.)*

Region	Actual				Projected						
	4Q 2015	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
Region 1											
Region 2											

Region 1

Region 2

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## Severely Adverse

### Spread Assumptions

Category	Benchmark	Spread to Benchmark									
		Actual					Projected				
		4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Example: Advance	3-Month LIBOR	10.0	10.0	10.0	10.0	15.0	15.0	15.0	15.0	15.0	15.0

### Variables Used Beyond Those Supplied

Variable Name	Actual				Projected						
	4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	

### Forward Curve

Maturity	Actual				Projected						
	4Q 2015	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
3-Month Treasury	0.1	0.0	-0.2	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	
6-Month											
1 year											
2 year											
5 year Treasury	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	
10 year Treasury	2.2	0.2	0.4	0.4	0.6	0.7	0.8	1.0	1.1	1.2	
15 year											
30 year											

### House Price Index

*(NOTE: For printing purposes dates only go to Oct-16. However, the underlying excel spreadsheet collects 30 years of data.)*

Region	Actual				Projected							
	4Q 2015	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	
Region 1												
Region 2												
.												
.												
.												
.												
.												



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

**Income Statement - Aggregate (BASE)**

Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
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## FHLBank Dodd-Frank Stress Test Template (Disclosure to FHFA ONLY)

<b><u>Income Statement - Existing (BASE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Interest Income:										
1 Advances										
2 Whole loans held for portfolio										
3 Investment Securities										
4 Fed Funds										
5 Other Interest Income										
6 Total Interest Income										
Interest Expense:										
7 CO Bonds										
8 Discount Notes										
9 Member Deposits										
10 Other Interest Expense										
11 Total Interest Expense										
<b>12 Net interest income</b>										
13 Provision (reversal) for credit losses on mortgage loans										
<b>14 Net Interest Income after mortgage loan loss provision</b>										
15 Derivatives gains (losses)										
16 Gains (losses) on securities										
17 Total net gain (loss) on changes in fair value										
18 Total OTTI credit charge										
19 Other gains (losses)										
20 Operating expenses										
21 Other expenses										
<b>22 Income (loss) before assessments</b>										
23 Total assessments										
<b>24 Net Income (Loss)</b>										

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

<b>Income Statement - Replacement (BASE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Interest Income:										
1 Advances										
2 Whole loans held for portfolio										
3 Investment Securities										
4 Fed Funds										
5 Other Interest Income										
6 Total Interest Income										
Interest Expense:										
7 CO Bonds										
8 Discount Notes										
9 Member Deposits										
10 Other Interest Expense										
11 Total Interest Expense										
<b>12 Net interest income</b>										
13 Provision (reversal) for credit losses on mortgage loans										
<b>14 Net Interest Income after mortgage loan loss provision</b>										
15 Derivatives gains (losses)										
16 Gains (losses) on securities										
17 Total net gain (loss) on changes in fair value										
18 Total OTTI credit charge										
19 Other gains (losses)										
20 Operating expenses										
21 Other expenses										
<b>22 Income (loss) before assessments</b>										
23 Total assessments										
<b>24 Net Income (Loss)</b>										

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

### Balance Sheet - Aggregate (BASE)

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>ASSETS</b>										
1	Advances									
2	Investment Securities									
3	Mortgage Loans									
4	Allowance for loan losses									
5	Fed Funds									
6	Other assets									
<b>7</b>	<b>Total assets</b>									
<b>LIABILITIES</b>										
8	CO bonds									
9	Discount notes									
10	Member deposits									
11	Other liabilities									
<b>12</b>	<b>Total liabilities</b>									
<b>CAPITAL</b>										
13	Class B capital stock									
14	Class A capital stock									
15	Capital stock pre-conversion									
16	Retained earnings (unrestricted)									
17	Retained earnings (restricted)									
18	Accumulated other comprehensive income (loss)									
<b>19</b>	<b>Total capital</b>									
<b>20</b>	<b>Total liabilities and capital</b>									

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

<b><u>Balance Sheet - Existing (BASE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>ASSETS</b>										
1 Advances										
2 Investment Securities										
3 Mortgage Loans										
4 Allowance for loan losses										
5 Fed Funds										
6 Other assets										
<b>7 Total assets</b>										
<b>LIABILITIES</b>										
8 CO bonds										
9 Discount notes										
10 Member deposits										
11 Other liabilities										
<b>12 Total liabilities</b>										
<b>CAPITAL</b>										
13 Class B capital stock										
14 Class A capital stock										
15 Capital stock pre-conversion										
16 Retained earnings (unrestricted)										
17 Retained earnings (restricted)										
18 Accumulated other comprehensive income (loss)										
<b>19 Total capital</b>										
<b>20 Total liabilities and capital</b>										

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

<b>Balance Sheet - Replacement (BASE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>ASSETS</b>										
1 Advances										
2 Investment Securities										
3 Mortgage Loans										
4 Allowance for loan losses										
5 Fed Funds										
6 Other assets										
<b>7 Total assets</b>										
<b>LIABILITIES</b>										
8 CO bonds										
9 Discount notes										
10 Member deposits										
11 Other liabilities										
<b>12 Total liabilities</b>										
<b>CAPITAL</b>										
13 Class B capital stock										
14 Class A capital stock										
15 Capital stock pre-conversion										
16 Retained earnings (unrestricted)										
17 Retained earnings (restricted)										
18 Accumulated other comprehensive income (loss)										
<b>19 Total capital</b>										
<b>20 Total liabilities and capital</b>										

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

**Capital Roll Forward (BASE)**

Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
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# FHLBank Dodd-Frank Stress Test Template (Disclosure to FHFA ONLY)

<b><u>Credit (BASE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>CREDIT EXPENSES</b>										
1	Provision for credit losses									
<b>PLS CREDIT QUALITY</b>										
2	Principal									
3	Principal writedown									
4	Balance									
5	Credit support									
<b>COUNTERPARTY CREDIT</b>										
6	<b>Net Exposure</b>									
7	Secured Credit									
8	Unsecured Credit									
9	Unsecured derivative counterparty exposure									
10	Payment from private mortgage insurers									



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

**Income Statement - Aggregate (ADVERSE)**

Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
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**FHLBank Dodd-Frank Stress Test Template  
(Disclosure to FHFA ONLY)**

**Income Statement - Existing (ADVERSE)**

Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
---------------------------	----	----	----	----	----	----	----	----	----


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

<b><u>Income Statement - Replacement (ADVERSE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9

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

**Balance Sheet-Aggregate (ADVERSE)**

Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9

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

<b><u>Balance Sheet - Existing (ADVERSE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>ASSETS</b>										
1 Advances										
2 Investment Securities										
3 Mortgage Loans										
4 Allowance for loan losses										
5 Fed Funds										
6 Other assets										
<b>7 Total assets</b>										
<b>LIABILITIES</b>										
8 CO bonds										
9 Discount notes										
10 Member deposits										
11 Other liabilities										
<b>12 Total liabilities</b>										
<b>CAPITAL</b>										
13 Class B capital stock										
14 Class A capital stock										
15 Capital stock pre-conversion										
16 Retained earnings (unrestricted)										
17 Retained earnings (restricted)										
18 Accumulated other comprehensive income (loss)										
<b>19 Total capital</b>										
<b>20 Total liabilities and capital</b>										

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

**Balance Sheet - Replacement (ADVERSE)**

Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
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**FHLBank Dodd-Frank Stress Test Template  
(Disclosure to FHFA ONLY)**

**Capital Roll Forward (ADVERSE)**

Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9

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

<b><u>Credit (ADVERSE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>CREDIT EXPENSES</b>										
1 Provision for credit losses										
<b>PLS CREDIT QUALITY</b>										
2 Principal										
3 Principal writedown										
4 Balance										
5 Credit support										
<b>COUNTERPARTY CREDIT</b>										
6 Unsecured credit										
7 Unsecured derivative counterparty exposure										
8 Payment from private mortgage insurers										



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

## Global Market Shock (ADVERSE)

Q1 Loss

Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS), Asset-based Securities (ABS), Commercial Mortgage-

- 1 backed Securities (CMBS) and other collateral
- 2 Agency Securities Option-Adjusted Spread
- 3 Municipal Securities
- 4 Counterparty Default Risk\*

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

Counterparty Name	Counterparty Type
-------------------	-------------------

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

## Global Market Shock (ADVERSE)

Q1  
Loss

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### TRADING SECURITIES

Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS), Asset-based Securities (ABS), Commercial Mortgage-backed

- 1 Securities (CMBS) and other collateral
- 2 Agency Securities Option-Adjusted Spread
- 3 Municipal Securities

### AVAILABLE-FOR-SALE SECURITIES

Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS), Asset-based Securities (ABS), Commercial Mortgage-backed

- 4 Securities (CMBS) and other collateral
- 5 Agency Securities Option-Adjusted Spread
- 6 Municipal Securities

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

(\*Credit ratings should be as of December 31, 2015)

Grand Total	RMBS														RMBS SubTotal		
	Non-Agency Prime	Sub-prime	Option ARMS	Other AltA	Unspec Non-Prime	HELOC	RMBS CDO	RMBS CDS	Credit Basket	PrimeX	ABX / TABX	Prime Whole Loans	Non-Prime Whole Loans	European RMBS		Other / Unspecified	
<b>MV* (\$MM)</b>																	
<b>AAA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>AA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>A Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>BBB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>BB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>&lt;B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>NR Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

<b>Profit/Loss (\$MM)</b>																	
<b>AAA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>AA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>A Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>BBB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>BB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>&lt;B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>NR Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

FHLBank Dodd-Frank Stress Test Template  
(Disclosure to FHFA ONLY)

(\*Credit ratings should be as of December 31, 2015)

Grand Total	ABS								CMBS								Corporate CDO / CLO			Warehouse			
	Autos	Credit Cards	Student Loans	ABS CDS	Credit Basket	Index Tranches	Other / Unspecified	ABS SubTotal	Cash Non-Agency CMBS	CMBS CDS	CMBS CDO	Credit Basket	Index Tranches	Whole Loans	Other / Unspecified	CMBS SubTotal	CLO	Other / Unspecified	Corporate CDO/CLO SubTotal	Total Size	Total Protection	Other / Unspecified	
<b>MV' (\$MM)</b>																							
<b>AAA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>AA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>A Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>BBB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>BB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>&lt;B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>NR Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Profit/Loss (\$MM)</b>																							
<b>AAA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>AA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>A Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>BBB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>BB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0		\$0		\$0			\$0
<b>&lt;B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0							\$0								\$0		\$0		\$0			\$0
2006	\$0							\$0								\$0		\$0		\$0			\$0
2007	\$0							\$0								\$0		\$0		\$0			\$0
Post 2007	\$0							\$0								\$0		\$0		\$0			\$0
Unspecified Vintage	\$0							\$0								\$0							

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

**Trading and Other Fair Value Assets**  
Munis (Adverse)

	MV (\$MM) Available-for-Sale Securities	MV (\$MM) Trading Securities	Profit/Loss from OAS Widening (AFS)	Profit/Loss from OAS Widening (Trading Secs)
<b>Bonds</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Bonds Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Bonds Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Loans</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Loans Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Loans Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>CDS</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>CDS Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>CDS Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

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

**Trading and Other Fair Value Assets**  
Munis (Adverse)

	MV (\$MM) Available-for-Sale Securities	MV (\$MM) Trading Securities	Profit/Loss from OAS Widening (AFS)	Profit/Loss from OAS Widening (Trading Secs)
<b>Indices</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Indices Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Indices Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Other / Unspecified Munis</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Other / Unspecified Munis Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Other / Unspecified Munis Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Grand Total</b>				
AAA	\$0	\$0	\$0	\$0
AA	\$0	\$0	\$0	\$0
A	\$0	\$0	\$0	\$0
BBB	\$0	\$0	\$0	\$0
BB	\$0	\$0	\$0	\$0
B	\$0	\$0	\$0	\$0
<B	\$0	\$0	\$0	\$0
NR	\$0	\$0	\$0	\$0
<b>Grand Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M	\$0	\$0	\$0	\$0
3M	\$0	\$0	\$0	\$0
6M	\$0	\$0	\$0	\$0
9M	\$0	\$0	\$0	\$0
1Y	\$0	\$0	\$0	\$0
2Y	\$0	\$0	\$0	\$0
3Y	\$0	\$0	\$0	\$0
5Y	\$0	\$0	\$0	\$0
7Y	\$0	\$0	\$0	\$0
10Y	\$0	\$0	\$0	\$0
15Y	\$0	\$0	\$0	\$0
20Y	\$0	\$0	\$0	\$0
30Y	\$0	\$0	\$0	\$0
<b>Grand Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

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

**Trading & Other Fair Value Assets Schedule**  
Agencies (Adverse)

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

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

<b>Income Statement-Aggregate (SEVERELY ADVERSE)</b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Interest Income:										
1 Advances										
2 Whole loans held for portfolio										
3 Investment Securities										
4 Fed Funds										
5 Other Interest Income										
6 Total Interest Income										
Interest Expense:										
7 CO Bonds										
8 Discount Notes										
9 Member Deposits										
10 Other Interest Expense										
11 Total Interest Expense										
<b>12 Net interest income</b>										
13 Provision (reversal) for credit losses on mortgage loans										
<b>14 Net interest income after mortgage loan loss provision</b>										
15 Derivatives gains (losses)										
16 Gains (losses) on securities										
17 Total net gain (loss) on changes in fair value										
18 Total OTTI credit charge										
19 Other gains (losses)										
20 Operating expenses										
21 Other expenses										
<b>22 Income (loss) before assessments</b>										
23 Total assessments										
<b>24 Net Income (Loss)</b>										



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

<b><u>Income Statement - Existing (SEVERELY ADVERSE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Interest Income:										
1 Advances										
2 Whole loans held for portfolio										
3 Investment Securities										
4 Fed Funds										
5 Other Interest Income										
6 Total Interest Income										
Interest Expense:										
7 CO Bonds										
8 Discount Notes										
9 Member Deposits										
10 Other Interest Expense										
11 Total Interest Expense										
<b>12 Net interest income</b>										
13 Provision (reversal) for credit losses on mortgage loans										
<b>14 Net Interest Income after mortgage loan loss provision</b>										
15 Derivatives gains (losses)										
16 Gains (losses) on securities										
17 Total net gain (loss) on changes in fair value										
18 Total OTTI credit charge										
19 Other gains (losses)										
20 Operating expenses										
21 Other expenses										
<b>22 Income (loss) before assessments</b>										
23 Total assessments										
<b>24 Net Income (Loss)</b>										

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

**Income Statement - Replacement (SEVERELY ADVERSE)**

Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
---------------------	----	----	----	----	----	----	----	----	----


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

### Balance Sheet-Aggregate (SEVERELY ADVERSE)

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
ASSETS										
1 Advances										
2 Investment Securities										
3 Mortgage Loans										
4 Allowance for loan losses										
5 Fed Funds										
6 Other assets										
<b>7 Total assets</b>										

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

### **Balance Sheet - Existing (SEVERELY ADVERSE)**

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
ASSETS										
1 Advances										
2 Investment Securities										
3 Mortgage Loans										
4 Allowance for loan losses										
5 Fed Funds										
6 Other assets										
<b>7 Total assets</b>										

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

### **Balance Sheet - Replacement (SEVERELY ADVERSE)**

	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>ASSETS</b>										
1 Advances										
2 Investment Securities										
3 Mortgage Loans										
4 Allowance for loan losses										
5 Fed Funds										
6 Other assets										
<b>7 Total assets</b>										

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

<b><u>Capital Roll Forward (SEVERELY ADVERSE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>CAPITAL</b>										
1 Beginning Capital										
2 Net Income										
3 Less: Dividends										
4 Other Capital Actions										
5 Change in AOCI										
6 Other										
<b>7 Ending Capital</b>										
8 Regulatory Capital										
<b><u>Capital Ratios</u></b>										
9 Regulatory Capital										
10 Leverage Capital										
11 Permanent Capital										

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

<b><u>Credit (SEVERELY ADVERSE)</u></b>	Most Recent Quarter	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
<b>CREDIT EXPENSES</b>										
1 Provision for credit losses										
<b>PLS CREDIT QUALITY</b>										
2 Principal										
3 Principal writedown										
4 Balance										
5 Credit support										
<b>COUNTERPARTY CREDIT</b>										
6 Unsecured credit										
7 Unsecured derivative counterparty exposure										
8 Payment from private mortgage insurers										

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

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

Q1 Loss

- 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
- 1 backed Securities (CMBS) and other collateral
  - 2 Agency Securities Option-Adjusted Spread
  - 3 Municipal Securities
  - 4 Counterparty Default Risk\*

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

Counterparty Name	Counterparty Type
-------------------	-------------------



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

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

Q1 Loss

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### TRADING SECURITIES

Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS), Asset-based Securities (ABS), Commercial Mortgage-backed

- 1 Securities (CMBS) and other collateral
- 2 Agency Securities Option-Adjusted Spread
- 3 Municipal Securities

### AVAILABLE-FOR-SALE SECURITIES

Private Label Securities (PLS) or Non-Agency Prices for Residential Mortgage-backed Securities (RMBS), Asset-based Securities (ABS), Commercial Mortgage-backed

- 4 Securities (CMBS) and other collateral
- 5 Agency Securities Option-Adjusted Spread
- 6 Municipal Securities

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

(\*Credit ratings should be as of December 31, 2015)

Grand Total	RMBS														RMBS SubTotal		
	Non-Agency Prime	Sub-prime	Option ARMS	Other AltA	Unspec Non-Prime	HELOC	RMBS CDO	RMBS CDS	Credit Basket	PrimeX	ABX / TABX	Prime Whole Loans	Non-Prime Whole Loans	European RMBS		Other / Unspecified	
<b>MV* (\$MM)</b>																	
<b>AAA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>AA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>A Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>BBB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>BB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>&lt;B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>NR Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Profit/Loss (\$MM)</b>																	
<b>AAA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>AA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>A Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>BBB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>BB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>&lt;B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>NR Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0																\$0
2006	\$0																\$0
2007	\$0																\$0
Post 2007	\$0																\$0
Unspecified Vintage	\$0																\$0
<b>Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

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

(\*Credit ratings should be as of December 31, 2015)

MV* (\$MM)	Grand Total	ABS							ABS SubTotal	CMBS							CMBS SubTotal	Corporate CDO / CLO			Warehouse		
		Autos	Credit Cards	Student Loans	ABS CDS	Credit Basket	Index Tranches	Other / Unspecified		Cash Non-Agency CMBS	CMBS CDS	CMBS CDO	Credit Basket	Index Tranches	Whole Loans	Other / Unspecified		CLO	Other / Unspecified	Corporate CDO/CLO SubTotal	Total Size	Other / Protection	Unspecified
<b>AAA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pre 2006	\$0								\$0								\$0			\$0			
2006	\$0								\$0								\$0			\$0			
2007	\$0								\$0								\$0			\$0			
Post 2007	\$0								\$0								\$0			\$0			
Unspecified Vintage	\$0								\$0								\$0			\$0			
<b>AA Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Pre 2006	\$0								\$0								\$0			\$0			
2006	\$0								\$0								\$0			\$0			
2007	\$0								\$0								\$0			\$0			
Post 2007	\$0								\$0								\$0			\$0			
Unspecified Vintage	\$0								\$0								\$0			\$0			
<b>A Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Pre 2006	\$0								\$0								\$0			\$0			
2006	\$0								\$0								\$0			\$0			
2007	\$0								\$0								\$0			\$0			
Post 2007	\$0								\$0								\$0			\$0			
Unspecified Vintage	\$0								\$0								\$0			\$0			
<b>BBB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Pre 2006	\$0								\$0								\$0			\$0			
2006	\$0								\$0								\$0			\$0			
2007	\$0								\$0								\$0			\$0			
Post 2007	\$0								\$0								\$0			\$0			
Unspecified Vintage	\$0								\$0								\$0			\$0			
<b>BB Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Pre 2006	\$0								\$0								\$0			\$0			
2006	\$0								\$0								\$0			\$0			
2007	\$0								\$0								\$0			\$0			
Post 2007	\$0								\$0								\$0			\$0			
Unspecified Vintage	\$0								\$0								\$0			\$0			
<b>B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Pre 2006	\$0								\$0								\$0			\$0			
2006	\$0								\$0								\$0			\$0			
2007	\$0								\$0								\$0			\$0			
Post 2007	\$0								\$0								\$0			\$0			
Unspecified Vintage	\$0								\$0								\$0			\$0			
<b>&lt;B Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Pre 2006	\$0								\$0								\$0			\$0			
2006	\$0								\$0								\$0			\$0			
2007	\$0								\$0								\$0			\$0			
Post 2007	\$0								\$0								\$0			\$0			
Unspecified Vintage	\$0								\$0								\$0			\$0			
<b>NR Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Pre 2006	\$0								\$0								\$0			\$0			
2006	\$0								\$0								\$0			\$0			
2007	\$0								\$0								\$0			\$0			
Post 2007	\$0								\$0								\$0			\$0			
Unspecified Vintage	\$0								\$0								\$0			\$0			
<b>Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	

  

Profit/Loss (\$MM)	AAA Total	AA Total	A Total	BBB Total	BB Total	B Total	<B Total	NR Total	Total
Pre 2006	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2006	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2007	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Post 2007	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unspecified Vintage	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

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

**Trading and Other Fair Value Assets**  
Munis (Severely Adverse)

	MV (\$MM) Available-for-Sale Securities	MV (\$MM) Trading Securities	Profit/Loss from OAS Widening (AFS)	Profit/Loss from OAS Widening (Trading Secs)
<b>Bonds</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Bonds Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Bonds Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Loans</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Loans Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Loans Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>CDS</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>CDS Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>CDS Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

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

**Trading and Other Fair Value Assets**  
Munis (Severely Adverse)

	MV (\$MM) Available-for-Sale Securities	MV (\$MM) Trading Securities	Profit/Loss from OAS Widening (AFS)	Profit/Loss from OAS Widening (Trading Secs)
<b>Indices</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Indices Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Indices Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Other / Unspecified Munis</b>				
AAA				
AA				
A				
BBB				
BB				
B				
<B				
NR				
<b>Other / Unspecified Munis Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M				
3M				
6M				
9M				
1Y				
2Y				
3Y				
5Y				
7Y				
10Y				
15Y				
20Y				
30Y				
<b>Other / Unspecified Munis Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Grand Total</b>				
AAA	\$0	\$0	\$0	\$0
AA	\$0	\$0	\$0	\$0
A	\$0	\$0	\$0	\$0
BBB	\$0	\$0	\$0	\$0
BB	\$0	\$0	\$0	\$0
B	\$0	\$0	\$0	\$0
<B	\$0	\$0	\$0	\$0
NR	\$0	\$0	\$0	\$0
<b>Grand Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
1M	\$0	\$0	\$0	\$0
3M	\$0	\$0	\$0	\$0
6M	\$0	\$0	\$0	\$0
9M	\$0	\$0	\$0	\$0
1Y	\$0	\$0	\$0	\$0
2Y	\$0	\$0	\$0	\$0
3Y	\$0	\$0	\$0	\$0
5Y	\$0	\$0	\$0	\$0
7Y	\$0	\$0	\$0	\$0
10Y	\$0	\$0	\$0	\$0
15Y	\$0	\$0	\$0	\$0
20Y	\$0	\$0	\$0	\$0
30Y	\$0	\$0	\$0	\$0
<b>Grand Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

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

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

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

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

Cumulative Projected  
Financial Metrics  
(Q1 2016 - Q1 2018)

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- 1 Net interest income + other non-interest income, net
- 2 (Provision) benefit for credit losses on mortgage loans
- 3 OTTI credit losses
- 4 Mark-to-market gains (losses)
- 5 Global market shock impact on trading securities
- 6 Counterparty default losses
- 7 AHP assessments
- 8 Net income (loss)
- 9 Other comprehensive income (loss)
- 10 Total comprehensive income (loss)
- 11 Total capital (GAAP) - starting
- 12 Total capital (GAAP) - ending
- 13 Regulatory capital ratio - starting
- 14 Regulatory capital ratio - ending

## Appendix 4: Baseline Scenarios - Domestic

Date	Real GDP growth	Nominal GDP growth	Real disposable	Nominal disposable	Unemployment rate	CPI inflation rate	3-month	5-year	10-year	BBB corporate yield	Mortgage rate	Prime rate	Dow Jones	House Price	Commercial	Market
			income	income			Treasury rate	Treasury yield	Treasury yield				Total Stock	Index	Real Estate	Volatility
			growth	growth							Market Index (Level)		Price Index (Level)		Index (Level)	
Q1 2001	-1.1	1.4	3.5	6.3	4.2	3.9	4.8	4.9	5.3	7.4	7.0	8.6	10645.9	113.3	139.0	32.8
Q2 2001	2.1	5.1	-0.3	1.6	4.4	2.8	3.7	4.9	5.5	7.5	7.1	7.3	11407.2	115.2	139.0	34.7
Q3 2001	-1.3	0.0	9.8	10.1	4.8	1.1	3.2	4.6	5.3	7.3	6.9	6.6	9563.0	117.5	141.0	43.7
Q4 2001	1.1	2.3	-4.9	-4.6	5.5	-0.3	1.9	4.2	5.1	7.2	6.8	5.2	10707.7	119.8	136.0	35.3
Q1 2002	3.7	5.1	10.1	10.9	5.7	1.3	1.7	4.5	5.4	7.6	7.0	4.8	10775.7	122.1	137.0	26.1
Q2 2002	2.2	3.8	2.0	5.2	5.8	3.2	1.7	4.5	5.4	7.6	6.8	4.8	9384.0	125.4	136.0	28.4
Q3 2002	2.0	3.8	-0.5	1.5	5.7	2.2	1.6	3.4	4.5	7.3	6.2	4.8	7773.6	128.6	139.0	45.1
Q4 2002	0.3	2.4	1.9	3.8	5.9	2.4	1.3	3.1	4.3	7.0	6.1	4.5	8343.2	131.3	142.0	42.6
Q1 2003	2.1	4.6	1.1	4.0	5.9	4.2	1.2	2.9	4.2	6.5	5.8	4.3	8051.9	134.1	148.0	34.7
Q2 2003	3.8	5.1	5.9	6.3	6.1	-0.7	1.0	2.6	3.8	5.7	5.5	4.2	9342.4	137.0	149.0	29.1
Q3 2003	6.9	9.3	6.7	9.3	6.1	3.0	0.9	3.1	4.4	6.0	6.1	4.0	9649.7	141.0	147.0	22.7
Q4 2003	4.8	6.8	1.6	3.3	5.8	1.5	0.9	3.2	4.4	5.8	5.9	4.0	10799.6	145.9	146.0	21.1
Q1 2004	2.3	5.9	2.9	6.1	5.7	3.4	0.9	3.0	4.1	5.5	5.6	4.0	11039.4	151.6	153.0	21.6
Q2 2004	3.0	6.6	4.0	7.0	5.6	3.2	1.1	3.7	4.7	6.1	6.2	4.0	11144.6	157.9	160.0	20.0
Q3 2004	3.7	6.3	2.1	4.5	5.4	2.6	1.5	3.5	4.4	5.8	5.9	4.4	10893.8	163.2	172.0	19.3
Q4 2004	3.5	6.4	5.1	8.5	5.4	4.4	2.0	3.5	4.3	5.4	5.7	4.9	11951.5	169.2	176.0	16.6
Q1 2005	4.3	8.3	-3.8	-1.8	5.3	2.0	2.5	3.9	4.4	5.4	5.8	5.4	11637.3	177.1	176.0	14.6
Q2 2005	2.1	5.1	3.2	6.0	5.1	2.7	2.9	3.9	4.2	5.5	5.7	5.9	11856.7	184.5	182.0	17.7
Q3 2005	3.4	7.3	2.1	6.6	5.0	6.2	3.4	4.0	4.3	5.5	5.8	6.4	12282.9	190.2	187.0	14.2
Q4 2005	2.3	5.4	3.4	6.6	5.0	3.8	3.8	4.4	4.6	5.9	6.2	7.0	12497.2	194.8	195.0	16.5
Q1 2006	4.9	8.2	9.5	11.5	4.7	2.1	4.4	4.6	4.7	6.0	6.3	7.4	13121.6	198.0	200.0	14.6
Q2 2006	1.2	4.5	0.6	3.7	4.6	3.7	4.7	5.0	5.2	6.5	6.6	7.9	12808.9	197.1	209.0	23.8
Q3 2006	0.4	3.2	1.2	4.1	4.6	3.8	4.9	4.8	5.0	6.4	6.5	8.3	13322.5	195.8	219.0	18.6
Q4 2006	3.2	4.6	5.3	4.6	4.4	-1.6	4.9	4.6	4.7	6.1	6.2	8.3	14215.8	195.8	217.0	12.7
Q1 2007	0.2	4.8	2.6	6.5	4.5	4.0	5.0	4.6	4.8	6.1	6.2	8.3	14354.0	193.3	227.0	19.6
Q2 2007	3.1	5.4	0.8	4.0	4.5	4.6	4.7	4.7	4.9	6.3	6.4	8.3	15163.1	188.5	236.0	18.9
Q3 2007	2.7	4.2	1.1	3.4	4.7	2.6	4.3	4.5	4.8	6.5	6.5	8.2	15317.8	183.2	249.0	30.8
Q4 2007	1.4	3.2	0.3	4.4	4.8	5.0	3.4	3.8	4.4	6.4	6.2	7.5	14753.6	177.8	251.0	31.1
Q1 2008	-2.7	-0.5	2.9	6.5	5.0	4.4	2.1	2.8	3.9	6.5	5.9	6.2	13284.1	171.1	240.0	32.2
Q2 2008	2.0	4.0	8.7	13.3	5.3	5.3	1.6	3.2	4.1	6.8	6.1	5.1	13016.4	163.9	224.0	24.1
Q3 2008	-1.9	0.8	-8.9	-5.1	6.0	6.3	1.5	3.1	4.1	7.2	6.3	5.0	11826.0	157.4	233.0	46.7
Q4 2008	-8.2	-7.7	2.6	-3.2	6.9	-8.9	0.3	2.2	3.7	9.4	5.8	4.1	9056.7	149.5	223.0	80.9
Q1 2009	-5.4	-4.5	-0.8	-3.0	8.3	-2.7	0.2	1.9	3.2	9.0	5.0	3.3	8044.2	143.5	209.0	56.7
Q2 2009	-0.5	-1.2	2.9	4.7	9.3	2.1	0.2	2.3	3.7	8.2	5.1	3.3	9342.8	143.2	178.0	42.3
Q3 2009	1.3	1.2	-4.3	-1.9	9.6	3.5	0.2	2.5	3.8	6.8	5.1	3.3	10812.8	144.3	154.0	31.3
Q4 2009	3.9	5.2	-0.5	2.2	9.9	3.2	0.1	2.3	3.7	6.1	4.9	3.3	11385.1	145.2	155.0	30.7



## Appendix 4: Baseline Scenarios - 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)
Q1 2010	1.7	3.2	0.4	1.8	9.8	0.6	0.1	2.4	3.9	5.8	5.0	3.3	12032.5	145.5	150.0	27.3
Q2 2010	3.9	5.8	5.3	5.8	9.6	-0.1	0.1	2.3	3.6	5.6	4.8	3.3	10645.8	144.4	165.0	45.8
Q3 2010	2.7	4.6	2.0	3.2	9.5	1.2	0.2	1.6	2.9	5.1	4.4	3.3	11814.0	141.6	167.0	32.9
Q4 2010	2.5	4.7	2.8	5.0	9.5	3.3	0.1	1.5	3.0	5.0	4.5	3.3	13131.5	140.3	173.0	23.5
Q1 2011	-1.5	0.2	5.0	8.2	9.1	4.3	0.1	2.1	3.5	5.4	4.9	3.3	13908.5	138.5	180.0	29.4
Q2 2011	2.9	6.0	-0.6	3.5	9.1	4.7	0.0	1.8	3.3	5.1	4.6	3.3	13843.5	137.7	177.0	22.7
Q3 2011	0.8	3.3	2.1	4.3	9.0	2.6	0.0	1.1	2.5	4.9	4.2	3.3	11676.5	137.7	177.0	48.0
Q4 2011	4.6	5.2	0.2	1.6	8.6	1.7	0.0	1.0	2.1	5.0	4.0	3.3	13019.3	137.6	188.0	45.5
Q1 2012	2.7	4.9	6.7	9.2	8.3	2.2	0.1	0.9	2.1	4.7	3.9	3.3	14627.5	139.6	188.0	23.0
Q2 2012	1.9	3.8	3.1	4.4	8.2	1.0	0.1	0.8	1.8	4.5	3.8	3.3	14100.2	142.8	189.0	26.7
Q3 2012	0.5	2.7	-0.2	1.1	8.0	1.8	0.1	0.7	1.6	4.2	3.5	3.3	14894.7	145.7	197.0	20.5
Q4 2012	0.1	1.7	10.9	13.3	7.8	2.6	0.1	0.7	1.7	3.9	3.4	3.3	14834.9	149.3	198.0	22.7
Q1 2013	1.9	3.6	-15.9	-14.7	7.7	1.4	0.1	0.8	1.9	4.0	3.5	3.3	16396.2	153.8	202.0	19.0
Q2 2013	1.1	2.1	2.7	3.1	7.5	-0.1	0.1	0.9	2.0	4.1	3.7	3.3	16771.3	158.8	213.0	20.5
Q3 2013	3.0	4.9	2.2	3.9	7.2	2.3	0.0	1.5	2.7	4.9	4.4	3.3	17718.3	163.0	224.0	17.0
Q4 2013	3.8	5.6	0.6	2.0	7.0	1.4	0.1	1.4	2.8	4.8	4.3	3.3	19413.2	166.3	229.0	20.3
Q1 2014	-0.9	0.6	4.0	5.6	6.7	2.1	0.0	1.6	2.8	4.6	4.4	3.3	19711.2	169.3	230.0	21.4
Q2 2014	4.6	6.9	3.0	5.2	6.2	2.4	0.0	1.7	2.7	4.3	4.2	3.3	20568.7	170.7	239.0	17.0
Q3 2014	4.3	6.0	2.7	3.9	6.1	1.2	0.0	1.7	2.5	4.2	4.1	3.3	20458.8	172.5	245.0	17.0
Q4 2014	2.1	2.2	4.7	4.2	5.7	-0.9	0.0	1.6	2.3	4.2	3.9	3.3	21424.6	174.5	252.0	26.3
Q1 2015	0.6	0.8	3.9	1.9	5.6	-3.1	0.0	1.5	2.0	4.0	3.7	3.3	21707.6	177.3	260.0	22.4
Q2 2015	3.9	6.1	2.6	4.9	5.4	3.0	0.0	1.5	2.2	4.2	3.8	3.3	21630.9	179.4	264.0	18.9
Q3 2015	2.0	3.3	3.8	5.1	5.2	1.6	0.0	1.6	2.3	4.5	3.9	3.3	19959.3	181.7	270.0	40.7
Q4 2015	1.9	1.9	3.5	3.8	5.0	0.2	0.1	1.6	2.2	4.6	3.9	3.3	21100.9	183.1	273.4	24.4
Q1 2016	2.5	4.0	2.8	3.5	4.9	1.2	0.4	1.8	2.4	4.5	4.1	3.6	21336.7	184.0	276.8	24.8
Q2 2016	2.6	4.0	2.5	4.3	4.8	2.2	0.6	2.0	2.6	4.7	4.2	3.8	21578.3	185.2	280.3	24.6
Q3 2016	2.6	4.3	2.6	4.5	4.7	2.3	0.9	2.2	2.7	4.8	4.3	4.0	21834.8	186.3	283.8	23.2
Q4 2016	2.5	4.3	2.6	4.6	4.6	2.3	1.0	2.4	2.9	4.9	4.5	4.1	22093.2	187.5	287.4	22.7
Q1 2017	2.4	4.1	2.8	4.8	4.6	2.2	1.3	2.6	3.0	5.0	4.6	4.4	22347.4	188.7	291.0	22.5
Q2 2017	2.5	4.6	2.6	4.8	4.6	2.4	1.5	2.7	3.1	5.1	4.7	4.6	22626.3	189.9	294.7	22.0
Q3 2017	2.3	4.6	2.5	4.7	4.5	2.4	1.9	2.9	3.3	5.2	4.9	5.0	22908.0	191.1	298.4	21.4
Q4 2017	2.3	4.4	2.6	4.7	4.5	2.3	2.2	3.0	3.4	5.3	5.0	5.3	23183.2	192.2	302.1	21.7
Q1 2018	2.6	4.3	2.9	4.7	4.5	2.0	2.4	3.1	3.5	5.4	5.2	5.5	23458.2	193.7	304.4	21.4
Q2 2018	2.4	4.2	2.6	4.6	4.6	2.1	2.6	3.2	3.6	5.5	5.3	5.7	23733.2	195.2	306.7	21.5
Q3 2018	2.3	4.2	2.6	4.5	4.6	2.1	2.7	3.2	3.7	5.6	5.4	5.8	24008.9	196.6	309.0	21.4
Q4 2018	2.3	4.1	2.5	4.5	4.7	2.1	2.8	3.3	3.8	5.6	5.5	5.9	24285.1	198.1	311.4	21.5
Q1 2019	2.1	4.0	2.4	4.3	4.7	2.1	2.8	3.4	3.8	5.6	5.5	5.9	24555.9	199.6	313.7	21.4

## Appendix 5: Baseline Scenarios – 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)
Q1 2001	3.8	1.1	0.9	5.0	1.7	106.0	2.6	-1.2	125.5	4.6	0.1	1.4
Q2 2001	0.1	4.1	0.8	5.5	2.2	106.1	-0.7	-0.3	124.7	3.1	3.1	1.4
Q3 2001	0.3	1.4	0.9	4.7	1.1	106.4	-4.4	-1.1	119.2	2.6	1.0	1.5
Q4 2001	0.5	1.7	0.9	8.4	0.2	106.9	-0.5	-1.4	131.0	1.4	0.0	1.5
Q1 2002	0.9	3.0	0.9	7.6	0.4	107.3	-0.9	-2.7	132.7	1.6	1.9	1.4
Q2 2002	2.0	2.0	1.0	8.1	1.2	104.8	4.3	1.7	119.9	3.3	0.9	1.5
Q3 2002	1.6	1.6	1.0	7.3	1.3	105.5	2.6	-0.7	121.7	3.9	1.4	1.6
Q4 2002	0.3	2.4	1.0	6.4	0.9	104.5	1.5	-0.4	118.8	3.6	1.9	1.6
Q1 2003	-0.9	3.3	1.1	6.5	3.6	105.5	-2.2	-1.6	118.1	2.9	1.6	1.6
Q2 2003	0.4	0.3	1.2	2.3	1.2	104.0	5.2	1.7	119.9	3.7	0.3	1.7
Q3 2003	2.0	2.2	1.2	14.2	0.0	102.6	1.7	-0.7	111.4	3.1	1.7	1.7
Q4 2003	3.1	2.2	1.3	12.9	5.6	103.4	4.2	-0.6	107.1	3.0	1.7	1.8
Q1 2004	2.0	2.3	1.2	5.5	4.0	101.4	3.8	-0.9	104.2	2.7	1.3	1.8
Q2 2004	2.2	2.4	1.2	7.1	4.1	102.8	0.3	1.1	109.4	2.2	1.0	1.8
Q3 2004	1.3	2.0	1.2	8.2	3.9	102.7	0.6	0.1	110.2	0.9	1.1	1.8
Q4 2004	1.5	2.4	1.4	6.3	0.9	98.9	-1.0	1.7	102.7	1.9	2.4	1.9
Q1 2005	0.6	1.5	1.3	10.3	2.9	98.6	0.8	-2.7	107.2	2.8	2.6	1.9
Q2 2005	2.8	2.2	1.2	8.9	1.5	98.9	5.4	-1.2	110.9	4.4	1.9	1.8
Q3 2005	3.0	3.2	1.2	9.3	2.3	98.6	1.4	-1.3	113.3	4.1	2.7	1.8
Q4 2005	2.4	2.5	1.2	11.6	1.7	98.1	0.7	0.7	117.9	5.9	1.4	1.7
Q1 2006	3.7	1.7	1.2	10.9	2.4	96.8	1.7	1.3	117.5	1.5	1.9	1.7
Q2 2006	4.4	2.5	1.3	7.1	3.2	96.7	1.7	-0.1	114.5	1.2	3.0	1.8
Q3 2006	2.6	2.0	1.3	10.3	2.1	96.4	-0.3	0.5	118.0	0.5	3.3	1.9
Q4 2006	4.4	0.9	1.3	11.1	3.8	94.6	5.2	-0.4	119.0	2.3	2.6	2.0
Q1 2007	3.2	2.2	1.3	13.7	3.6	94.0	4.0	-0.2	117.6	3.9	2.6	2.0
Q2 2007	2.5	2.3	1.4	10.6	4.9	91.9	0.6	0.0	123.4	2.4	1.7	2.0
Q3 2007	2.0	2.1	1.4	8.6	7.4	90.6	-1.5	0.1	115.0	3.1	0.2	2.0
Q4 2007	2.0	4.9	1.5	12.9	6.1	89.4	3.4	2.2	111.7	3.1	4.0	2.0
Q1 2008	2.3	4.2	1.6	7.1	8.1	88.0	2.7	1.3	99.9	1.0	3.7	2.0
Q2 2008	-1.3	3.2	1.6	6.1	6.4	88.7	-4.6	1.6	106.2	-2.2	5.7	2.0
Q3 2008	-2.2	3.2	1.4	3.1	2.8	91.6	-4.1	3.6	105.9	-6.6	5.8	1.8
Q4 2008	-7.1	-1.4	1.4	0.1	-0.9	92.3	-12.5	-2.2	90.8	-8.7	0.5	1.5
Q1 2009	-11.3	-1.1	1.3	3.8	-1.4	94.2	-15.1	-3.6	99.2	-6.1	-0.1	1.4
Q2 2009	-0.8	0.0	1.4	15.4	2.3	92.3	7.1	-1.7	96.4	-0.8	2.2	1.6
Q3 2009	1.2	1.1	1.5	12.6	3.9	91.3	0.4	-1.2	89.5	0.6	3.5	1.6
Q4 2009	2.0	1.6	1.4	9.0	5.2	90.7	7.1	-1.6	93.1	1.4	3.0	1.6

## Appendix 5: Baseline Scenarios – International (Cont.)

<u>Date</u>	<u>Euro area real GDP growth</u>	<u>Euro area inflation</u>	<u>Euro area bilateral dollar exchange rate (USD/euro)</u>	<u>Developing Asia real GDP growth</u>	<u>Developing Asia inflation</u>	<u>Developing Asia bilateral dollar exchange rate (F/USD, index)</u>	<u>Japan real GDP growth</u>	<u>Japan inflation</u>	<u>Japan bilateral dollar exchange rate (yen/USD)</u>	<u>U.K. real GDP growth</u>	<u>U.K. inflation</u>	<u>U.K. bilateral dollar exchange rate (USD/pound)</u>
Q1 2010	1.7	1.8	1.4	9.8	4.6	89.8	5.8	0.9	93.4	1.5	4.0	1.5
Q2 2010	3.9	2.0	1.2	9.8	3.4	91.1	4.6	-1.2	88.5	3.3	3.2	1.5
Q3 2010	1.9	1.6	1.4	8.8	3.9	88.4	6.1	-2.1	83.5	2.0	2.3	1.6
Q4 2010	2.1	2.6	1.3	9.3	7.7	87.4	-2.0	1.3	81.7	0.4	4.0	1.5
Q1 2011	3.5	3.6	1.4	9.5	6.3	86.5	-7.7	-0.4	82.8	3.0	6.7	1.6
Q2 2011	0.0	3.2	1.5	7.1	5.4	85.3	-2.2	-0.4	80.6	1.4	4.7	1.6
Q3 2011	-0.1	1.4	1.3	5.9	5.0	87.4	11.2	0.3	77.0	3.3	3.7	1.6
Q4 2011	-1.2	3.5	1.3	6.1	3.4	87.4	0.9	-0.7	77.0	0.6	3.4	1.6
Q1 2012	-0.7	2.7	1.3	7.1	3.2	86.4	3.6	1.9	82.4	0.9	2.1	1.6
Q2 2012	-1.3	2.3	1.3	5.9	4.0	88.1	-1.3	-0.7	79.8	-0.7	2.0	1.6
Q3 2012	-0.6	1.6	1.3	6.5	1.9	86.3	-1.9	-2.1	77.9	4.1	2.3	1.6
Q4 2012	-1.7	2.4	1.3	7.2	3.7	86.0	-0.4	0.0	86.6	-0.2	4.0	1.6
Q1 2013	-1.0	1.1	1.3	6.3	4.2	86.3	4.0	0.4	94.2	2.7	2.9	1.5
Q2 2013	1.6	0.5	1.3	7.0	3.1	87.3	3.1	0.6	99.2	2.4	1.7	1.5
Q3 2013	1.0	1.3	1.4	7.4	3.5	86.8	2.0	2.4	98.3	3.8	2.1	1.6
Q4 2013	0.8	0.3	1.4	6.5	4.0	85.9	-0.7	2.3	105.3	2.6	1.5	1.7
Q1 2014	0.9	0.6	1.4	5.9	1.5	86.9	5.0	0.7	103.0	2.6	1.8	1.7
Q2 2014	0.2	0.1	1.4	7.0	2.7	86.8	-7.2	9.3	101.3	3.2	1.5	1.7
Q3 2014	1.2	0.3	1.3	7.5	2.2	87.2	-2.8	1.3	109.7	2.6	0.9	1.6
Q4 2014	1.5	-0.4	1.2	5.6	1.0	88.2	1.8	-0.8	119.9	2.7	-0.6	1.6
Q1 2015	2.2	-1.2	1.1	5.8	1.0	88.1	4.4	-0.3	120.0	1.5	-1.2	1.5
Q2 2015	1.6	2.2	1.1	6.2	2.9	88.5	-0.5	1.7	122.1	2.2	0.8	1.6
Q3 2015	1.2	-0.1	1.1	7.0	2.6	91.1	1.0	0.0	119.8	1.8	1.0	1.5
Q4 2015	1.6	-0.1	1.1	6.2	2.3	92.2	1.0	-0.3	120.3	2.4	-0.3	1.5
Q1 2016	1.7	0.9	1.1	6.1	2.3	92.8	1.1	0.7	121.1	2.3	1.1	1.5
Q2 2016	1.8	1.2	1.1	6.0	2.3	93.4	1.1	0.9	122.0	2.1	1.4	1.5
Q3 2016	1.8	1.3	1.1	5.9	2.3	94.0	1.1	1.1	122.8	2.0	1.6	1.5
Q4 2016	1.8	1.4	1.0	5.9	2.4	94.5	1.0	1.4	123.5	2.0	1.8	1.5
Q1 2017	1.8	1.5	1.1	5.9	2.6	94.4	0.8	1.7	123.9	2.2	1.9	1.5
Q2 2017	1.7	1.5	1.1	6.0	2.7	94.2	0.7	1.8	124.1	2.3	1.9	1.5
Q3 2017	1.7	1.6	1.1	6.0	2.8	94.0	0.6	1.8	124.4	2.3	1.9	1.5
Q4 2017	1.7	1.5	1.1	6.0	2.8	93.8	0.7	1.6	124.5	2.3	1.8	1.5
Q1 2018	1.6	1.5	1.1	6.0	2.8	93.7	0.8	1.4	124.0	2.2	1.8	1.5
Q2 2018	1.6	1.5	1.1	6.0	2.9	93.6	0.9	1.2	123.4	2.1	1.7	1.5
Q3 2018	1.6	1.5	1.1	6.0	2.9	93.6	1.0	1.1	122.7	2.1	1.7	1.5
Q4 2018	1.6	1.6	1.1	6.1	3.0	93.5	1.0	1.2	122.0	2.1	1.7	1.5
Q1 2019	1.6	1.6	1.1	6.2	3.2	93.4	1.0	1.3	121.0	2.1	1.7	1.5

## Appendix 6: Adverse Scenarios - Domestic

Date	Real GDP growth	Nominal GDP growth	Real disposable income	Nominal disposable income	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	House Price Index (Level)	Commercial Real Estate Price Index (Level)	Market Volatility Index (Level)
			growth	growth			(Level)	(Level)	(Level)							
Q1 2001	-1.1	1.4	3.5	6.3	4.2	3.9	4.8	4.9	5.3	7.4	7.0	8.6	10645.9	113.3	139.0	32.8
Q2 2001	2.1	5.1	-0.3	1.6	4.4	2.8	3.7	4.9	5.5	7.5	7.1	7.3	11407.2	115.2	139.0	34.7
Q3 2001	-1.3	0.0	9.8	10.1	4.8	1.1	3.2	4.6	5.3	7.3	6.9	6.6	9563.0	117.5	141.0	43.7
Q4 2001	1.1	2.3	-4.9	-4.6	5.5	-0.3	1.9	4.2	5.1	7.2	6.8	5.2	10707.7	119.8	136.0	35.3
Q1 2002	3.7	5.1	10.1	10.9	5.7	1.3	1.7	4.5	5.4	7.6	7.0	4.8	10775.7	122.1	137.0	26.1
Q2 2002	2.2	3.8	2.0	5.2	5.8	3.2	1.7	4.5	5.4	7.6	6.8	4.8	9384.0	125.4	136.0	28.4
Q3 2002	2.0	3.8	-0.5	1.5	5.7	2.2	1.6	3.4	4.5	7.3	6.2	4.8	7773.6	128.6	139.0	45.1
Q4 2002	0.3	2.4	1.9	3.8	5.9	2.4	1.3	3.1	4.3	7.0	6.1	4.5	8343.2	131.3	142.0	42.6
Q1 2003	2.1	4.6	1.1	4.0	5.9	4.2	1.2	2.9	4.2	6.5	5.8	4.3	8051.9	134.1	148.0	34.7
Q2 2003	3.8	5.1	5.9	6.3	6.1	-0.7	1.0	2.6	3.8	5.7	5.5	4.2	9342.4	137.0	149.0	29.1
Q3 2003	6.9	9.3	6.7	9.3	6.1	3.0	0.9	3.1	4.4	6.0	6.1	4.0	9649.7	141.0	147.0	22.7
Q4 2003	4.8	6.8	1.6	3.3	5.8	1.5	0.9	3.2	4.4	5.8	5.9	4.0	10799.6	145.9	146.0	21.1
Q1 2004	2.3	5.9	2.9	6.1	5.7	3.4	0.9	3.0	4.1	5.5	5.6	4.0	11039.4	151.6	153.0	21.6
Q2 2004	3.0	6.6	4.0	7.0	5.6	3.2	1.1	3.7	4.7	6.1	6.2	4.0	11144.6	157.9	160.0	20.0
Q3 2004	3.7	6.3	2.1	4.5	5.4	2.6	1.5	3.5	4.4	5.8	5.9	4.4	10893.8	163.2	172.0	19.3
Q4 2004	3.5	6.4	5.1	8.5	5.4	4.4	2.0	3.5	4.3	5.4	5.7	4.9	11951.5	169.2	176.0	16.6
Q1 2005	4.3	8.3	-3.8	-1.8	5.3	2.0	2.5	3.9	4.4	5.4	5.8	5.4	11637.3	177.1	176.0	14.6
Q2 2005	2.1	5.1	3.2	6.0	5.1	2.7	2.9	3.9	4.2	5.5	5.7	5.9	11856.7	184.5	182.0	17.7
Q3 2005	3.4	7.3	2.1	6.6	5.0	6.2	3.4	4.0	4.3	5.5	5.8	6.4	12282.9	190.2	187.0	14.2
Q4 2005	2.3	5.4	3.4	6.6	5.0	3.8	3.8	4.4	4.6	5.9	6.2	7.0	12497.2	194.8	195.0	16.5
Q1 2006	4.9	8.2	9.5	11.5	4.7	2.1	4.4	4.6	4.7	6.0	6.3	7.4	13121.6	198.0	200.0	14.6
Q2 2006	1.2	4.5	0.6	3.7	4.6	3.7	4.7	5.0	5.2	6.5	6.6	7.9	12808.9	197.1	209.0	23.8
Q3 2006	0.4	3.2	1.2	4.1	4.6	3.8	4.9	4.8	5.0	6.4	6.5	8.3	13322.5	195.8	219.0	18.6
Q4 2006	3.2	4.6	5.3	4.6	4.4	-1.6	4.9	4.6	4.7	6.1	6.2	8.3	14215.8	195.8	217.0	12.7
Q1 2007	0.2	4.8	2.6	6.5	4.5	4.0	5.0	4.6	4.8	6.1	6.2	8.3	14354.0	193.3	227.0	19.6
Q2 2007	3.1	5.4	0.8	4.0	4.5	4.6	4.7	4.7	4.9	6.3	6.4	8.3	15163.1	188.5	236.0	18.9
Q3 2007	2.7	4.2	1.1	3.4	4.7	2.6	4.3	4.5	4.8	6.5	6.5	8.2	15317.8	183.2	249.0	30.8
Q4 2007	1.4	3.2	0.3	4.4	4.8	5.0	3.4	3.8	4.4	6.4	6.2	7.5	14753.6	177.8	251.0	31.1
Q1 2008	-2.7	-0.5	2.9	6.5	5.0	4.4	2.1	2.8	3.9	6.5	5.9	6.2	13284.1	171.1	240.0	32.2
Q2 2008	2.0	4.0	8.7	13.3	5.3	5.3	1.6	3.2	4.1	6.8	6.1	5.1	13016.4	163.9	224.0	24.1
Q3 2008	-1.9	0.8	-8.9	-5.1	6.0	6.3	1.5	3.1	4.1	7.2	6.3	5.0	11826.0	157.4	233.0	46.7
Q4 2008	-8.2	-7.7	2.6	-3.2	6.9	-8.9	0.3	2.2	3.7	9.4	5.8	4.1	9056.7	149.5	223.0	80.9
Q1 2009	-5.4	-4.5	-0.8	-3.0	8.3	-2.7	0.2	1.9	3.2	9.0	5.0	3.3	8044.2	143.5	209.0	56.7
Q2 2009	-0.5	-1.2	2.9	4.7	9.3	2.1	0.2	2.3	3.7	8.2	5.1	3.3	9342.8	143.2	178.0	42.3
Q3 2009	1.3	1.2	-4.3	-1.9	9.6	3.5	0.2	2.5	3.8	6.8	5.1	3.3	10812.8	144.3	154.0	31.3
Q4 2009	3.9	5.2	-0.5	2.2	9.9	3.2	0.1	2.3	3.7	6.1	4.9	3.3	11385.1	145.2	155.0	30.7

## Appendix 6: Adverse Scenarios – 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)
Q1 2010	1.7	3.2	0.4	1.8	9.8	0.6	0.1	2.4	3.9	5.8	5.0	3.3	12032.5	145.5	150.0	27.3
Q2 2010	3.9	5.8	5.3	5.8	9.6	-0.1	0.1	2.3	3.6	5.6	4.8	3.3	10645.8	144.4	165.0	45.8
Q3 2010	2.7	4.6	2.0	3.2	9.5	1.2	0.2	1.6	2.9	5.1	4.4	3.3	11814.0	141.6	167.0	32.9
Q4 2010	2.5	4.7	2.8	5.0	9.5	3.3	0.1	1.5	3.0	5.0	4.5	3.3	13131.5	140.3	173.0	23.5
Q1 2011	-1.5	0.2	5.0	8.2	9.1	4.3	0.1	2.1	3.5	5.4	4.9	3.3	13908.5	138.5	180.0	29.4
Q2 2011	2.9	6.0	-0.6	3.5	9.1	4.7	0.0	1.8	3.3	5.1	4.6	3.3	13843.5	137.7	177.0	22.7
Q3 2011	0.8	3.3	2.1	4.3	9.0	2.6	0.0	1.1	2.5	4.9	4.2	3.3	11676.5	137.7	177.0	48.0
Q4 2011	4.6	5.2	0.2	1.6	8.6	1.7	0.0	1.0	2.1	5.0	4.0	3.3	13019.3	137.6	188.0	45.5
Q1 2012	2.7	4.9	6.7	9.2	8.3	2.2	0.1	0.9	2.1	4.7	3.9	3.3	14627.5	139.6	188.0	23.0
Q2 2012	1.9	3.8	3.1	4.4	8.2	1.0	0.1	0.8	1.8	4.5	3.8	3.3	14100.2	142.8	189.0	26.7
Q3 2012	0.5	2.7	-0.2	1.1	8.0	1.8	0.1	0.7	1.6	4.2	3.5	3.3	14894.7	145.7	197.0	20.5
Q4 2012	0.1	1.7	10.9	13.3	7.8	2.6	0.1	0.7	1.7	3.9	3.4	3.3	14834.9	149.3	198.0	22.7
Q1 2013	1.9	3.6	-15.9	-14.7	7.7	1.4	0.1	0.8	1.9	4.0	3.5	3.3	16396.2	153.8	202.0	19.0
Q2 2013	1.1	2.1	2.7	3.1	7.5	-0.1	0.1	0.9	2.0	4.1	3.7	3.3	16771.3	158.8	213.0	20.5
Q3 2013	3.0	4.9	2.2	3.9	7.2	2.3	0.0	1.5	2.7	4.9	4.4	3.3	17718.3	163.0	224.0	17.0
Q4 2013	3.8	5.6	0.6	2.0	7.0	1.4	0.1	1.4	2.8	4.8	4.3	3.3	19413.2	166.3	229.0	20.3
Q1 2014	-0.9	0.6	4.0	5.6	6.7	2.1	0.0	1.6	2.8	4.6	4.4	3.3	19711.2	169.3	230.0	21.4
Q2 2014	4.6	6.9	3.0	5.2	6.2	2.4	0.0	1.7	2.7	4.3	4.2	3.3	20568.7	170.7	239.0	17.0
Q3 2014	4.3	6.0	2.7	3.9	6.1	1.2	0.0	1.7	2.5	4.2	4.1	3.3	20458.8	172.5	245.0	17.0
Q4 2014	2.1	2.2	4.7	4.2	5.7	-0.9	0.0	1.6	2.3	4.2	3.9	3.3	21424.6	174.5	252.0	26.3
Q1 2015	0.6	0.8	3.9	1.9	5.6	-3.1	0.0	1.5	2.0	4.0	3.7	3.3	21707.6	177.3	260.0	22.4
Q2 2015	3.9	6.1	2.6	4.9	5.4	3.0	0.0	1.5	2.2	4.2	3.8	3.3	21630.9	179.4	264.0	18.9
Q3 2015	2.0	3.3	3.8	5.1	5.2	1.6	0.0	1.6	2.3	4.5	3.9	3.3	19959.3	181.7	270.0	40.7
Q4 2015	1.9	1.9	3.5	3.8	5.0	0.2	0.1	1.6	2.2	4.6	3.9	3.3	21100.9	183.1	273.4	24.4
Q1 2016	-1.5	-0.1	2.3	1.2	5.5	-0.9	0.1	0.5	1.3	4.4	3.5	3.3	20899.6	181.2	270.6	40.7
Q2 2016	-2.8	-3.0	0.3	-0.6	6.1	-0.7	0.1	0.7	1.4	4.9	3.8	3.3	18454.3	178.7	264.2	37.0
Q3 2016	-2.0	-2.1	-0.2	-1.0	6.7	-0.5	0.1	0.8	1.5	5.1	4.0	3.3	16692.8	175.9	257.7	38.4
Q4 2016	-1.1	-1.1	0.0	-0.3	7.1	-0.1	0.1	1.0	1.7	5.4	4.2	3.2	15536.2	172.8	251.8	36.0
Q1 2017	0.0	0.2	0.9	1.0	7.4	0.3	0.1	1.2	1.8	5.4	4.3	3.2	15745.4	169.8	246.6	32.0
Q2 2017	1.3	1.8	1.4	1.9	7.5	0.7	0.1	1.3	1.9	5.3	4.3	3.2	16052.6	167.0	243.5	29.1
Q3 2017	1.7	2.6	1.1	1.9	7.5	1.0	0.1	1.5	2.2	5.4	4.5	3.2	16396.9	164.5	240.5	26.8
Q4 2017	2.6	3.4	2.1	3.1	7.5	1.2	0.1	1.6	2.3	5.4	4.6	3.2	17115.4	162.9	240.6	24.7
Q1 2018	2.6	3.4	2.3	3.4	7.4	1.3	0.1	1.8	2.4	5.4	4.7	3.2	17806.7	161.7	241.0	23.1
Q2 2018	3.0	3.9	2.5	3.7	7.3	1.4	0.1	1.9	2.6	5.5	4.8	3.2	18645.6	161.1	242.2	21.7
Q3 2018	3.0	4.0	2.6	3.8	7.2	1.5	0.1	2.1	2.8	5.5	4.9	3.2	19184.9	161.0	244.4	21.0
Q4 2018	3.0	4.1	2.6	3.9	7.1	1.6	0.1	2.3	2.9	5.6	5.0	3.2	19756.4	161.2	246.8	20.3
Q1 2019	3.0	4.2	2.4	3.9	7.0	1.7	0.1	2.4	3.0	5.6	5.1	3.2	20341.0	161.6	249.4	19.8

## Appendix 7: Adverse Scenarios – International

<u>Date</u>	<u>Euro area real GDP growth</u>	<u>Euro area inflation</u>	<u>Euro area bilateral dollar exchange rate (USD/euro)</u>	<u>Developing Asia real GDP growth</u>	<u>Developing Asia inflation</u>	<u>Developing Asia bilateral dollar exchange rate (F/USD, index)</u>	<u>Japan real GDP growth</u>	<u>Japan inflation</u>	<u>Japan bilateral dollar exchange rate (yen/USD)</u>	<u>U.K. real GDP growth</u>	<u>U.K. inflation</u>	<u>U.K. bilateral dollar exchange rate (USD/pound)</u>
Q1 2001	3.8	1.1	0.9	5.0	1.7	106.0	2.6	-1.2	125.5	4.6	0.1	1.4
Q2 2001	0.1	4.1	0.8	5.5	2.2	106.1	-0.7	-0.3	124.7	3.1	3.1	1.4
Q3 2001	0.3	1.4	0.9	4.7	1.1	106.4	-4.4	-1.1	119.2	2.6	1.0	1.5
Q4 2001	0.5	1.7	0.9	8.4	0.2	106.9	-0.5	-1.4	131.0	1.4	0.0	1.5
Q1 2002	0.9	3.0	0.9	7.6	0.4	107.3	-0.9	-2.7	132.7	1.6	1.9	1.4
Q2 2002	2.0	2.0	1.0	8.1	1.2	104.8	4.3	1.7	119.9	3.3	0.9	1.5
Q3 2002	1.6	1.6	1.0	7.3	1.3	105.5	2.6	-0.7	121.7	3.9	1.4	1.6
Q4 2002	0.3	2.4	1.0	6.4	0.9	104.5	1.5	-0.4	118.8	3.6	1.9	1.6
Q1 2003	-0.9	3.3	1.1	6.5	3.6	105.5	-2.2	-1.6	118.1	2.9	1.6	1.6
Q2 2003	0.4	0.3	1.2	2.3	1.2	104.0	5.2	1.7	119.9	3.7	0.3	1.7
Q3 2003	2.0	2.2	1.2	14.2	0.0	102.6	1.7	-0.7	111.4	3.1	1.7	1.7
Q4 2003	3.1	2.2	1.3	12.9	5.6	103.4	4.2	-0.6	107.1	3.0	1.7	1.8
Q1 2004	2.0	2.3	1.2	5.5	4.0	101.4	3.8	-0.9	104.2	2.7	1.3	1.8
Q2 2004	2.2	2.4	1.2	7.1	4.1	102.8	0.3	1.1	109.4	2.2	1.0	1.8
Q3 2004	1.3	2.0	1.2	8.2	3.9	102.7	0.6	0.1	110.2	0.9	1.1	1.8
Q4 2004	1.5	2.4	1.4	6.3	0.9	98.9	-1.0	1.7	102.7	1.9	2.4	1.9
Q1 2005	0.6	1.5	1.3	10.3	2.9	98.6	0.8	-2.7	107.2	2.8	2.6	1.9
Q2 2005	2.8	2.2	1.2	8.9	1.5	98.9	5.4	-1.2	110.9	4.4	1.9	1.8
Q3 2005	3.0	3.2	1.2	9.3	2.3	98.6	1.4	-1.3	113.3	4.1	2.7	1.8
Q4 2005	2.4	2.5	1.2	11.6	1.7	98.1	0.7	0.7	117.9	5.9	1.4	1.7
Q1 2006	3.7	1.7	1.2	10.9	2.4	96.8	1.7	1.3	117.5	1.5	1.9	1.7
Q2 2006	4.4	2.5	1.3	7.1	3.2	96.7	1.7	-0.1	114.5	1.2	3.0	1.8
Q3 2006	2.6	2.0	1.3	10.3	2.1	96.4	-0.3	0.5	118.0	0.5	3.3	1.9
Q4 2006	4.4	0.9	1.3	11.1	3.8	94.6	5.2	-0.4	119.0	2.3	2.6	2.0
Q1 2007	3.2	2.2	1.3	13.7	3.6	94.0	4.0	-0.2	117.6	3.9	2.6	2.0
Q2 2007	2.5	2.3	1.4	10.6	4.9	91.9	0.6	0.0	123.4	2.4	1.7	2.0
Q3 2007	2.0	2.1	1.4	8.6	7.4	90.6	-1.5	0.1	115.0	3.1	0.2	2.0
Q4 2007	2.0	4.9	1.5	12.9	6.1	89.4	3.4	2.2	111.7	3.1	4.0	2.0
Q1 2008	2.3	4.2	1.6	7.1	8.1	88.0	2.7	1.3	99.9	1.0	3.7	2.0
Q2 2008	-1.3	3.2	1.6	6.1	6.4	88.7	-4.6	1.6	106.2	-2.2	5.7	2.0
Q3 2008	-2.2	3.2	1.4	3.1	2.8	91.6	-4.1	3.6	105.9	-6.6	5.8	1.8
Q4 2008	-7.1	-1.4	1.4	0.1	-0.9	92.3	-12.5	-2.2	90.8	-8.7	0.5	1.5
Q1 2009	-11.3	-1.1	1.3	3.8	-1.4	94.2	-15.1	-3.6	99.2	-6.1	-0.1	1.4
Q2 2009	-0.8	0.0	1.4	15.4	2.3	92.3	7.1	-1.7	96.4	-0.8	2.2	1.6
Q3 2009	1.2	1.1	1.5	12.6	3.9	91.3	0.4	-1.2	89.5	0.6	3.5	1.6
Q4 2009	2.0	1.6	1.4	9.0	5.2	90.7	7.1	-1.6	93.1	1.4	3.0	1.6

## Appendix 7: Adverse Scenarios – 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)
Q1 2010	1.7	1.8	1.4	9.8	4.6	89.8	5.8	0.9	93.4	1.5	4.0	1.5
Q2 2010	3.9	2.0	1.2	9.8	3.4	91.1	4.6	-1.2	88.5	3.3	3.2	1.5
Q3 2010	1.9	1.6	1.4	8.8	3.9	88.4	6.1	-2.1	83.5	2.0	2.3	1.6
Q4 2010	2.1	2.6	1.3	9.3	7.7	87.4	-2.0	1.3	81.7	0.4	4.0	1.5
Q1 2011	3.5	3.6	1.4	9.5	6.3	86.5	-7.7	-0.4	82.8	3.0	6.7	1.6
Q2 2011	0.0	3.2	1.5	7.1	5.4	85.3	-2.2	-0.4	80.6	1.4	4.7	1.6
Q3 2011	-0.1	1.4	1.3	5.9	5.0	87.4	11.2	0.3	77.0	3.3	3.7	1.6
Q4 2011	-1.2	3.5	1.3	6.1	3.4	87.4	0.9	-0.7	77.0	0.6	3.4	1.6
Q1 2012	-0.7	2.7	1.3	7.1	3.2	86.4	3.6	1.9	82.4	0.9	2.1	1.6
Q2 2012	-1.3	2.3	1.3	5.9	4.0	88.1	-1.3	-0.7	79.8	-0.7	2.0	1.6
Q3 2012	-0.6	1.6	1.3	6.5	1.9	86.3	-1.9	-2.1	77.9	4.1	2.3	1.6
Q4 2012	-1.7	2.4	1.3	7.2	3.7	86.0	-0.4	0.0	86.6	-0.2	4.0	1.6
Q1 2013	-1.0	1.1	1.3	6.3	4.2	86.3	4.0	0.4	94.2	2.7	2.9	1.5
Q2 2013	1.6	0.5	1.3	7.0	3.1	87.3	3.1	0.6	99.2	2.4	1.7	1.5
Q3 2013	1.0	1.3	1.4	7.4	3.5	86.8	2.0	2.4	98.3	3.8	2.1	1.6
Q4 2013	0.8	0.3	1.4	6.5	4.0	85.9	-0.7	2.3	105.3	2.6	1.5	1.7
Q1 2014	0.9	0.6	1.4	5.9	1.5	86.9	5.0	0.7	103.0	2.6	1.8	1.7
Q2 2014	0.2	0.1	1.4	7.0	2.7	86.8	-7.2	9.3	101.3	3.2	1.5	1.7
Q3 2014	1.2	0.3	1.3	7.5	2.2	87.2	-2.8	1.3	109.7	2.6	0.9	1.6
Q4 2014	1.5	-0.4	1.2	5.6	1.0	88.2	1.8	-0.8	119.9	2.7	-0.6	1.6
Q1 2015	2.2	-1.2	1.1	5.8	1.0	88.1	4.4	-0.3	120.0	1.5	-1.2	1.5
Q2 2015	1.6	2.2	1.1	6.2	2.9	88.5	-0.5	1.7	122.1	2.2	0.8	1.6
Q3 2015	1.2	-0.1	1.1	7.0	2.6	91.1	1.0	0.0	119.8	1.8	1.0	1.5
Q4 2015	1.6	-0.1	1.1	6.2	2.3	92.2	1.0	-0.3	120.3	2.4	-0.3	1.5
Q1 2016	-3.4	-0.5	1.0	-1.1	0.2	102.3	-4.0	-2.1	122.7	-2.1	-0.7	1.4
Q2 2016	-3.2	-0.8	1.0	0.4	-0.3	104.6	-5.7	-2.4	121.6	-2.6	-0.8	1.4
Q3 2016	-1.8	-0.6	1.0	3.8	-0.8	104.4	-5.0	-2.2	122.1	-1.9	-0.5	1.4
Q4 2016	-0.7	-0.3	1.0	5.5	-0.7	104.1	-3.8	-1.7	122.6	-0.9	-0.2	1.4
Q1 2017	0.2	0.1	1.0	6.2	-0.4	103.0	-2.8	-1.2	122.6	0.1	0.2	1.4
Q2 2017	0.9	0.4	1.0	6.3	-0.1	101.8	-1.9	-0.7	122.6	1.0	0.6	1.5
Q3 2017	1.5	0.6	1.0	6.3	0.3	100.6	-1.1	-0.4	122.6	1.7	0.8	1.5
Q4 2017	1.8	0.8	1.0	6.3	0.6	99.5	-0.3	-0.2	122.6	2.2	1.0	1.5
Q1 2018	2.0	0.9	1.0	6.3	0.8	98.6	0.4	-0.2	122.0	2.4	1.1	1.5
Q2 2018	2.1	1.0	1.0	6.4	1.1	97.8	0.9	-0.1	121.4	2.6	1.2	1.5
Q3 2018	2.1	1.1	1.0	6.5	1.4	97.1	1.2	0.0	120.8	2.7	1.3	1.5
Q4 2018	2.1	1.2	1.0	6.6	1.7	96.5	1.5	0.3	120.3	2.7	1.4	1.5
Q1 2019	2.0	1.3	1.1	6.7	2.0	96.1	1.6	0.6	119.4	2.7	1.5	1.5

## Appendix 8: Severely Adverse Scenarios - Domestic

Date	Real GDP growth	Nominal GDP growth	Real disposable income	Nominal disposable income	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	House Price Index (Level)	Commercial Real Estate Price Index (Level)	Market Volatility Index (Level)
			growth	growth			(Level)	(Level)	(Level)				(Level)			
Q1 2001	-1.1	1.4	3.5	6.3	4.2	3.9	4.8	4.9	5.3	7.4	7.0	8.6	10645.9	113.3	139.0	32.8
Q2 2001	2.1	5.1	-0.3	1.6	4.4	2.8	3.7	4.9	5.5	7.5	7.1	7.3	11407.2	115.2	139.0	34.7
Q3 2001	-1.3	0.0	9.8	10.1	4.8	1.1	3.2	4.6	5.3	7.3	6.9	6.6	9563.0	117.5	141.0	43.7
Q4 2001	1.1	2.3	-4.9	-4.6	5.5	-0.3	1.9	4.2	5.1	7.2	6.8	5.2	10707.7	119.8	136.0	35.3
Q1 2002	3.7	5.1	10.1	10.9	5.7	1.3	1.7	4.5	5.4	7.6	7.0	4.8	10775.7	122.1	137.0	26.1
Q2 2002	2.2	3.8	2.0	5.2	5.8	3.2	1.7	4.5	5.4	7.6	6.8	4.8	9384.0	125.4	136.0	28.4
Q3 2002	2.0	3.8	-0.5	1.5	5.7	2.2	1.6	3.4	4.5	7.3	6.2	4.8	7773.6	128.6	139.0	45.1
Q4 2002	0.3	2.4	1.9	3.8	5.9	2.4	1.3	3.1	4.3	7.0	6.1	4.5	8343.2	131.3	142.0	42.6
Q1 2003	2.1	4.6	1.1	4.0	5.9	4.2	1.2	2.9	4.2	6.5	5.8	4.3	8051.9	134.1	148.0	34.7
Q2 2003	3.8	5.1	5.9	6.3	6.1	-0.7	1.0	2.6	3.8	5.7	5.5	4.2	9342.4	137.0	149.0	29.1
Q3 2003	6.9	9.3	6.7	9.3	6.1	3.0	0.9	3.1	4.4	6.0	6.1	4.0	9649.7	141.0	147.0	22.7
Q4 2003	4.8	6.8	1.6	3.3	5.8	1.5	0.9	3.2	4.4	5.8	5.9	4.0	10799.6	145.9	146.0	21.1
Q1 2004	2.3	5.9	2.9	6.1	5.7	3.4	0.9	3.0	4.1	5.5	5.6	4.0	11039.4	151.6	153.0	21.6
Q2 2004	3.0	6.6	4.0	7.0	5.6	3.2	1.1	3.7	4.7	6.1	6.2	4.0	11144.6	157.9	160.0	20.0
Q3 2004	3.7	6.3	2.1	4.5	5.4	2.6	1.5	3.5	4.4	5.8	5.9	4.4	10893.8	163.2	172.0	19.3
Q4 2004	3.5	6.4	5.1	8.5	5.4	4.4	2.0	3.5	4.3	5.4	5.7	4.9	11951.5	169.2	176.0	16.6
Q1 2005	4.3	8.3	-3.8	-1.8	5.3	2.0	2.5	3.9	4.4	5.4	5.8	5.4	11637.3	177.1	176.0	14.6
Q2 2005	2.1	5.1	3.2	6.0	5.1	2.7	2.9	3.9	4.2	5.5	5.7	5.9	11856.7	184.5	182.0	17.7
Q3 2005	3.4	7.3	2.1	6.6	5.0	6.2	3.4	4.0	4.3	5.5	5.8	6.4	12282.9	190.2	187.0	14.2
Q4 2005	2.3	5.4	3.4	6.6	5.0	3.8	3.8	4.4	4.6	5.9	6.2	7.0	12497.2	194.8	195.0	16.5
Q1 2006	4.9	8.2	9.5	11.5	4.7	2.1	4.4	4.6	4.7	6.0	6.3	7.4	13121.6	198.0	200.0	14.6
Q2 2006	1.2	4.5	0.6	3.7	4.6	3.7	4.7	5.0	5.2	6.5	6.6	7.9	12808.9	197.1	209.0	23.8
Q3 2006	0.4	3.2	1.2	4.1	4.6	3.8	4.9	4.8	5.0	6.4	6.5	8.3	13322.5	195.8	219.0	18.6
Q4 2006	3.2	4.6	5.3	4.6	4.4	-1.6	4.9	4.6	4.7	6.1	6.2	8.3	14215.8	195.8	217.0	12.7
Q1 2007	0.2	4.8	2.6	6.5	4.5	4.0	5.0	4.6	4.8	6.1	6.2	8.3	14354.0	193.3	227.0	19.6
Q2 2007	3.1	5.4	0.8	4.0	4.5	4.6	4.7	4.7	4.9	6.3	6.4	8.3	15163.1	188.5	236.0	18.9
Q3 2007	2.7	4.2	1.1	3.4	4.7	2.6	4.3	4.5	4.8	6.5	6.5	8.2	15317.8	183.2	249.0	30.8
Q4 2007	1.4	3.2	0.3	4.4	4.8	5.0	3.4	3.8	4.4	6.4	6.2	7.5	14753.6	177.8	251.0	31.1
Q1 2008	-2.7	-0.5	2.9	6.5	5.0	4.4	2.1	2.8	3.9	6.5	5.9	6.2	13284.1	171.1	240.0	32.2
Q2 2008	2.0	4.0	8.7	13.3	5.3	5.3	1.6	3.2	4.1	6.8	6.1	5.1	13016.4	163.9	224.0	24.1
Q3 2008	-1.9	0.8	-8.9	-5.1	6.0	6.3	1.5	3.1	4.1	7.2	6.3	5.0	11826.0	157.4	233.0	46.7
Q4 2008	-8.2	-7.7	2.6	-3.2	6.9	-8.9	0.3	2.2	3.7	9.4	5.8	4.1	9056.7	149.5	223.0	80.9
Q1 2009	-5.4	-4.5	-0.8	-3.0	8.3	-2.7	0.2	1.9	3.2	9.0	5.0	3.3	8044.2	143.5	209.0	56.7
Q2 2009	-0.5	-1.2	2.9	4.7	9.3	2.1	0.2	2.3	3.7	8.2	5.1	3.3	9342.8	143.2	178.0	42.3
Q3 2009	1.3	1.2	-4.3	-1.9	9.6	3.5	0.2	2.5	3.8	6.8	5.1	3.3	10812.8	144.3	154.0	31.3
Q4 2009	3.9	5.2	-0.5	2.2	9.9	3.2	0.1	2.3	3.7	6.1	4.9	3.3	11385.1	145.2	155.0	30.7



## Appendix 8: Severely Adverse Scenarios – 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)
Q1 2010	1.7	3.2	0.4	1.8	9.8	0.6	0.1	2.4	3.9	5.8	5.0	3.3	12032.5	145.5	150.0	27.3
Q2 2010	3.9	5.8	5.3	5.8	9.6	-0.1	0.1	2.3	3.6	5.6	4.8	3.3	10645.8	144.4	165.0	45.8
Q3 2010	2.7	4.6	2.0	3.2	9.5	1.2	0.2	1.6	2.9	5.1	4.4	3.3	11814.0	141.6	167.0	32.9
Q4 2010	2.5	4.7	2.8	5.0	9.5	3.3	0.1	1.5	3.0	5.0	4.5	3.3	13131.5	140.3	173.0	23.5
Q1 2011	-1.5	0.2	5.0	8.2	9.1	4.3	0.1	2.1	3.5	5.4	4.9	3.3	13908.5	138.5	180.0	29.4
Q2 2011	2.9	6.0	-0.6	3.5	9.1	4.7	0.0	1.8	3.3	5.1	4.6	3.3	13843.5	137.7	177.0	22.7
Q3 2011	0.8	3.3	2.1	4.3	9.0	2.6	0.0	1.1	2.5	4.9	4.2	3.3	11676.5	137.7	177.0	48.0
Q4 2011	4.6	5.2	0.2	1.6	8.6	1.7	0.0	1.0	2.1	5.0	4.0	3.3	13019.3	137.6	188.0	45.5
Q1 2012	2.7	4.9	6.7	9.2	8.3	2.2	0.1	0.9	2.1	4.7	3.9	3.3	14627.5	139.6	188.0	23.0
Q2 2012	1.9	3.8	3.1	4.4	8.2	1.0	0.1	0.8	1.8	4.5	3.8	3.3	14100.2	142.8	189.0	26.7
Q3 2012	0.5	2.7	-0.2	1.1	8.0	1.8	0.1	0.7	1.6	4.2	3.5	3.3	14894.7	145.7	197.0	20.5
Q4 2012	0.1	1.7	10.9	13.3	7.8	2.6	0.1	0.7	1.7	3.9	3.4	3.3	14834.9	149.3	198.0	22.7
Q1 2013	1.9	3.6	-15.9	-14.7	7.7	1.4	0.1	0.8	1.9	4.0	3.5	3.3	16396.2	153.8	202.0	19.0
Q2 2013	1.1	2.1	2.7	3.1	7.5	-0.1	0.1	0.9	2.0	4.1	3.7	3.3	16771.3	158.8	213.0	20.5
Q3 2013	3.0	4.9	2.2	3.9	7.2	2.3	0.0	1.5	2.7	4.9	4.4	3.3	17718.3	163.0	224.0	17.0
Q4 2013	3.8	5.6	0.6	2.0	7.0	1.4	0.1	1.4	2.8	4.8	4.3	3.3	19413.2	166.3	229.0	20.3
Q1 2014	-0.9	0.6	4.0	5.6	6.7	2.1	0.0	1.6	2.8	4.6	4.4	3.3	19711.2	169.3	230.0	21.4
Q2 2014	4.6	6.9	3.0	5.2	6.2	2.4	0.0	1.7	2.7	4.3	4.2	3.3	20568.7	170.7	239.0	17.0
Q3 2014	4.3	6.0	2.7	3.9	6.1	1.2	0.0	1.7	2.5	4.2	4.1	3.3	20458.8	172.5	245.0	17.0
Q4 2014	2.1	2.2	4.7	4.2	5.7	-0.9	0.0	1.6	2.3	4.2	3.9	3.3	21424.6	174.5	252.0	26.3
Q1 2015	0.6	0.8	3.9	1.9	5.6	-3.1	0.0	1.5	2.0	4.0	3.7	3.3	21707.6	177.3	260.0	22.4
Q2 2015	3.9	6.1	2.6	4.9	5.4	3.0	0.0	1.5	2.2	4.2	3.8	3.3	21630.9	179.4	264.0	18.9
Q3 2015	2.0	3.3	3.8	5.1	5.2	1.6	0.0	1.6	2.3	4.5	3.9	3.3	19959.3	181.7	270.0	40.7
Q4 2015	1.9	1.9	3.5	3.8	5.0	0.2	0.1	1.6	2.2	4.6	3.9	3.3	21100.9	183.1	273.4	24.4
Q1 2016	-5.1	-2.6	-0.5	-0.4	6.0	0.2	0.0	0.0	0.2	4.8	3.2	3.3	16831.9	178.8	264.9	73.3
Q2 2016	-7.5	-6.1	-4.1	-3.2	7.2	0.9	-0.2	0.0	0.4	5.6	3.7	2.9	13254.9	173.5	251.0	61.1
Q3 2016	-5.9	-4.5	-4.5	-3.5	8.3	1.1	-0.5	0.0	0.4	6.0	3.9	2.6	11469.2	167.4	236.5	67.1
Q4 2016	-4.2	-2.9	-3.6	-2.5	9.1	1.3	-0.5	0.0	0.6	6.4	4.1	2.6	10395.5	160.8	223.2	59.1
Q1 2017	-2.2	-0.9	-2.0	-0.7	9.7	1.4	-0.5	0.0	0.7	6.1	4.1	2.6	11183.3	154.7	210.4	45.5
Q2 2017	0.4	1.9	-0.7	1.0	9.9	1.8	-0.5	0.0	0.8	5.8	4.1	2.6	12131.9	148.9	201.3	37.4
Q3 2017	1.3	2.9	-0.3	1.4	10.0	1.9	-0.5	0.1	1.0	5.7	4.1	2.6	13178.9	144.0	193.4	31.1
Q4 2017	3.0	4.4	1.4	3.1	9.9	1.9	-0.5	0.2	1.1	5.5	4.1	2.6	14671.1	140.8	191.2	26.2
Q1 2018	3.0	4.0	2.3	3.6	9.8	1.6	-0.5	0.3	1.2	5.3	4.1	2.6	16180.1	138.5	190.1	22.8
Q2 2018	3.9	5.0	2.6	4.0	9.6	1.7	-0.5	0.4	1.4	5.1	4.0	2.6	17996.1	137.5	190.5	20.0
Q3 2018	3.9	4.9	2.9	4.3	9.4	1.7	-0.5	0.5	1.5	5.0	4.1	2.6	19271.6	137.3	192.6	18.9
Q4 2018	3.9	4.9	3.1	4.4	9.1	1.6	-0.5	0.6	1.6	4.8	4.1	2.6	20640.9	137.7	195.4	17.6
Q1 2019	3.9	4.8	3.0	4.2	8.9	1.5	-0.5	0.7	1.7	4.7	4.1	2.6	22068.1	138.5	198.5	16.8

## Appendix 9: Severely Adverse Scenarios – International

<u>Date</u>	<u>Euro area real GDP growth</u>	<u>Euro area inflation</u>	<u>Euro area bilateral dollar exchange rate (USD/euro)</u>	<u>Developing Asia real GDP growth</u>	<u>Developing Asia inflation</u>	<u>Developing Asia bilateral dollar exchange rate (F/USD, index)</u>	<u>Japan real GDP growth</u>	<u>Japan inflation</u>	<u>Japan bilateral dollar exchange rate (yen/USD)</u>	<u>U.K. real GDP growth</u>	<u>U.K. inflation</u>	<u>U.K. bilateral dollar exchange rate (USD/pound)</u>
Q1 2001	3.8	1.1	0.9	5.0	1.7	106.0	2.6	-1.2	125.5	4.6	0.1	1.4
Q2 2001	0.1	4.1	0.8	5.5	2.2	106.1	-0.7	-0.3	124.7	3.1	3.1	1.4
Q3 2001	0.3	1.4	0.9	4.7	1.1	106.4	-4.4	-1.1	119.2	2.6	1.0	1.5
Q4 2001	0.5	1.7	0.9	8.4	0.2	106.9	-0.5	-1.4	131.0	1.4	0.0	1.5
Q1 2002	0.9	3.0	0.9	7.6	0.4	107.3	-0.9	-2.7	132.7	1.6	1.9	1.4
Q2 2002	2.0	2.0	1.0	8.1	1.2	104.8	4.3	1.7	119.9	3.3	0.9	1.5
Q3 2002	1.6	1.6	1.0	7.3	1.3	105.5	2.6	-0.7	121.7	3.9	1.4	1.6
Q4 2002	0.3	2.4	1.0	6.4	0.9	104.5	1.5	-0.4	118.8	3.6	1.9	1.6
Q1 2003	-0.9	3.3	1.1	6.5	3.6	105.5	-2.2	-1.6	118.1	2.9	1.6	1.6
Q2 2003	0.4	0.3	1.2	2.3	1.2	104.0	5.2	1.7	119.9	3.7	0.3	1.7
Q3 2003	2.0	2.2	1.2	14.2	0.0	102.6	1.7	-0.7	111.4	3.1	1.7	1.7
Q4 2003	3.1	2.2	1.3	12.9	5.6	103.4	4.2	-0.6	107.1	3.0	1.7	1.8
Q1 2004	2.0	2.3	1.2	5.5	4.0	101.4	3.8	-0.9	104.2	2.7	1.3	1.8
Q2 2004	2.2	2.4	1.2	7.1	4.1	102.8	0.3	1.1	109.4	2.2	1.0	1.8
Q3 2004	1.3	2.0	1.2	8.2	3.9	102.7	0.6	0.1	110.2	0.9	1.1	1.8
Q4 2004	1.5	2.4	1.4	6.3	0.9	98.9	-1.0	1.7	102.7	1.9	2.4	1.9
Q1 2005	0.6	1.5	1.3	10.3	2.9	98.6	0.8	-2.7	107.2	2.8	2.6	1.9
Q2 2005	2.8	2.2	1.2	8.9	1.5	98.9	5.4	-1.2	110.9	4.4	1.9	1.8
Q3 2005	3.0	3.2	1.2	9.3	2.3	98.6	1.4	-1.3	113.3	4.1	2.7	1.8
Q4 2005	2.4	2.5	1.2	11.6	1.7	98.1	0.7	0.7	117.9	5.9	1.4	1.7
Q1 2006	3.7	1.7	1.2	10.9	2.4	96.8	1.7	1.3	117.5	1.5	1.9	1.7
Q2 2006	4.4	2.5	1.3	7.1	3.2	96.7	1.7	-0.1	114.5	1.2	3.0	1.8
Q3 2006	2.6	2.0	1.3	10.3	2.1	96.4	-0.3	0.5	118.0	0.5	3.3	1.9
Q4 2006	4.4	0.9	1.3	11.1	3.8	94.6	5.2	-0.4	119.0	2.3	2.6	2.0
Q1 2007	3.2	2.2	1.3	13.7	3.6	94.0	4.0	-0.2	117.6	3.9	2.6	2.0
Q2 2007	2.5	2.3	1.4	10.6	4.9	91.9	0.6	0.0	123.4	2.4	1.7	2.0
Q3 2007	2.0	2.1	1.4	8.6	7.4	90.6	-1.5	0.1	115.0	3.1	0.2	2.0
Q4 2007	2.0	4.9	1.5	12.9	6.1	89.4	3.4	2.2	111.7	3.1	4.0	2.0
Q1 2008	2.3	4.2	1.6	7.1	8.1	88.0	2.7	1.3	99.9	1.0	3.7	2.0
Q2 2008	-1.3	3.2	1.6	6.1	6.4	88.7	-4.6	1.6	106.2	-2.2	5.7	2.0
Q3 2008	-2.2	3.2	1.4	3.1	2.8	91.6	-4.1	3.6	105.9	-6.6	5.8	1.8
Q4 2008	-7.1	-1.4	1.4	0.1	-0.9	92.3	-12.5	-2.2	90.8	-8.7	0.5	1.5
Q1 2009	-11.3	-1.1	1.3	3.8	-1.4	94.2	-15.1	-3.6	99.2	-6.1	-0.1	1.4
Q2 2009	-0.8	0.0	1.4	15.4	2.3	92.3	7.1	-1.7	96.4	-0.8	2.2	1.6
Q3 2009	1.2	1.1	1.5	12.6	3.9	91.3	0.4	-1.2	89.5	0.6	3.5	1.6
Q4 2009	2.0	1.6	1.4	9.0	5.2	90.7	7.1	-1.6	93.1	1.4	3.0	1.6

## Appendix 9: Severely Adverse Scenarios – International (Cont.)

<u>Date</u>	<u>Euro area real GDP growth</u>	<u>Euro area inflation</u>	<u>Euro area bilateral dollar exchange rate (USD/euro)</u>	<u>Developing Asia real GDP growth</u>	<u>Developing Asia inflation</u>	<u>Developing Asia bilateral dollar exchange rate (F/USD, index)</u>	<u>Japan real GDP growth</u>	<u>Japan inflation</u>	<u>Japan bilateral dollar exchange rate (yen/USD)</u>	<u>U.K. real GDP growth</u>	<u>U.K. inflation</u>	<u>U.K. bilateral dollar exchange rate (USD/pound)</u>
Q1 2010	1.7	1.8	1.4	9.8	4.6	89.8	5.8	0.9	93.4	1.5	4.0	1.5
Q2 2010	3.9	2.0	1.2	9.8	3.4	91.1	4.6	-1.2	88.5	3.3	3.2	1.5
Q3 2010	1.9	1.6	1.4	8.8	3.9	88.4	6.1	-2.1	83.5	2.0	2.3	1.6
Q4 2010	2.1	2.6	1.3	9.3	7.7	87.4	-2.0	1.3	81.7	0.4	4.0	1.5
Q1 2011	3.5	3.6	1.4	9.5	6.3	86.5	-7.7	-0.4	82.8	3.0	6.7	1.6
Q2 2011	0.0	3.2	1.5	7.1	5.4	85.3	-2.2	-0.4	80.6	1.4	4.7	1.6
Q3 2011	-0.1	1.4	1.3	5.9	5.0	87.4	11.2	0.3	77.0	3.3	3.7	1.6
Q4 2011	-1.2	3.5	1.3	6.1	3.4	87.4	0.9	-0.7	77.0	0.6	3.4	1.6
Q1 2012	-0.7	2.7	1.3	7.1	3.2	86.4	3.6	1.9	82.4	0.9	2.1	1.6
Q2 2012	-1.3	2.3	1.3	5.9	4.0	88.1	-1.3	-0.7	79.8	-0.7	2.0	1.6
Q3 2012	-0.6	1.6	1.3	6.5	1.9	86.3	-1.9	-2.1	77.9	4.1	2.3	1.6
Q4 2012	-1.7	2.4	1.3	7.2	3.7	86.0	-0.4	0.0	86.6	-0.2	4.0	1.6
Q1 2013	-1.0	1.1	1.3	6.3	4.2	86.3	4.0	0.4	94.2	2.7	2.9	1.5
Q2 2013	1.6	0.5	1.3	7.0	3.1	87.3	3.1	0.6	99.2	2.4	1.7	1.5
Q3 2013	1.0	1.3	1.4	7.4	3.5	86.8	2.0	2.4	98.3	3.8	2.1	1.6
Q4 2013	0.8	0.3	1.4	6.5	4.0	85.9	-0.7	2.3	105.3	2.6	1.5	1.7
Q1 2014	0.9	0.6	1.4	5.9	1.5	86.9	5.0	0.7	103.0	2.6	1.8	1.7
Q2 2014	0.2	0.1	1.4	7.0	2.7	86.8	-7.2	9.3	101.3	3.2	1.5	1.7
Q3 2014	1.2	0.3	1.3	7.5	2.2	87.2	-2.8	1.3	109.7	2.6	0.9	1.6
Q4 2014	1.5	-0.4	1.2	5.6	1.0	88.2	1.8	-0.8	119.9	2.7	-0.6	1.6
Q1 2015	2.2	-1.2	1.1	5.8	1.0	88.1	4.4	-0.3	120.0	1.5	-1.2	1.5
Q2 2015	1.6	2.2	1.1	6.2	2.9	88.5	-0.5	1.7	122.1	2.2	0.8	1.6
Q3 2015	1.2	-0.1	1.1	7.0	2.6	91.1	1.0	0.0	119.8	1.8	1.0	1.5
Q4 2015	1.6	-0.1	1.1	6.2	2.3	92.2	1.0	-0.3	120.3	2.4	-0.3	1.5
Q1 2016	-4.4	-0.4	1.0	-1.4	0.1	100.9	-4.1	-2.8	117.0	-2.6	-0.8	1.4
Q2 2016	-5.4	-1.0	1.0	-0.8	-1.1	105.0	-7.5	-3.7	115.5	-4.4	-1.3	1.4
Q3 2016	-4.4	-1.3	1.0	1.5	-1.9	107.2	-9.0	-4.3	114.9	-4.1	-1.4	1.4
Q4 2016	-3.4	-1.2	0.9	2.9	-2.4	108.7	-9.6	-4.6	114.2	-3.4	-1.3	1.4
Q1 2017	-1.6	-0.9	0.9	5.0	-2.2	107.1	-8.1	-3.8	114.2	-1.9	-0.9	1.4
Q2 2017	-0.2	-0.5	1.0	6.1	-1.9	105.3	-6.0	-3.1	114.2	-0.4	-0.4	1.4
Q3 2017	0.9	-0.1	1.0	6.4	-1.4	103.5	-4.1	-2.5	114.3	0.8	0.0	1.4
Q4 2017	1.6	0.2	1.0	6.5	-1.0	101.9	-2.4	-2.1	114.3	1.7	0.3	1.5
Q1 2018	2.1	0.4	1.0	6.5	-0.5	100.5	-1.0	-1.7	113.8	2.3	0.6	1.5
Q2 2018	2.3	0.6	1.0	6.6	-0.1	99.2	0.1	-1.4	113.4	2.7	0.8	1.5
Q3 2018	2.4	0.7	1.0	6.7	0.3	98.1	0.9	-1.1	113.1	3.0	1.0	1.5
Q4 2018	2.4	0.9	1.0	6.8	0.8	97.3	1.4	-0.7	112.7	3.1	1.1	1.5
Q1 2019	2.3	1.0	1.0	7.0	1.2	96.5	1.7	-0.2	112.1	3.1	1.3	1.5

## Appendix 10: Global Market Shock - Adverse

### Securitized Products

Trading, PE & Other Fair Value Assets Schedule  
Securitized Products

	RMBS														
	Non-Agency		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
	Prime	Sub-prime													
<b>Relative MV Shock Based on Current Rating (%)</b>															
<b>AAA Total</b>															
Pre 2006	-6.4%	-6.4%	-6.4%	-6.4%	-6.4%	-6.4%	-6.4%	-6.4%	-6.4%	-6.4%	-6.4%	-6.4%	-6.4%	-6.4%	-6.4%
2006	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%
2007	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%
Post 2007	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%
Unspecified Vintage	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%	-17.2%
<b>AA Total</b>															
Pre 2006	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%
2006	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%
2007	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%
Post 2007	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%	-32.7%
Unspecified Vintage	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%	-35.8%
<b>A Total</b>															
Pre 2006	-14.2%	-14.2%	-14.2%	-14.2%	-14.2%	-14.2%	-14.2%	-14.2%	-14.2%	-14.2%	-14.2%	-14.2%	-14.2%	-14.2%	-14.2%
2006	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%
2007	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%
Post 2007	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%	-34.9%
Unspecified Vintage	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%	-38.2%
<b>BBB Total</b>															
Pre 2006	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%	-15.7%
2006	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%
2007	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%
Post 2007	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%	-38.6%
Unspecified Vintage	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%	-42.3%
<b>BB Total</b>															
Pre 2006	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%
2006	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
2007	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
Post 2007	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
Unspecified Vintage	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
<b>B Total</b>															
Pre 2006	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%
2006	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
2007	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
Post 2007	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
Unspecified Vintage	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
<b>&lt;B Total</b>															
Pre 2006	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%
2006	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
2007	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
Post 2007	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
Unspecified Vintage	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
<b>NR Total</b>															
Pre 2006	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%	-20.2%
2006	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
2007	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
Post 2007	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%
Unspecified Vintage	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%	-45.8%

# Securitized Products

## Trading, PE & Other Fair Value Assets Schedule

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
<b>Relative MV Shock Based on Current Rating (%)</b>																			
<b>AAA Total</b>																			
Pre 2006	-2.1%	-6.6%	-5.4%	-6.6%	-6.6%	-6.6%	-6.6%	-2.5%	-1.5%	-2.5%	-1.5%	-1.5%	-2.5%	-2.5%	-3.0%	-3.0%	-9.2%	9.2%	-1.4%
2006	-2.1%	-6.6%	-6.0%	-6.6%	-6.6%	-6.6%	-6.6%	-1.4%	-0.8%	-1.4%	-0.8%	-0.8%	-1.4%	-1.4%	-3.0%	-3.0%	-11.1%	11.1%	-1.4%
2007	-2.1%	-6.6%	-7.2%	-7.2%	-7.2%	-7.2%	-7.2%	-2.7%	-1.6%	-2.7%	-1.6%	-1.6%	-2.7%	-2.7%	-3.0%	-3.0%	-11.1%	11.1%	-1.4%
Post 2007	-2.1%	-6.6%	-5.8%	-6.6%	-6.6%	-6.6%	-6.6%	-11.7%	-7.0%	-11.7%	-7.0%	-7.0%	-11.7%	-11.7%	-8.9%	-8.9%	-9.2%	9.2%	-1.4%
Unspecified Vintage	-2.1%	-6.6%	-7.2%	-7.2%	-7.2%	-7.2%	-7.2%	-11.7%	-7.0%	-11.7%	-7.0%	-7.0%	-11.7%	-11.7%	-8.9%	-8.9%	-11.1%	11.1%	-1.4%
<b>AA Total</b>																			
Pre 2006	-3.9%	-10.0%	-13.0%	-13.0%	-13.0%	-13.0%	-13.0%	-6.3%	-3.8%	-6.3%	-3.8%	-3.8%	-6.3%	-6.3%	-13.1%	-13.1%	-9.2%	9.2%	-1.4%
2006	-3.9%	-10.0%	-14.5%	-14.5%	-14.5%	-14.5%	-14.5%	-3.4%	-2.0%	-3.4%	-2.0%	-2.0%	-3.4%	-3.4%	-13.1%	-13.1%	-11.1%	11.1%	-1.4%
2007	-3.9%	-10.0%	-17.3%	-17.3%	-17.3%	-17.3%	-17.3%	-6.8%	-4.1%	-6.8%	-4.1%	-4.1%	-6.8%	-6.8%	-13.1%	-13.1%	-11.1%	11.1%	-1.4%
Post 2007	-3.9%	-10.0%	-14.0%	-14.0%	-14.0%	-14.0%	-14.0%	-29.2%	-17.5%	-29.2%	-17.5%	-17.5%	-29.2%	-29.2%	-28.0%	-28.0%	-9.2%	9.2%	-1.4%
Unspecified Vintage	-3.9%	-10.0%	-17.3%	-17.3%	-17.3%	-17.3%	-17.3%	-29.2%	-17.5%	-29.2%	-17.5%	-17.5%	-29.2%	-29.2%	-28.0%	-28.0%	-11.1%	11.1%	-1.4%
<b>A Total</b>																			
Pre 2006	-7.3%	-10.0%	-14.7%	-14.7%	-14.7%	-14.7%	-14.7%	-8.1%	-4.8%	-8.1%	-4.8%	-4.8%	-8.1%	-8.1%	-20.9%	-20.9%	-9.2%	9.2%	-1.4%
2006	-7.3%	-10.0%	-16.4%	-16.4%	-16.4%	-16.4%	-16.4%	-4.3%	-2.6%	-4.3%	-2.6%	-2.6%	-4.3%	-4.3%	-20.9%	-20.9%	-11.1%	11.1%	-1.4%
2007	-7.3%	-10.0%	-19.6%	-19.6%	-19.6%	-19.6%	-19.6%	-8.7%	-5.2%	-8.7%	-5.2%	-5.2%	-8.7%	-8.7%	-20.9%	-20.9%	-11.1%	11.1%	-1.4%
Post 2007	-7.3%	-10.0%	-15.9%	-15.9%	-15.9%	-15.9%	-15.9%	-37.2%	-22.3%	-37.2%	-22.3%	-22.3%	-37.2%	-37.2%	-41.2%	-41.2%	-9.2%	9.2%	-1.4%
Unspecified Vintage	-7.3%	-10.0%	-19.6%	-19.6%	-19.6%	-19.6%	-19.6%	-37.2%	-22.3%	-37.2%	-22.3%	-22.3%	-37.2%	-37.2%	-41.2%	-41.2%	-11.1%	11.1%	-1.4%
<b>BBB Total</b>																			
Pre 2006	-7.3%	-19.0%	-17.7%	-19.0%	-19.0%	-19.0%	-19.0%	-9.4%	-5.6%	-9.4%	-5.6%	-5.6%	-9.4%	-9.4%	-22.3%	-22.3%	-9.2%	9.2%	-22.0%
2006	-7.3%	-19.0%	-19.7%	-19.7%	-19.7%	-19.7%	-19.7%	-5.0%	-3.0%	-5.0%	-3.0%	-3.0%	-5.0%	-5.0%	-22.3%	-22.3%	-11.1%	11.1%	-22.0%
2007	-7.3%	-19.0%	-23.5%	-23.5%	-23.5%	-23.5%	-23.5%	-10.0%	-6.0%	-10.0%	-6.0%	-6.0%	-10.0%	-10.0%	-22.3%	-22.3%	-11.1%	11.1%	-22.0%
Post 2007	-7.3%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-43.1%	-25.8%	-43.1%	-25.8%	-25.8%	-43.1%	-43.1%	-43.0%	-43.0%	-9.2%	9.2%	-22.0%
Unspecified Vintage	-7.3%	-19.0%	-23.5%	-23.5%	-23.5%	-23.5%	-23.5%	-43.1%	-25.8%	-43.1%	-25.8%	-25.8%	-43.1%	-43.1%	-43.0%	-43.0%	-11.1%	11.1%	-22.0%
<b>BB Total</b>																			
Pre 2006	-9.4%	-19.0%	-17.7%	-19.0%	-19.0%	-19.0%	-19.0%	-9.4%	-5.6%	-9.4%	-5.6%	-5.6%	-9.4%	-9.4%	-23.8%	-23.8%	-9.2%	9.2%	-22.0%
2006	-9.4%	-19.0%	-19.7%	-19.7%	-19.7%	-19.7%	-19.7%	-5.0%	-3.0%	-5.0%	-3.0%	-3.0%	-5.0%	-5.0%	-23.8%	-23.8%	-11.1%	11.1%	-22.0%
2007	-9.4%	-19.0%	-23.5%	-23.5%	-23.5%	-23.5%	-23.5%	-10.0%	-6.0%	-10.0%	-6.0%	-6.0%	-10.0%	-10.0%	-23.8%	-23.8%	-11.1%	11.1%	-22.0%
Post 2007	-9.4%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-43.1%	-25.8%	-43.1%	-25.8%	-25.8%	-43.1%	-43.1%	-43.7%	-43.7%	-9.2%	9.2%	-22.0%
Unspecified Vintage	-9.4%	-19.0%	-23.5%	-23.5%	-23.5%	-23.5%	-23.5%	-43.1%	-25.8%	-43.1%	-25.8%	-25.8%	-43.1%	-43.1%	-43.7%	-43.7%	-11.1%	11.1%	-22.0%
<b>B Total</b>																			
Pre 2006	-9.4%	-19.0%	-17.7%	-19.0%	-19.0%	-19.0%	-19.0%	-9.4%	-5.6%	-9.4%	-5.6%	-5.6%	-9.4%	-9.4%	-23.8%	-23.8%	-9.2%	9.2%	-22.0%
2006	-9.4%	-19.0%	-19.7%	-19.7%	-19.7%	-19.7%	-19.7%	-5.0%	-3.0%	-5.0%	-3.0%	-3.0%	-5.0%	-5.0%	-23.8%	-23.8%	-11.1%	11.1%	-22.0%
2007	-9.4%	-19.0%	-23.5%	-23.5%	-23.5%	-23.5%	-23.5%	-10.0%	-6.0%	-10.0%	-6.0%	-6.0%	-10.0%	-10.0%	-23.8%	-23.8%	-11.1%	11.1%	-22.0%
Post 2007	-9.4%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-43.1%	-25.8%	-43.1%	-25.8%	-25.8%	-43.1%	-43.1%	-43.7%	-43.7%	-9.2%	9.2%	-22.0%
Unspecified Vintage	-9.4%	-19.0%	-23.5%	-23.5%	-23.5%	-23.5%	-23.5%	-43.1%	-25.8%	-43.1%	-25.8%	-25.8%	-43.1%	-43.1%	-43.7%	-43.7%	-11.1%	11.1%	-22.0%
<b>«B Total</b>																			
Pre 2006	-9.4%	-19.0%	-17.7%	-19.0%	-19.0%	-19.0%	-19.0%	-9.4%	-5.6%	-9.4%	-5.6%	-5.6%	-9.4%	-9.4%	-23.8%	-23.8%	-9.2%	9.2%	-22.0%
2006	-9.4%	-19.0%	-19.7%	-19.7%	-19.7%	-19.7%	-19.7%	-5.0%	-3.0%	-5.0%	-3.0%	-3.0%	-5.0%	-5.0%	-23.8%	-23.8%	-11.1%	11.1%	-22.0%
2007	-9.4%	-19.0%	-23.5%	-23.5%	-23.5%	-23.5%	-23.5%	-10.0%	-6.0%	-10.0%	-6.0%	-6.0%	-10.0%	-10.0%	-23.8%	-23.8%	-11.1%	11.1%	-22.0%
Post 2007	-9.4%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-43.1%	-25.8%	-43.1%	-25.8%	-25.8%	-43.1%	-43.1%	-43.7%	-43.7%	-9.2%	9.2%	-22.0%
Unspecified Vintage	-9.4%	-19.0%	-23.5%	-23.5%	-23.5%	-23.5%	-23.5%	-43.1%	-25.8%	-43.1%	-25.8%	-25.8%	-43.1%	-43.1%	-43.7%	-43.7%	-11.1%	11.1%	-22.0%
<b>NR Total</b>																			
Pre 2006	-9.4%	-19.0%	-17.7%	-19.0%	-19.0%	-19.0%	-19.0%	-9.4%	-5.6%	-9.4%	-5.6%	-5.6%	-9.4%	-9.4%	-23.8%	-23.8%	-9.2%	9.2%	-22.0%
2006	-9.4%	-19.0%	-19.7%	-19.7%	-19.7%	-19.7%	-19.7%	-5.0%	-3.0%	-5.0%	-3.0%	-3.0%	-5.0%	-5.0%	-23.8%	-23.8%	-11.1%	11.1%	-22.0%
2007	-9.4%	-19.0%	-23.5%	-23.5%	-23.5%	-23.5%	-23.5%	-10.0%	-6.0%	-10.0%	-6.0%	-6.0%	-10.0%	-10.0%	-23.8%	-23.8%	-11.1%	11.1%	-22.0%
Post 2007	-9.4%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-19.0%	-43.1%	-25.8%	-43.1%	-25.8%	-25.8%	-43.1%	-43.1%	-43.7%	-43.7%	-9.2%	9.2%	-22.0%
Unspecified Vintage	-9.4%	-19.0%	-23.5%	-23.5%	-23.5%	-23.5%	-23.5%	-43.1%	-25.8%	-43.1%	-25.8%	-25.8%	-43.1%	-43.1%	-43.7%	-43.7%	-11.1%	11.1%	-22.0%

# Municipals

## Trading, PE & Other Fair Value Assets Schedule Munis

	<b>Spread Widening (bps)</b>
<b>Bonds</b>	
AAA	14.0
AA	21.0
A	58.0
BBB	140.0
BB	250.6
B	359.1
<B	538.5
NR	538.5
<b>Loans</b>	
AAA	14.0
AA	21.0
A	58.0
BBB	140.0
BB	250.6
B	359.1
<B	538.5
NR	538.5
<b>CDS</b>	
AAA	6.0
AA	8.5
A	16.9
BBB	59.6
BB	137.8
B	197.5
<B	296.1
NR	296.1
<b>Indices</b>	
AAA	6.0
AA	8.5
A	16.9
BBB	59.6
BB	137.8
B	197.5
<B	296.1
NR	296.1
<b>Other / Unspecified Munis</b>	
AAA	14.0
AA	21.0
A	58.0
BBB	140.0
BB	250.6
B	359.1
<B	538.5
NR	538.5

## Agencies

### Trading, PE & Other Fair Value Assets Schedule

#### Agencies

	OAS Widening (bps)
<b>US Residential Agency Products</b>	
IOs	155.0
POs	17.5
Other CMOs	30.5
Pass-Throughs	20.5
Agency Debt/Debentures	11.5
IOS Index	155.0
POS Index	17.5
MBX Index	20.5
Other Agency Derivatives	11.5
TBA's	20.5
Reverse Mortgages	30.5
Residential Other / Unspecified	20.5
<b>US Commercial Agency Products</b>	
Cash Agency CMBS	100.0
Agency CMBS Derivatives	100.0
Commercial Other / Unspecified	100.0
<b>Non-US Agency Products</b>	
AAA	25.7
AA	33.4
A	43.5
BBB	56.5
BB	73.4
B	95.5
<B	124.1
NR	124.1

# Rates DV01

DFAST 2016 Market Shocks: Adverse Scenario  
Rates DV01

Rates Shocks (bps)	MATURITY												
	1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	30Y
<b>AUD Directional Risks</b>													
Governments	97.9	97.9	83.9	68.5	53.0	(14.8)	(42.8)	(71.2)	(107.5)	(129.0)	(144.4)	(143.2)	(139.8)
Agencies	97.9	97.9	83.9	68.5	53.0	(14.8)	(42.8)	(71.2)	(107.5)	(129.0)	(144.4)	(143.2)	(139.8)
Municipals	97.9	97.9	83.9	68.5	53.0	(14.8)	(42.8)	(71.2)	(107.5)	(129.0)	(144.4)	(143.2)	(139.8)
Swaps / Discounting Curve	68.6	68.6	60.1	51.0	41.9	(10.3)	(37.8)	(64.6)	(89.4)	(110.9)	(117.7)	(119.5)	(123.9)
Instruments shocked by MV**													
Other	68.6	68.6	60.1	51.0	41.9	(10.3)	(37.8)	(64.6)	(89.4)	(110.9)	(117.7)	(119.5)	(123.9)

**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	52.2	52.2	52.9	47.9	43.0	14.0	(8.5)	(46.4)	(67.5)	(83.1)	(79.8)	(80.7)	(78.9)
Agencies	52.2	52.2	52.9	47.9	43.0	14.0	(8.5)	(46.4)	(67.5)	(83.1)	(79.8)	(80.7)	(78.9)
Municipals	52.2	52.2	52.9	47.9	43.0	14.0	(8.5)	(46.4)	(67.5)	(83.1)	(79.8)	(80.7)	(78.9)
Swaps / Discounting Curve	26.0	26.0	34.3	32.5	30.7	1.7	(22.7)	(64.4)	(83.1)	(103.3)	(113.7)	(114.5)	(112.8)
Instruments shocked by MV**													
Other	26.0	26.0	34.3	32.5	30.7	1.7	(22.7)	(64.4)	(83.1)	(103.3)	(113.7)	(114.5)	(112.8)

**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	84.4	84.4	80.0	81.1	82.2	82.5	78.8	58.9	37.2	9.2	(21.0)	(39.0)	(58.1)
Agencies	84.4	84.4	80.0	81.1	82.2	82.5	78.8	58.9	37.2	9.2	(21.0)	(39.0)	(58.1)
Municipals	84.4	84.4	80.0	81.1	82.2	82.5	78.8	58.9	37.2	9.2	(21.0)	(39.0)	(58.1)
Swaps / Discounting Curve	5.1	5.1	6.7	2.8	0.0	0.0	0.0	0.0	0.0	(19.0)	(53.0)	(71.0)	(81.0)
Instruments shocked by MV**													
Other	5.1	5.1	6.7	2.8	0.0	0.0	0.0	0.0	0.0	(19.0)	(53.0)	(71.0)	(81.0)

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

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



## Rates DV01 (Continued)

### DKK Directional Risks

Governments	82.9	82.9	81.1	75.7	70.2	51.0	27.0	(6.0)	(36.0)	(71.0)	(106.0)	(112.7)	(107.6)
Agencies	82.9	82.9	81.1	75.7	70.2	51.0	27.0	(6.0)	(36.0)	(71.0)	(106.0)	(112.7)	(107.6)
Municipals	82.9	82.9	81.1	75.7	70.2	51.0	27.0	(6.0)	(36.0)	(71.0)	(106.0)	(112.7)	(107.6)
Swaps / Discounting Curve	31.0	31.0	27.5	28.4	29.4	10.0	(4.0)	(45.0)	(76.9)	(89.2)	(100.2)	(105.0)	(110.5)
Instruments shocked by MV**													
Other	31.0	31.0	27.5	28.4	29.4	10.0	(4.0)	(45.0)	(76.9)	(89.2)	(100.2)	(105.0)	(110.5)

### 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	38.1	44.7	51.3	51.1	51.0	41.0	30.0	(1.0)	(35.0)	(75.6)	(116.3)	(125.2)	(131.0)
Governments: Belgium	38.1	46.0	51.3	51.1	51.0	41.0	29.0	(4.0)	(40.0)	(78.1)	(116.3)	(125.2)	(131.0)
Governments: Finland	38.1	44.7	51.3	51.1	51.0	42.0	30.0	(1.0)	(36.0)	(78.0)	(116.3)	(125.2)	(131.0)
Governments: France	64.5	64.5	56.9	56.3	55.8	42.0	29.0	(3.0)	(37.0)	(78.0)	(117.4)	(127.7)	(134.1)
Governments: Germany	38.1	44.7	51.3	51.1	51.0	44.0	35.0	10.0	(16.0)	(53.0)	(96.0)	(120.0)	(131.0)
Governments: Greece	760.3	901.7	1,113.9	1,326.0	1,538.2	2,386.8	2,295.6	1,555.7	1,245.0	1,017.3	845.5	759.5	673.1
Governments: Ireland	38.1	38.1	51.3	51.1	51.0	34.0	19.0	(18.0)	(58.0)	(97.9)	(116.3)	(125.2)	(131.0)
Governments: Italy	101.3	101.3	93.9	78.1	62.4	26.0	0.0	(52.0)	(94.7)	(131.5)	(146.8)	(151.2)	(158.4)
Governments: Netherlands	62.5	62.5	69.4	63.3	58.0	45.0	33.0	4.0	(27.0)	(69.0)	(110.0)	(123.4)	(129.1)
Governments: Portugal	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
Governments: Spain	66.0	66.0	57.0	47.5	38.0	10.0	(15.0)	(66.0)	(110.0)	(148.7)	(173.7)	(184.3)	(187.4)
Governments: Other	62.5	62.5	69.4	63.3	58.0	45.0	33.0	4.0	(27.0)	(69.0)	(110.0)	(123.4)	(129.1)
Agencies	62.5	62.5	69.4	63.3	58.0	45.0	33.0	4.0	(27.0)	(69.0)	(110.0)	(123.4)	(129.1)
Municipals	62.5	62.5	69.4	63.3	58.0	45.0	33.0	4.0	(27.0)	(69.0)	(110.0)	(123.4)	(129.1)
Swaps / Discounting Curve	15.4	15.4	19.3	28.2	37.2	27.6	12.0	(21.0)	(50.5)	(87.2)	(99.4)	(109.4)	(114.0)
Instruments shocked by MV**													
Other	15.4	15.4	19.3	28.2	37.2	27.6	12.0	(21.0)	(50.5)	(87.2)	(99.4)	(109.4)	(114.0)

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

OIS Basis	1.5	0.8	0.2	0.5	0.4	0.2	(0.1)	(0.5)	(0.8)	(0.9)	(1.0)	(1.0)	(0.8)
1m Basis	(0.1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2
3m Basis													
6m Basis	(1.8)	(1.0)	(0.3)	(0.6)	(0.4)	(0.2)	0.1	0.5	0.6	0.7	0.7	0.5	0.3
12m Basis	(5.6)	(3.1)	(0.9)	(2.0)	(1.3)	(0.6)	0.3	1.4	1.8	2.1	2.0	1.7	1.0
Other Basis													

### GBP Directional Risks

Governments	101.7	101.7	91.5	73.1	54.8	16.1	(17.6)	(54.8)	(84.9)	(94.6)	(102.2)	(107.4)	(104.2)
Agencies	101.7	101.7	91.5	73.1	54.8	16.1	(17.6)	(54.8)	(84.9)	(94.6)	(102.2)	(107.4)	(104.2)
Municipals	101.7	101.7	91.5	73.1	54.8	16.1	(17.6)	(54.8)	(84.9)	(94.6)	(102.2)	(107.4)	(104.2)
Swaps / Discounting Curve	22.5	22.5	44.5	43.2	41.9	9.9	(15.3)	(51.8)	(73.6)	(90.7)	(97.5)	(94.6)	(88.4)
Instruments shocked by MV**													
Other	22.5	22.5	44.5	43.2	41.9	9.9	(15.3)	(51.8)	(73.6)	(90.7)	(97.5)	(94.6)	(88.4)

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

OIS Basis	(1.4)	(1.5)	(1.6)	(1.6)	(2.0)	(2.4)	(2.4)	(2.9)	(3.2)	(3.6)	(3.8)	(3.9)	(4.0)
1m Basis	(1.9)	(2.0)	(2.1)	(2.2)	(2.7)	(1.5)	(1.1)	(0.9)	(0.9)	(1.1)	(1.2)	(1.4)	(1.4)
3m Basis													
6m Basis	5.3	5.7	5.8	6.1	7.6	5.0	4.0	3.2	2.8	2.5	2.2	2.0	1.7
12m Basis	16.3	17.5	18.0	18.8	23.3	18.0	15.3	12.5	11.2	9.9	8.7	7.9	6.9
Other Basis													

# Rates DV01 (Continued)

## JPY Directional Risks

Governments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agencies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Municipals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Swaps / Discounting Curve	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Instruments shocked by MV**													
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

OIS Basis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1m TIBOR Basis	0.3	0.3	0.4	0.3	0.4	0.2	0.1	0.3	0.3	0.3	1.1	1.3	1.5
3m TIBOR Basis													
6m TIBOR Basis	0.5	0.7	0.9	0.7	0.8	0.2	0.1	0.2	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)
12m TIBOR Basis													
1m LIBOR Basis	0.3	0.3	0.4	0.3	0.4	0.2	0.1	0.3	0.3	0.3	1.1	1.3	1.5
3m LIBOR Basis													
6m LIBOR Basis	0.5	0.7	0.9	0.7	0.8	0.2	0.1	0.2	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)
12m LIBOR Basis													
Other Basis													

## NOK Directional Risks

Governments	84.3	84.3	80.4	66.3	52.1	19.0	(14.0)	(46.3)	(78.5)	(81.7)	(80.8)	(80.9)	(80.3)
Agencies	84.3	84.3	80.4	66.3	52.1	19.0	(14.0)	(46.3)	(78.5)	(81.7)	(80.8)	(80.9)	(80.3)
Municipals	84.3	84.3	80.4	66.3	52.1	19.0	(14.0)	(46.3)	(78.5)	(81.7)	(80.8)	(80.9)	(80.3)
Swaps / Discounting Curve	90.2	90.2	83.6	67.1	50.6	7.1	(16.3)	(51.3)	(70.6)	(82.5)	(84.8)	(90.9)	(89.0)
Instruments shocked by MV**													
Other	90.2	90.2	83.6	67.1	50.6	7.1	(16.3)	(51.3)	(70.6)	(82.5)	(84.8)	(90.9)	(89.0)

## 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	59.7	59.7	48.5	41.4	34.2	(1.7)	(29.8)	(75.1)	(100.1)	(123.1)	(126.6)	(135.2)	(135.2)
Agencies	59.7	59.7	48.5	41.4	34.2	(1.7)	(29.8)	(75.1)	(100.1)	(123.1)	(126.6)	(135.2)	(135.2)
Municipals	59.7	59.7	48.5	41.4	34.2	(1.7)	(29.8)	(75.1)	(100.1)	(123.1)	(126.6)	(135.2)	(135.2)
Swaps / Discounting Curve	59.7	59.7	48.5	41.4	34.2	(1.7)	(29.8)	(75.1)	(100.1)	(123.1)	(126.6)	(135.2)	(135.2)
Instruments shocked by MV**													
Other	59.7	59.7	48.5	41.4	34.2	(1.7)	(29.8)	(75.1)	(100.1)	(123.1)	(126.6)	(135.2)	(135.2)

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

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

## SEK Directional Risks

Governments	82.6	82.6	75.8	69.0	66.0	54.0	38.0	(1.0)	(40.0)	(80.0)	(107.6)	(108.6)	(109.9)
Agencies	82.6	82.6	75.8	69.0	66.0	54.0	38.0	(1.0)	(40.0)	(80.0)	(107.6)	(108.6)	(109.9)
Municipals	82.6	82.6	75.8	69.0	66.0	54.0	38.0	(1.0)	(40.0)	(80.0)	(107.6)	(108.6)	(109.9)
Swaps / Discounting Curve	72.3	72.3	71.3	61.0	59.5	27.0	(1.2)	(59.2)	(75.1)	(84.3)	(89.1)	(92.4)	(92.5)
Instruments shocked by MV**													
Other	72.3	72.3	71.3	61.0	59.5	27.0	(1.2)	(59.2)	(75.1)	(84.3)	(89.1)	(92.4)	(92.5)

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

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

## Rates DV01 (Continued)

### USD Directional Risks

Governments	(16.0)	(47.6)	(57.1)	(64.2)	(69.5)	(94.0)	(112.3)	(138.2)	(152.5)	(152.1)	(152.2)	(143.5)	(141.4)
Agencies	(16.0)	(47.6)	(57.1)	(64.2)	(69.5)	(94.0)	(112.3)	(138.2)	(152.5)	(152.1)	(152.2)	(143.5)	(141.4)
Municipals	(16.0)	(47.6)	(57.1)	(64.2)	(69.5)	(94.0)	(112.3)	(138.2)	(152.5)	(152.1)	(152.2)	(143.5)	(141.4)
Swaps / Discounting Curve	(43.6)	(43.6)	(49.2)	(59.7)	(70.3)	(97.5)	(117.8)	(143.1)	(153.7)	(156.9)	(156.2)	(153.5)	(155.5)
Instruments shocked by MV**													
Other	(43.6)	(43.6)	(49.2)	(59.7)	(70.3)	(97.5)	(117.8)	(143.1)	(153.7)	(156.9)	(156.2)	(153.5)	(155.5)

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

Prime Basis	(16.0)	(20.5)	(22.4)	(23.9)	(25.5)	(17.4)	(12.5)	(8.8)	(8.2)	(7.9)	(8.4)	(8.7)	(8.9)
CP Basis	(16.9)	(21.8)	(23.7)	(25.3)	(27.0)	(11.5)	(16.0)	(6.4)	(6.0)	(6.0)	(6.4)	(6.6)	(6.8)
OIS Basis	(50.2)	(64.5)	(42.8)	(33.0)	(23.7)	(16.5)	(12.7)	(7.4)	(6.8)	(5.1)	(5.4)	(5.6)	(5.8)
1m Basis	(6.4)	(8.2)	(6.3)	(3.8)	(2.7)	(0.8)	(0.2)	0.4	0.7	1.1	1.2	1.6	1.7
3m Basis													
6m Basis	2.7	3.4	3.7	4.0	4.2	2.4	1.5	0.5	(0.1)	(0.5)	(0.5)	(0.5)	(0.5)
12m Basis	9.2	11.8	12.9	13.7	14.7	13.0	12.0	10.2	9.5	10.3	8.1	7.3	5.6
Other Basis													

Absolute increase in Muni SIFMA/Libor Ratio (Pts)	(31.4)	8.8	(2.5)	8.3	19.2	19.5	20.1	21.3	21.2	20.1	15.1	12.1	8.5
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### Other Advanced Economies Directional Risks

Governments	(16.0)	(47.6)	(57.1)	(64.2)	(69.5)	(94.0)	(112.3)	(138.2)	(152.5)	(152.1)	(152.2)	(143.5)	(141.4)
Agencies	(16.0)	(47.6)	(57.1)	(64.2)	(69.5)	(94.0)	(112.3)	(138.2)	(152.5)	(152.1)	(152.2)	(143.5)	(141.4)
Municipals	(16.0)	(47.6)	(57.1)	(64.2)	(69.5)	(94.0)	(112.3)	(138.2)	(152.5)	(152.1)	(152.2)	(143.5)	(141.4)
Swaps / Discounting Curve	(43.6)	(43.6)	(49.2)	(59.7)	(70.3)	(97.5)	(117.8)	(143.1)	(153.7)	(156.9)	(156.2)	(153.5)	(155.5)
Instruments shocked by MV**													
Other	(43.6)	(43.6)	(49.2)	(59.7)	(70.3)	(97.5)	(117.8)	(143.1)	(153.7)	(156.9)	(156.2)	(153.5)	(155.5)

### Directional Risks: Emerging Europe

BGN	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
CZK	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(34.0)	(57.0)	(84.0)	(116.3)	(125.2)	(131.0)
HRK	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
HUF	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
PLN	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
RON	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
RUB	200.0	198.9	197.2	195.5	193.9	187.2	180.5	167.1	153.8	133.7	100.3	66.9	0.0
Other Emerging Europe	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)

### Directional Risks: Latin America & Caribbean

ARS	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
BRL	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
CLP	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
COP	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
MXN	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
PEN	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
VEF	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
Other Latam & Caribbean	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)

## Rates DV01 (Continued)

### Directional Risks: Asia Ex-Japan

CNY	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
HKD	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
IDR	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
INR	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
KRW	50.0	45.7	39.1	32.6	26.1	0.0	(1.8)	(5.4)	(8.9)	(14.3)	(23.2)	(32.1)	(50.0)
MYR	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
PHP	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
SGD	50.0	45.7	39.1	32.6	26.1	0.0	(1.8)	(5.4)	(8.9)	(14.3)	(23.2)	(32.1)	(50.0)
THB	50.0	45.7	39.1	32.6	26.1	0.0	(1.8)	(5.4)	(8.9)	(14.3)	(23.2)	(32.1)	(50.0)
TWD	50.0	45.7	39.1	32.6	26.1	0.0	(1.8)	(5.4)	(8.9)	(14.3)	(23.2)	(32.1)	(50.0)
Other Asia Ex-Japan	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)

### Directional Risks: Middle East/North Africa

ILS	(9.0)	(9.0)	(9.0)	(11.0)	(13.0)	(32.0)	(56.0)	(103.0)	(146.0)	(152.1)	(152.2)	(143.5)	(141.4)
TRY	(62.0)	(87.0)	(99.0)	(103.0)	(96.0)	(158.0)	(190.0)	(225.0)	(238.0)	(237.0)	(245.0)	(219.0)	(219.0)
Other Middle East/Africa	106.7	106.7	141.6	97.2	52.9	(51.4)	(69.3)	(92.8)	(113.4)	(125.6)	(132.2)	(150.1)	(167.7)

### Directional Risks: Sub-Saharan Africa

ZAR	106.7	106.7	141.6	97.2	52.9	(51.4)	(69.3)	(92.8)	(113.4)	(125.6)	(132.2)	(150.1)	(167.7)
Other Sub-Saharan Africa	106.7	106.7	141.6	97.2	52.9	(51.4)	(69.3)	(92.8)	(113.4)	(125.6)	(132.2)	(150.1)	(167.7)

# Relative Normal Interest Rate 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	-67.8%	-67.8%	-65.3%	-62.8%	-60.3%	-24.2%	-21.7%	-17.8%	-14.3%	-11.8%	-11.7%	-10.3%	-9.6%	-9.1%
		3M	-49.3%	-49.3%	-47.5%	-45.7%	-43.9%	-22.7%	-19.3%	-16.2%	-14.2%	-11.7%	-11.6%	-10.3%	-9.5%	-9.1%
		6M	-39.1%	-39.1%	-37.7%	-36.3%	-34.8%	-22.5%	-18.5%	-16.0%	-13.9%	-11.7%	-11.6%	-10.3%	-9.6%	-9.1%
		9M	-34.8%	-34.8%	-33.5%	-32.2%	-31.0%	-22.3%	-17.9%	-15.5%	-13.7%	-11.5%	-11.5%	-10.2%	-9.5%	-9.1%
		1Y	-31.3%	-31.3%	-30.2%	-29.0%	-27.9%	-22.0%	-17.1%	-15.0%	-13.5%	-11.3%	-11.4%	-10.1%	-9.4%	-9.0%
		2Y	-27.4%	-27.4%	-25.3%	-23.2%	-21.1%	-17.9%	-15.7%	-13.1%	-12.9%	-11.7%	-11.9%	-9.7%	-9.9%	-10.4%
		3Y	-26.8%	-26.8%	-25.2%	-23.6%	-22.1%	-20.0%	-18.5%	-15.7%	-15.4%	-14.8%	-14.3%	-13.5%	-11.9%	-10.6%
		5Y	-26.1%	-26.1%	-23.8%	-21.5%	-19.2%	-17.6%	-15.7%	-12.5%	-22.0%	-12.5%	-19.6%	-11.0%	-11.0%	-11.3%
		7Y	-26.1%	-26.1%	-23.7%	-21.4%	-19.0%	-16.9%	-15.3%	-13.6%	-19.6%	-12.0%	-16.6%	-11.3%	-11.4%	-11.6%
		10Y	-22.1%	-22.1%	-20.0%	-17.9%	-15.8%	-17.0%	-15.8%	-14.5%	-13.5%	-16.5%	-17.6%	-16.9%	-17.3%	-17.4%
		15Y	-23.4%	-23.4%	-20.9%	-18.4%	-15.9%	-17.0%	-15.9%	-15.0%	-13.5%	-18.7%	-17.6%	-18.2%	-19.3%	-20.2%
	20Y	-23.8%	-23.8%	-21.2%	-18.7%	-16.1%	-17.3%	-16.4%	-15.6%	-14.8%	-20.2%	-21.1%	-21.6%	-22.0%	-22.2%	
	30Y	-52.7%	-52.7%	-45.8%	-38.9%	-32.1%	-34.3%	-32.3%	-30.3%	-28.5%	-38.4%	-35.0%	-35.6%	-33.9%	-32.0%	
EUR	EXPIRY															
		1M	-76.2%	-76.2%	-67.8%	-59.4%	-51.0%	-70.6%	-77.2%	-63.4%	-57.4%	-44.8%	-29.6%	-13.1%	-2.2%	8.1%
		3M	-79.4%	-79.4%	-70.6%	-61.9%	-53.1%	-70.1%	-79.1%	-64.8%	-56.3%	-44.3%	-29.3%	-13.1%	-2.2%	8.3%
		6M	-80.1%	-80.1%	-71.3%	-62.4%	-53.6%	-71.2%	-80.5%	-65.6%	-55.0%	-43.0%	-28.7%	-12.9%	-2.2%	8.2%
		9M	-76.3%	-76.3%	-67.9%	-59.5%	-51.1%	-63.4%	-72.6%	-63.4%	-53.4%	-41.6%	-28.3%	-12.8%	-2.2%	8.2%
		1Y	-74.1%	-74.1%	-65.9%	-57.8%	-49.6%	-59.5%	-68.6%	-62.1%	-52.0%	-40.4%	-27.9%	-12.7%	-2.2%	8.2%
		2Y	-42.2%	-42.2%	-43.6%	-45.0%	-46.3%	-48.6%	-49.8%	-52.7%	-47.1%	-38.7%	-48.4%	-9.1%	-4.0%	1.0%
		3Y	-24.8%	-24.8%	-28.6%	-32.5%	-36.3%	-39.5%	-41.2%	-44.8%	-40.6%	-35.9%	-26.7%	-14.0%	-10.6%	-7.4%
		5Y	-25.5%	-25.5%	-28.5%	-31.5%	-34.6%	-37.7%	-38.9%	-39.3%	-38.3%	-33.7%	-28.1%	-21.5%	-17.3%	-13.0%
		7Y	-25.7%	-25.7%	-28.0%	-30.3%	-32.6%	-33.6%	-33.4%	-36.4%	-36.6%	-34.5%	-31.1%	-25.7%	-21.4%	-16.9%
		10Y	-28.7%	-28.7%	-30.2%	-31.8%	-33.4%	-31.7%	-31.1%	-33.8%	-35.2%	-35.0%	-35.4%	-32.1%	-27.8%	-22.7%
		15Y	-33.1%	-33.1%	-35.1%	-37.1%	-39.1%	-36.6%	-35.0%	-35.8%	-37.0%	-37.7%	-32.7%	-29.5%	-26.5%	-23.9%
	20Y	-35.4%	-35.4%	-37.2%	-39.0%	-40.8%	-38.1%	-37.1%	-39.4%	-39.2%	-38.1%	-33.5%	-29.0%	-27.4%	-24.1%	
	30Y	-40.0%	-40.0%	-38.8%	-37.6%	-36.5%	-42.9%	-45.3%	-47.6%	-43.6%	-43.1%	-38.4%	-31.5%	-23.0%	-13.8%	
GBP	EXPIRY															
		1M	-88.3%	-88.3%	-85.1%	-81.8%	-78.6%	-38.7%	-27.1%	-17.2%	-15.6%	-12.9%	-14.0%	-12.9%	-12.2%	-11.5%
		3M	-54.2%	-54.2%	-52.2%	-50.2%	-48.2%	-29.6%	-21.6%	-16.1%	-14.8%	-12.6%	-13.6%	-12.4%	-11.9%	-11.3%
		6M	-40.0%	-40.0%	-38.6%	-37.1%	-35.6%	-24.9%	-19.5%	-15.5%	-14.2%	-12.0%	-13.2%	-12.2%	-11.7%	-11.2%
		9M	-34.7%	-34.7%	-33.5%	-32.2%	-30.9%	-22.7%	-18.2%	-14.7%	-13.6%	-11.7%	-12.9%	-12.0%	-11.5%	-10.9%
		1Y	-30.2%	-30.2%	-29.1%	-28.0%	-26.9%	-20.8%	-17.1%	-14.0%	-13.2%	-11.4%	-12.6%	-11.7%	-11.2%	-10.7%
		2Y	-24.8%	-24.8%	-22.9%	-21.0%	-19.1%	-16.3%	-14.5%	-11.9%	-11.8%	-11.2%	-12.5%	-10.7%	-11.2%	-11.7%
		3Y	-23.4%	-23.4%	-22.0%	-20.7%	-19.3%	-17.9%	-16.4%	-14.4%	-14.2%	-13.7%	-14.4%	-14.1%	-12.7%	-11.1%
		5Y	-21.4%	-21.4%	-19.5%	-17.6%	-15.8%	-14.7%	-13.3%	-11.8%	-20.2%	-11.5%	-19.3%	-11.4%	-11.4%	-11.4%
		7Y	-21.4%	-21.4%	-19.4%	-17.5%	-15.5%	-14.5%	-13.6%	-12.3%	-18.0%	-11.9%	-17.3%	-12.2%	-12.2%	-12.0%
		10Y	-23.2%	-23.2%	-21.0%	-18.8%	-16.6%	-15.4%	-14.5%	-13.7%	-14.0%	-12.4%	-14.1%	-13.7%	-13.5%	-13.2%
		15Y	-30.5%	-30.5%	-27.3%	-24.0%	-20.7%	-18.9%	-17.4%	-16.1%	-15.8%	-16.4%	-15.4%	-15.2%	-15.7%	-16.2%
	20Y	-34.1%	-34.1%	-30.5%	-26.8%	-23.2%	-21.7%	-20.3%	-19.2%	-18.7%	-18.3%	-17.6%	-17.3%	-17.2%	-17.1%	
	30Y	-45.5%	-45.5%	-39.6%	-33.7%	-27.7%	-25.3%	-23.2%	-21.8%	-21.7%	-21.5%	-20.1%	-21.0%	-21.6%	-21.7%	
JPY	EXPIRY															
		1M	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		3M	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		6M	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		9M	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		1Y	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		2Y	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		3Y	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		5Y	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		7Y	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		10Y	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		15Y	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	20Y	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	30Y	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

# Relative Normal Interest Rate Shocks (Continued)

USD															
EXPIRY	1M	-57.8%	-57.8%	-55.7%	-53.6%	-51.4%	-31.3%	-21.8%	-16.2%	-15.1%	-13.4%	-14.0%	-12.6%	-11.6%	-10.7%
	3M	-47.1%	-47.1%	-45.3%	-43.6%	-41.9%	-26.7%	-18.7%	-14.8%	-13.9%	-12.1%	-12.7%	-11.4%	-10.9%	-9.7%
	6M	-37.1%	-37.1%	-35.8%	-34.4%	-33.1%	-22.3%	-17.2%	-14.3%	-12.7%	-11.6%	-12.2%	-10.9%	-10.2%	-9.5%
	9M	-31.9%	-31.9%	-30.8%	-29.6%	-28.4%	-21.2%	-16.8%	-13.9%	-12.6%	-11.3%	-12.0%	-11.4%	-10.2%	-9.4%
	1Y	-28.3%	-28.3%	-27.3%	-26.2%	-25.2%	-19.8%	-16.1%	-13.8%	-12.5%	-11.2%	-12.3%	-11.0%	-10.1%	-9.3%
	2Y	-23.3%	-23.3%	-21.5%	-19.7%	-17.9%	-16.3%	-14.2%	-11.6%	-11.3%	-11.0%	-11.9%	-10.4%	-10.2%	-10.4%
	3Y	-22.4%	-22.4%	-21.1%	-19.8%	-18.5%	-16.6%	-15.5%	-13.6%	-13.8%	-13.2%	-13.6%	-13.4%	-12.1%	-10.0%
	5Y	-20.3%	-20.3%	-18.5%	-16.8%	-15.0%	-13.7%	-12.3%	-10.8%	-18.5%	-10.5%	-17.7%	-10.4%	-10.3%	-10.5%
	7Y	-20.8%	-20.8%	-18.9%	-17.0%	-15.1%	-13.9%	-12.6%	-11.2%	-16.1%	-10.8%	-15.7%	-11.2%	-10.9%	-10.7%
	10Y	-21.4%	-21.4%	-19.4%	-17.3%	-15.3%	-14.4%	-13.6%	-12.4%	-12.8%	-11.1%	-12.8%	-12.4%	-12.0%	-11.6%
	15Y	-27.4%	-27.4%	-24.4%	-21.5%	-18.6%	-17.2%	-15.9%	-15.0%	-14.3%	-14.2%	-13.8%	-13.0%	-13.1%	-13.1%
20Y	-30.0%	-30.0%	-26.8%	-23.6%	-20.4%	-19.1%	-17.7%	-16.8%	-16.1%	-15.3%	-14.3%	-13.8%	-13.3%	-12.9%	
30Y	-38.4%	-38.4%	-33.4%	-28.4%	-23.4%	-21.5%	-19.5%	-17.6%	-17.5%	-17.3%	-15.4%	-15.4%	-15.1%	-14.6%	

## US MBS Vega

### Other Advanced Economies

EXPIRY	1M	-67.8%	-67.8%	-65.3%	-62.8%	-60.3%	-24.2%	-21.7%	-17.8%	-14.3%	-11.8%	-11.7%	-10.3%	-9.6%	-9.1%
	3M	-49.3%	-49.3%	-47.5%	-45.7%	-43.9%	-22.7%	-19.3%	-16.2%	-14.2%	-11.7%	-11.6%	-10.3%	-9.5%	-9.1%
	6M	-39.1%	-39.1%	-37.7%	-36.3%	-34.8%	-22.5%	-18.5%	-16.0%	-13.9%	-11.7%	-11.6%	-10.3%	-9.6%	-9.1%
	9M	-34.8%	-34.8%	-33.5%	-32.2%	-31.0%	-22.3%	-17.9%	-15.5%	-13.7%	-11.5%	-11.5%	-10.2%	-9.5%	-9.1%
	1Y	-31.3%	-31.3%	-30.2%	-29.0%	-27.9%	-22.0%	-17.1%	-15.0%	-13.5%	-11.3%	-11.4%	-10.1%	-9.4%	-9.0%
	2Y	-27.4%	-27.4%	-25.3%	-23.2%	-21.1%	-17.9%	-15.7%	-13.1%	-12.9%	-11.7%	-11.9%	-9.7%	-9.9%	-10.4%
	3Y	-26.8%	-26.8%	-25.2%	-23.6%	-22.1%	-20.0%	-18.5%	-15.7%	-15.4%	-14.8%	-14.3%	-13.5%	-11.9%	-10.6%
	5Y	-26.1%	-26.1%	-23.8%	-21.5%	-19.2%	-17.6%	-15.7%	-12.5%	-22.0%	-12.5%	-19.6%	-11.0%	-11.0%	-11.3%
	7Y	-26.1%	-26.1%	-23.7%	-21.4%	-19.0%	-16.9%	-15.3%	-13.6%	-19.6%	-12.0%	-16.6%	-11.3%	-11.4%	-11.6%
	10Y	-22.1%	-22.1%	-20.0%	-17.9%	-15.8%	-17.0%	-15.8%	-14.5%	-13.5%	-16.5%	-17.6%	-16.9%	-17.3%	-17.4%
	15Y	-23.4%	-23.4%	-20.9%	-18.4%	-15.9%	-17.0%	-15.9%	-15.0%	-13.5%	-18.7%	-17.6%	-18.2%	-19.3%	-20.2%
20Y	-23.8%	-23.8%	-21.2%	-18.7%	-16.1%	-17.3%	-16.4%	-15.6%	-14.8%	-20.2%	-21.1%	-21.6%	-22.0%	-22.2%	
30Y	-52.7%	-52.7%	-45.8%	-38.9%	-32.1%	-34.3%	-32.3%	-30.3%	-28.5%	-38.4%	-35.0%	-35.6%	-33.9%	-32.0%	

### Total Emerging Europe

EXPIRY	1M	-88.3%	-88.3%	-88.3%	-88.3%	-88.3%	-89.5%	-91.1%	-93.5%	-94.9%	-96.0%	-57.6%	-24.5%	-4.2%	15.6%
	3M	-88.3%	-88.3%	-88.3%	-88.3%	-88.3%	-89.9%	-91.5%	-93.7%	-95.1%	-99.7%	-56.9%	-24.3%	-4.2%	15.6%
	6M	-88.5%	-88.5%	-88.5%	-88.5%	-88.5%	-90.5%	-92.1%	-94.1%	-95.3%	-96.4%	-55.8%	-24.1%	-4.1%	15.5%
	9M	-89.3%	-89.3%	-89.3%	-89.3%	-89.3%	-91.1%	-92.6%	-94.4%	-95.5%	-93.2%	-54.8%	-23.8%	-4.1%	15.4%
	1Y	-90.1%	-90.1%	-90.1%	-90.1%	-90.1%	-91.8%	-93.2%	-94.7%	-95.7%	-90.2%	-53.8%	-23.6%	-4.1%	15.3%
	2Y	-92.9%	-92.9%	-92.9%	-92.9%	-92.9%	-94.1%	-94.7%	-95.8%	-96.3%	-81.2%	-88.2%	-16.2%	-7.2%	1.8%
	3Y	-94.9%	-94.9%	-94.9%	-94.9%	-94.9%	-95.3%	-97.0%	-98.7%	-87.6%	-71.3%	-46.8%	-24.0%	-18.4%	-13.0%
	5Y	-59.2%	-59.2%	-66.2%	-73.3%	-80.3%	-78.2%	-79.6%	-79.1%	-72.5%	-59.4%	-45.1%	-34.6%	-27.8%	-21.3%
	7Y	-53.3%	-53.3%	-58.1%	-63.0%	-67.8%	-65.7%	-64.7%	-64.6%	-60.9%	-55.6%	-47.5%	-39.3%	-33.1%	-26.8%
	10Y	-44.8%	-44.8%	-47.3%	-49.7%	-52.2%	-49.2%	-46.7%	-49.5%	-51.6%	-52.1%	-52.4%	-47.0%	-42.0%	-35.7%
	15Y	-44.4%	-44.4%	-47.2%	-49.9%	-52.6%	-50.8%	-49.3%	-52.4%	-56.0%	-59.7%	-49.2%	-44.1%	-41.1%	-37.2%
20Y	-56.8%	-56.8%	-59.7%	-62.6%	-65.5%	-64.5%	-63.8%	-69.5%	-67.8%	-64.1%	-54.2%	-46.8%	-43.7%	-39.9%	
30Y	-81.9%	-81.9%	-79.4%	-77.0%	-74.5%	-79.3%	-84.4%	-89.7%	-83.7%	-82.1%	-66.1%	-55.4%	-39.9%	-23.7%	

### Total Latam & Caribbean

EXPIRY	1M	-24.8%	-24.8%	-23.9%	-22.9%	-22.0%	-17.3%	-15.7%	-11.0%	-9.2%	-7.2%	-7.2%	-6.3%	-5.8%	-5.5%
	3M	-22.8%	-22.8%	-22.0%	-21.2%	-20.3%	-16.0%	-14.6%	-10.3%	-8.7%	-6.9%	-6.9%	-6.1%	-5.7%	-5.4%
	6M	-22.4%	-22.4%	-21.6%	-20.8%	-20.0%	-15.8%	-14.3%	-10.4%	-8.2%	-5.8%	-5.9%	-5.3%	-4.9%	-4.6%
	9M	-21.0%	-21.0%	-20.2%	-19.5%	-18.7%	-15.1%	-13.6%	-9.6%	-7.8%	-5.7%	-5.8%	-5.2%	-4.9%	-4.6%
	1Y	-19.2%	-19.2%	-18.5%	-17.8%	-17.1%	-14.3%	-12.8%	-8.7%	-7.4%	-5.6%	-5.7%	-5.1%	-4.8%	-4.5%
	2Y	-13.9%	-13.9%	-12.8%	-11.8%	-10.7%	-9.1%	-8.3%	-6.1%	-5.9%	-5.3%	-5.5%	-4.5%	-4.6%	-4.8%
	3Y	-12.4%	-12.4%	-11.7%	-11.0%	-10.2%	-9.3%	-12.7%	-7.0%	-6.7%	-6.2%	-6.0%	-5.7%	-5.0%	-4.4%
	5Y	-10.6%	-10.6%	-9.7%	-8.8%	-7.8%	-6.8%	-10.7%	-5.2%	-8.6%	-4.8%	-7.5%	-4.2%	-4.1%	-4.2%
	7Y	-10.3%	-10.3%	-9.4%	-8.4%	-7.5%	-6.9%	-8.5%	-5.0%	-7.0%	-4.7%	-6.4%	-4.3%	-4.3%	-4.4%
	10Y	-8.4%	-8.4%	-7.6%	-6.8%	-6.0%	-5.9%	-5.7%	-4.6%	-4.8%	-4.6%	-4.9%	-4.6%	-4.6%	-4.6%
	15Y	-9.1%	-9.1%	-8.2%	-7.2%	-6.2%	-6.1%	-5.8%	-4.9%	-4.7%	-5.1%	-4.7%	-4.9%	-5.3%	-5.5%
20Y	-8.7%	-8.7%	-7.7%	-6.8%	-5.9%	-5.8%	-5.6%	-4.8%	-5.0%	-5.3%	-5.8%	-6.1%	-6.4%	-6.5%	
30Y	-34.5%	-34.5%	-30.0%	-25.5%	-21.0%	-20.5%	-19.5%	-16.1%	-16.8%	-17.9%	-16.5%	-17.0%	-16.3%	-15.4%	

## Relative Normal Interest Rate Shocks (Continued)

### Total Asia Ex-Japan

EXPIRY	1M	-47.8%	-47.8%	-46.0%	-44.3%	-42.5%	-35.7%	-29.2%	-24.2%	-23.0%	-19.3%	-20.0%	-18.1%	-17.7%	-17.3%
	3M	-48.5%	-48.5%	-46.7%	-44.9%	-43.1%	-35.8%	-29.2%	-24.1%	-22.9%	-19.2%	-20.0%	-18.1%	-17.7%	-17.3%
	6M	-48.0%	-48.0%	-46.3%	-44.5%	-42.7%	-36.1%	-29.6%	-24.8%	-23.1%	-19.7%	-20.6%	-18.7%	-18.3%	-17.9%
	9M	-47.7%	-47.7%	-46.0%	-44.2%	-42.5%	-36.3%	-30.1%	-25.7%	-23.6%	-19.9%	-20.9%	-19.0%	-18.7%	-18.2%
	1Y	-47.4%	-47.4%	-45.7%	-43.9%	-42.2%	-36.4%	-30.7%	-26.8%	-24.2%	-20.1%	-21.2%	-19.4%	-19.0%	-18.6%
	2Y	-46.3%	-46.3%	-42.8%	-39.2%	-35.7%	-31.9%	-28.1%	-23.0%	-22.4%	-21.0%	-22.2%	-18.8%	-20.1%	-21.4%
	3Y	-45.1%	-45.1%	-42.4%	-39.8%	-37.2%	-34.8%	-32.3%	-28.2%	-27.3%	-26.1%	-26.1%	-25.7%	-23.5%	-21.1%
	5Y	-41.4%	-41.4%	-37.8%	-34.2%	-30.5%	-28.8%	-25.7%	-22.4%	-38.2%	-21.5%	-34.3%	-20.5%	-21.1%	-21.5%
	7Y	-38.5%	-38.5%	-35.0%	-31.6%	-28.1%	-26.8%	-24.2%	-21.8%	-32.0%	-21.0%	-30.0%	-21.5%	-21.8%	-22.0%
	10Y	-36.0%	-36.0%	-32.5%	-29.1%	-25.7%	-25.0%	-24.0%	-23.1%	-23.5%	-20.7%	-23.9%	-23.5%	-23.5%	-23.2%
	15Y	-42.5%	-42.5%	-38.0%	-33.5%	-28.9%	-27.9%	-25.7%	-24.3%	-25.3%	-26.8%	-25.7%	-25.5%	-26.3%	-26.9%
20Y	-55.9%	-55.9%	-49.9%	-44.0%	-38.0%	-37.3%	-34.8%	-33.6%	-33.7%	-32.7%	-30.9%	-29.8%	-29.3%	-28.6%	
30Y	-78.4%	-78.4%	-68.1%	-57.9%	-47.7%	-46.3%	-42.6%	-40.0%	-40.4%	-39.3%	-35.5%	-35.7%	-33.7%	-31.5%	

### Total ME/N. Africa

EXPIRY	1M	-34.7%	-34.7%	-33.4%	-32.2%	-30.9%	-23.1%	-17.7%	-13.7%	-11.4%	-8.6%	-9.9%	-9.6%	-9.5%	-9.4%
	3M	-32.6%	-32.6%	-31.4%	-30.2%	-29.0%	-22.0%	-17.1%	-13.4%	-11.2%	-8.5%	-9.8%	-9.5%	-9.5%	-9.4%
	6M	-29.9%	-29.9%	-28.8%	-27.7%	-26.6%	-20.6%	-16.2%	-12.8%	-10.8%	-8.4%	-9.7%	-9.5%	-9.5%	-9.3%
	9M	-27.9%	-27.9%	-26.8%	-25.8%	-24.8%	-19.5%	-15.5%	-12.4%	-10.4%	-8.3%	-9.7%	-9.4%	-9.4%	-9.3%
	1Y	-26.1%	-26.1%	-25.2%	-24.2%	-23.2%	-18.6%	-14.9%	-11.9%	-10.1%	-8.2%	-9.6%	-9.4%	-9.4%	-9.3%
	2Y	-22.8%	-22.8%	-21.0%	-19.3%	-17.5%	-14.9%	-12.7%	-9.6%	-8.6%	-8.2%	-9.6%	-8.6%	-9.4%	-10.1%
	3Y	-21.2%	-21.2%	-19.9%	-18.7%	-17.4%	-15.4%	-13.3%	-10.6%	-9.6%	-10.0%	-11.0%	-11.4%	-10.6%	-9.7%
	5Y	-16.5%	-16.5%	-15.1%	-13.6%	-12.2%	-10.6%	-9.0%	-7.2%	-13.5%	-8.3%	-14.8%	-9.1%	-9.5%	-9.8%
	7Y	-13.7%	-13.7%	-12.5%	-11.2%	-10.0%	-8.9%	-7.8%	-8.1%	-12.6%	-9.0%	-13.9%	-10.1%	-10.5%	-10.7%
	10Y	-22.2%	-22.2%	-20.1%	-18.0%	-15.8%	-14.9%	-13.9%	-12.8%	-13.0%	-11.9%	-13.5%	-13.2%	-13.2%	-13.1%
	15Y	-29.1%	-29.1%	-26.0%	-22.9%	-19.8%	-18.3%	-16.8%	-15.6%	-15.2%	-15.7%	-14.9%	-14.7%	-15.2%	-15.6%
20Y	-34.5%	-34.5%	-30.8%	-27.1%	-23.4%	-21.8%	-20.1%	-18.7%	-18.4%	-18.0%	-17.3%	-16.9%	-16.7%	-16.5%	
30Y	-52.4%	-52.4%	-45.6%	-38.7%	-31.9%	-29.3%	-26.7%	-24.1%	-23.8%	-23.4%	-21.3%	-21.6%	-20.6%	-19.4%	

### Total Sub-Saharan Africa

EXPIRY	1M	-9.5%	-9.5%	-9.2%	-8.8%	-8.5%	-6.9%	-5.7%	-5.0%	-4.6%	-3.9%	-4.1%	-3.7%	-3.6%	-3.4%
	3M	-9.2%	-9.2%	-8.9%	-8.5%	-8.2%	-6.8%	-5.6%	-4.9%	-4.5%	-3.8%	-4.1%	-3.7%	-3.6%	-3.4%
	6M	-8.8%	-8.8%	-8.5%	-8.2%	-7.8%	-6.6%	-5.5%	-4.8%	-4.5%	-3.8%	-4.0%	-3.7%	-3.5%	-3.4%
	9M	-8.5%	-8.5%	-8.2%	-7.9%	-7.6%	-6.4%	-5.4%	-4.8%	-4.4%	-3.8%	-4.0%	-3.7%	-3.5%	-3.4%
	1Y	-8.3%	-8.3%	-8.0%	-7.7%	-7.4%	-6.3%	-5.3%	-4.7%	-4.4%	-3.7%	-4.0%	-3.7%	-3.5%	-3.4%
	2Y	-8.2%	-8.2%	-7.6%	-7.0%	-6.3%	-5.6%	-5.0%	-4.1%	-4.0%	-3.7%	-4.0%	-3.3%	-3.5%	-3.6%
	3Y	-8.3%	-8.3%	-7.8%	-7.3%	-6.9%	-6.3%	-5.7%	-4.9%	-4.8%	-4.5%	-4.5%	-4.4%	-3.9%	-3.5%
	5Y	-7.8%	-7.8%	-7.1%	-6.4%	-5.8%	-5.2%	-4.6%	-3.9%	-6.6%	-3.7%	-5.9%	-3.4%	-3.4%	-3.5%
	7Y	-7.7%	-7.7%	-7.0%	-6.3%	-5.6%	-5.1%	-4.6%	-3.9%	-5.5%	-3.6%	-5.1%	-3.5%	-3.5%	-3.6%
	10Y	-7.4%	-7.4%	-6.7%	-6.0%	-5.3%	-4.9%	-4.5%	-4.0%	-4.0%	-3.6%	-4.0%	-3.8%	-3.9%	-3.9%
	15Y	-8.4%	-8.4%	-7.5%	-6.6%	-5.7%	-5.3%	-4.9%	-4.6%	-4.4%	-4.5%	-4.2%	-4.4%	-4.7%	-5.0%
20Y	-9.5%	-9.5%	-8.4%	-7.4%	-6.4%	-6.0%	-5.6%	-5.2%	-5.2%	-5.2%	-5.6%	-5.9%	-6.1%	-6.3%	
30Y	-34.8%	-34.8%	-30.3%	-25.7%	-21.2%	-19.6%	-17.9%	-16.3%	-16.2%	-16.1%	-14.9%	-15.3%	-14.6%	-13.9%	

# Absolute Normal Interest Rate Shocks

## Rates Vega

### Absolute Normal Interest Rate Shocks (bps)

		MATURITY													
		1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	25Y	30Y
<b>AUD</b>															
<b>EXPIRY</b>	<b>1M</b>	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	<b>3M</b>	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	<b>6M</b>	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	<b>9M</b>	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	<b>1Y</b>	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	<b>2Y</b>	(19.0)	(19.0)	(17.5)	(16.1)	(14.6)	(13.2)	(11.9)	(10.0)	(9.8)	(9.2)	(9.9)	(8.2)	(8.5)	(8.7)
	<b>3Y</b>	(19.9)	(19.9)	(18.7)	(17.6)	(16.4)	(15.2)	(13.9)	(12.2)	(11.8)	(11.3)	(11.3)	(10.8)	(9.5)	(8.2)
	<b>5Y</b>	(19.3)	(19.3)	(17.6)	(16.0)	(14.3)	(12.9)	(11.4)	(9.8)	(16.5)	(9.2)	(14.7)	(8.3)	(8.2)	(8.0)
	<b>7Y</b>	(19.1)	(19.1)	(17.4)	(15.6)	(13.9)	(12.7)	(11.4)	(9.9)	(13.9)	(9.0)	(12.6)	(8.5)	(8.3)	(8.0)
	<b>10Y</b>	(18.7)	(18.7)	(17.0)	(15.2)	(13.4)	(12.4)	(11.3)	(10.2)	(10.1)	(8.8)	(9.4)	(8.8)	(8.4)	(8.0)
	<b>15Y</b>	(20.7)	(20.7)	(18.5)	(16.3)	(14.0)	(12.8)	(11.6)	(10.5)	(10.0)	(10.0)	(8.9)	(8.4)	(8.4)	(8.3)
<b>20Y</b>	(21.1)	(21.1)	(18.8)	(16.6)	(14.3)	(13.1)	(12.0)	(10.9)	(10.4)	(9.9)	(9.1)	(8.5)	(8.1)	(7.7)	
<b>30Y</b>	(24.8)	(24.8)	(21.6)	(18.3)	(15.1)	(13.7)	(12.4)	(11.0)	(10.6)	(10.2)	(8.9)	(8.7)	(8.0)	(7.3)	
<b>EUR</b>															
<b>EXPIRY</b>	<b>1M</b>	(20.1)	(20.1)	(17.9)	(15.7)	(13.4)	(19.1)	(24.7)	(27.0)	(27.4)	(25.4)	(18.9)	(8.9)	(1.6)	5.8
	<b>3M</b>	(20.1)	(20.1)	(17.9)	(15.7)	(13.4)	(19.1)	(24.7)	(27.0)	(27.4)	(25.4)	(18.9)	(8.9)	(1.6)	5.8
	<b>6M</b>	(20.1)	(20.1)	(17.9)	(15.7)	(13.4)	(19.1)	(24.7)	(27.0)	(27.4)	(25.4)	(18.9)	(8.9)	(1.6)	5.8
	<b>9M</b>	(20.1)	(20.1)	(17.9)	(15.7)	(13.4)	(19.1)	(24.7)	(27.0)	(27.4)	(25.4)	(18.9)	(8.9)	(1.6)	5.8
	<b>1Y</b>	(20.1)	(20.1)	(17.9)	(15.7)	(13.4)	(19.1)	(24.7)	(27.0)	(27.4)	(25.4)	(18.9)	(8.9)	(1.6)	5.8
	<b>2Y</b>	(16.6)	(16.6)	(17.1)	(17.7)	(18.2)	(21.0)	(23.7)	(27.8)	(27.9)	(25.9)	(33.2)	(6.4)	(2.8)	0.7
	<b>3Y</b>	(13.7)	(13.7)	(15.8)	(17.9)	(20.0)	(21.4)	(22.8)	(27.1)	(26.8)	(25.2)	(18.7)	(9.8)	(7.4)	(5.1)
	<b>5Y</b>	(16.6)	(16.6)	(18.6)	(20.6)	(22.6)	(23.9)	(25.1)	(27.2)	(27.2)	(24.8)	(19.8)	(14.8)	(11.7)	(8.6)
	<b>7Y</b>	(17.8)	(17.8)	(19.5)	(21.1)	(22.7)	(23.3)	(23.8)	(26.0)	(26.3)	(25.0)	(21.4)	(17.2)	(14.0)	(10.8)
	<b>10Y</b>	(19.6)	(19.6)	(20.7)	(21.8)	(22.8)	(22.3)	(21.8)	(24.3)	(25.0)	(25.3)	(23.9)	(20.7)	(17.4)	(14.1)
	<b>15Y</b>	(20.1)	(20.1)	(21.3)	(22.5)	(23.8)	(23.4)	(22.9)	(24.9)	(25.1)	(25.6)	(20.4)	(17.0)	(15.0)	(13.0)
<b>20Y</b>	(21.2)	(21.2)	(22.2)	(23.3)	(24.4)	(24.1)	(23.8)	(26.0)	(25.4)	(24.0)	(18.7)	(15.3)	(13.7)	(12.1)	
<b>30Y</b>	(23.0)	(23.0)	(22.3)	(21.6)	(20.9)	(22.2)	(23.4)	(24.6)	(22.7)	(21.9)	(17.2)	(14.1)	(9.9)	(5.7)	
<b>GBP</b>															
<b>EXPIRY</b>	<b>1M</b>	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	<b>3M</b>	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	<b>6M</b>	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	<b>9M</b>	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	<b>1Y</b>	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	<b>2Y</b>	(19.0)	(19.0)	(17.5)	(16.1)	(14.6)	(13.2)	(11.9)	(10.0)	(9.8)	(9.2)	(9.9)	(8.2)	(8.5)	(8.7)
	<b>3Y</b>	(19.9)	(19.9)	(18.7)	(17.6)	(16.4)	(15.2)	(13.9)	(12.2)	(11.8)	(11.3)	(11.3)	(10.8)	(9.5)	(8.2)
	<b>5Y</b>	(19.3)	(19.3)	(17.6)	(16.0)	(14.3)	(12.9)	(11.4)	(9.8)	(16.5)	(9.2)	(14.7)	(8.3)	(8.2)	(8.0)
	<b>7Y</b>	(19.1)	(19.1)	(17.4)	(15.6)	(13.9)	(12.7)	(11.4)	(9.9)	(13.9)	(9.0)	(12.6)	(8.5)	(8.3)	(8.0)
	<b>10Y</b>	(18.7)	(18.7)	(17.0)	(15.2)	(13.4)	(12.4)	(11.3)	(10.2)	(10.1)	(8.8)	(9.4)	(8.8)	(8.4)	(8.0)
	<b>15Y</b>	(20.7)	(20.7)	(18.5)	(16.3)	(14.0)	(12.8)	(11.6)	(10.5)	(10.0)	(10.0)	(8.9)	(8.4)	(8.4)	(8.3)
<b>20Y</b>	(21.1)	(21.1)	(18.8)	(16.6)	(14.3)	(13.1)	(12.0)	(10.9)	(10.4)	(9.9)	(9.1)	(8.5)	(8.1)	(7.7)	
<b>30Y</b>	(24.8)	(24.8)	(21.6)	(18.3)	(15.1)	(13.7)	(12.4)	(11.0)	(10.6)	(10.2)	(8.9)	(8.7)	(8.0)	(7.3)	
<b>JPY</b>															
<b>EXPIRY</b>	<b>1M</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>3M</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>6M</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>9M</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>1Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>2Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>3Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>5Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>7Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>10Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>15Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>20Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
<b>30Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	



# Absolute Normal Interest Rate Shocks (Continued)

## USD

EXPIRY	1M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	3M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	6M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	9M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	1Y	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	2Y	(19.0)	(19.0)	(17.5)	(16.1)	(14.6)	(13.2)	(11.9)	(10.0)	(9.8)	(9.2)	(9.9)	(8.2)	(8.5)	(8.7)
	3Y	(19.9)	(19.9)	(18.7)	(17.6)	(16.4)	(15.2)	(13.9)	(12.2)	(11.8)	(11.3)	(11.3)	(10.8)	(9.5)	(8.2)
	5Y	(19.3)	(19.3)	(17.6)	(16.0)	(14.3)	(12.9)	(11.4)	(9.8)	(16.5)	(9.2)	(14.7)	(8.3)	(8.2)	(8.0)
	7Y	(19.1)	(19.1)	(17.4)	(15.6)	(13.9)	(12.7)	(11.4)	(9.9)	(13.9)	(9.0)	(12.6)	(8.5)	(8.3)	(8.0)
	10Y	(18.7)	(18.7)	(17.0)	(15.2)	(13.4)	(12.4)	(11.3)	(10.2)	(10.1)	(8.8)	(9.4)	(8.8)	(8.4)	(8.0)
	15Y	(20.7)	(20.7)	(18.5)	(16.3)	(14.0)	(12.8)	(11.6)	(10.5)	(10.0)	(10.0)	(8.9)	(8.4)	(8.4)	(8.3)
	20Y	(21.1)	(21.1)	(18.8)	(16.6)	(14.3)	(13.1)	(12.0)	(10.9)	(10.4)	(9.9)	(9.1)	(8.5)	(8.1)	(7.7)
	30Y	(24.8)	(24.8)	(21.6)	(18.3)	(15.1)	(13.7)	(12.4)	(11.0)	(10.6)	(10.2)	(8.9)	(8.7)	(8.0)	(7.3)

## US MBS Vega

### Other Advanced Economies

EXPIRY	1M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	3M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	6M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	9M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	1Y	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	2Y	(19.0)	(19.0)	(17.5)	(16.1)	(14.6)	(13.2)	(11.9)	(10.0)	(9.8)	(9.2)	(9.9)	(8.2)	(8.5)	(8.7)
	3Y	(19.9)	(19.9)	(18.7)	(17.6)	(16.4)	(15.2)	(13.9)	(12.2)	(11.8)	(11.3)	(11.3)	(10.8)	(9.5)	(8.2)
	5Y	(19.3)	(19.3)	(17.6)	(16.0)	(14.3)	(12.9)	(11.4)	(9.8)	(16.5)	(9.2)	(14.7)	(8.3)	(8.2)	(8.0)
	7Y	(19.1)	(19.1)	(17.4)	(15.6)	(13.9)	(12.7)	(11.4)	(9.9)	(13.9)	(9.0)	(12.6)	(8.5)	(8.3)	(8.0)
	10Y	(18.7)	(18.7)	(17.0)	(15.2)	(13.4)	(12.4)	(11.3)	(10.2)	(10.1)	(8.8)	(9.4)	(8.8)	(8.4)	(8.0)
	15Y	(20.7)	(20.7)	(18.5)	(16.3)	(14.0)	(12.8)	(11.6)	(10.5)	(10.0)	(10.0)	(8.9)	(8.4)	(8.4)	(8.3)
	20Y	(21.1)	(21.1)	(18.8)	(16.6)	(14.3)	(13.1)	(12.0)	(10.9)	(10.4)	(9.9)	(9.1)	(8.5)	(8.1)	(7.7)
	30Y	(24.8)	(24.8)	(21.6)	(18.3)	(15.1)	(13.7)	(12.4)	(11.0)	(10.6)	(10.2)	(8.9)	(8.7)	(8.0)	(7.3)

### Total Emerging Europe

EXPIRY	1M	(7.5)	(7.5)	(7.5)	(7.5)	(7.5)	(8.5)	(10.2)	(14.4)	(18.8)	(23.9)	(18.9)	(8.9)	(1.6)	5.8
	3M	(7.6)	(7.6)	(7.6)	(7.6)	(7.6)	(8.9)	(10.7)	(14.9)	(19.3)	(25.4)	(18.9)	(8.9)	(1.6)	5.8
	6M	(7.7)	(7.7)	(7.7)	(7.7)	(7.7)	(9.5)	(11.6)	(15.9)	(20.2)	(25.4)	(18.9)	(8.9)	(1.6)	5.8
	9M	(8.3)	(8.3)	(8.3)	(8.3)	(8.3)	(10.3)	(12.6)	(16.9)	(21.1)	(25.4)	(18.9)	(8.9)	(1.6)	5.8
	1Y	(9.2)	(9.2)	(9.2)	(9.2)	(9.2)	(11.2)	(13.7)	(18.0)	(22.1)	(25.4)	(18.9)	(8.9)	(1.6)	5.8
	2Y	(13.2)	(13.2)	(13.2)	(13.2)	(13.2)	(15.9)	(17.8)	(22.5)	(25.9)	(25.9)	(33.2)	(6.4)	(2.8)	0.7
	3Y	(18.6)	(18.6)	(18.6)	(18.6)	(18.6)	(20.1)	(22.8)	(27.1)	(26.8)	(25.2)	(18.7)	(9.8)	(7.4)	(5.1)
	5Y	(16.6)	(16.6)	(18.6)	(20.6)	(22.6)	(23.9)	(25.1)	(27.2)	(27.2)	(24.8)	(19.8)	(14.8)	(11.7)	(8.6)
	7Y	(17.8)	(17.8)	(19.5)	(21.1)	(22.7)	(23.3)	(23.8)	(26.0)	(26.3)	(25.0)	(21.4)	(17.2)	(14.0)	(10.8)
	10Y	(19.6)	(19.6)	(20.7)	(21.8)	(22.8)	(22.3)	(21.8)	(24.3)	(25.0)	(25.3)	(23.9)	(20.7)	(17.4)	(14.1)
	15Y	(20.1)	(20.1)	(21.3)	(22.5)	(23.8)	(23.4)	(22.9)	(24.9)	(25.1)	(25.6)	(20.4)	(17.0)	(15.0)	(13.0)
	20Y	(21.2)	(21.2)	(22.3)	(23.3)	(24.4)	(24.1)	(23.8)	(26.0)	(25.4)	(24.0)	(18.7)	(15.3)	(13.7)	(12.1)
	30Y	(23.0)	(23.0)	(22.3)	(21.6)	(20.9)	(22.2)	(23.4)	(24.6)	(22.7)	(21.9)	(17.2)	(14.1)	(9.9)	(5.7)

### Total Latam & Caribbean

EXPIRY	1M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	3M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	6M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	9M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	1Y	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	2Y	(19.0)	(19.0)	(17.5)	(16.1)	(14.6)	(13.2)	(11.9)	(10.0)	(9.8)	(9.2)	(9.9)	(8.2)	(8.5)	(8.7)
	3Y	(19.9)	(19.9)	(18.7)	(17.6)	(16.4)	(15.2)	(13.9)	(12.2)	(11.8)	(11.3)	(11.3)	(10.8)	(9.5)	(8.2)
	5Y	(19.3)	(19.3)	(17.6)	(16.0)	(14.3)	(12.9)	(11.4)	(9.8)	(16.5)	(9.2)	(14.7)	(8.3)	(8.2)	(8.0)
	7Y	(19.1)	(19.1)	(17.4)	(15.6)	(13.9)	(12.7)	(11.4)	(9.9)	(13.9)	(9.0)	(12.6)	(8.5)	(8.3)	(8.0)
	10Y	(18.7)	(18.7)	(17.0)	(15.2)	(13.4)	(12.4)	(11.3)	(10.2)	(10.1)	(8.8)	(9.4)	(8.8)	(8.4)	(8.0)
	15Y	(20.7)	(20.7)	(18.5)	(16.3)	(14.0)	(12.8)	(11.6)	(10.5)	(10.0)	(10.0)	(8.9)	(8.4)	(8.4)	(8.3)
	20Y	(21.1)	(21.1)	(18.8)	(16.6)	(14.3)	(13.1)	(12.0)	(10.9)	(10.4)	(9.9)	(9.1)	(8.5)	(8.1)	(7.7)
	30Y	(24.8)	(24.8)	(21.6)	(18.3)	(15.1)	(13.7)	(12.4)	(11.0)	(10.6)	(10.2)	(8.9)	(8.7)	(8.0)	(7.3)

## Absolute Normal Interest Rate Shocks (Continued)

### Total Asia Ex-Japan

EXPIRY	1M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	3M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	6M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	9M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	1Y	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	2Y	(19.0)	(19.0)	(17.5)	(16.1)	(14.6)	(13.2)	(11.9)	(10.0)	(9.8)	(9.2)	(9.9)	(8.2)	(8.5)	(8.7)
	3Y	(19.9)	(19.9)	(18.7)	(17.6)	(16.4)	(15.2)	(13.9)	(12.2)	(11.8)	(11.3)	(11.3)	(10.8)	(9.5)	(8.2)
	5Y	(19.3)	(19.3)	(17.6)	(16.0)	(14.3)	(12.9)	(11.4)	(9.8)	(16.5)	(9.2)	(14.7)	(8.3)	(8.2)	(8.0)
	7Y	(19.1)	(19.1)	(17.4)	(15.6)	(13.9)	(12.7)	(11.4)	(9.9)	(13.9)	(9.0)	(12.6)	(8.5)	(8.3)	(8.0)
	10Y	(18.7)	(18.7)	(17.0)	(15.2)	(13.4)	(12.4)	(11.3)	(10.2)	(10.1)	(8.8)	(9.4)	(8.8)	(8.4)	(8.0)
	15Y	(20.7)	(20.7)	(18.5)	(16.3)	(14.0)	(12.8)	(11.6)	(10.5)	(10.0)	(10.0)	(8.9)	(8.4)	(8.4)	(8.3)
	20Y	(21.1)	(21.1)	(18.8)	(16.6)	(14.3)	(13.1)	(12.0)	(10.9)	(10.4)	(9.9)	(9.1)	(8.5)	(8.1)	(7.7)
30Y	(24.8)	(24.8)	(21.6)	(18.3)	(15.1)	(13.7)	(12.4)	(11.0)	(10.6)	(10.2)	(8.9)	(8.7)	(8.0)	(7.3)	

### Total ME/N. Africa

EXPIRY	1M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	3M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	6M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	9M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	1Y	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	2Y	(19.0)	(19.0)	(17.5)	(16.1)	(14.6)	(13.2)	(11.9)	(10.0)	(9.8)	(9.2)	(9.9)	(8.2)	(8.5)	(8.7)
	3Y	(19.9)	(19.9)	(18.7)	(17.6)	(16.4)	(15.2)	(13.9)	(12.2)	(11.8)	(11.3)	(11.3)	(10.8)	(9.5)	(8.2)
	5Y	(19.3)	(19.3)	(17.6)	(16.0)	(14.3)	(12.9)	(11.4)	(9.8)	(16.5)	(9.2)	(14.7)	(8.3)	(8.2)	(8.0)
	7Y	(19.1)	(19.1)	(17.4)	(15.6)	(13.9)	(12.7)	(11.4)	(9.9)	(13.9)	(9.0)	(12.6)	(8.5)	(8.3)	(8.0)
	10Y	(18.7)	(18.7)	(17.0)	(15.2)	(13.4)	(12.4)	(11.3)	(10.2)	(10.1)	(8.8)	(9.4)	(8.8)	(8.4)	(8.0)
	15Y	(20.7)	(20.7)	(18.5)	(16.3)	(14.0)	(12.8)	(11.6)	(10.5)	(10.0)	(10.0)	(8.9)	(8.4)	(8.4)	(8.3)
	20Y	(21.1)	(21.1)	(18.8)	(16.6)	(14.3)	(13.1)	(12.0)	(10.9)	(10.4)	(9.9)	(9.1)	(8.5)	(8.1)	(7.7)
30Y	(24.8)	(24.8)	(21.6)	(18.3)	(15.1)	(13.7)	(12.4)	(11.0)	(10.6)	(10.2)	(8.9)	(8.7)	(8.0)	(7.3)	

### Total Sub-Saharan Africa

EXPIRY	1M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	3M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	6M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	9M	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	1Y	(18.1)	(18.1)	(17.5)	(16.8)	(16.1)	(14.2)	(12.2)	(11.1)	(10.5)	(9.1)	(9.8)	(9.0)	(8.5)	(8.0)
	2Y	(19.0)	(19.0)	(17.5)	(16.1)	(14.6)	(13.2)	(11.9)	(10.0)	(9.8)	(9.2)	(9.9)	(8.2)	(8.5)	(8.7)
	3Y	(19.9)	(19.9)	(18.7)	(17.6)	(16.4)	(15.2)	(13.9)	(12.2)	(11.8)	(11.3)	(11.3)	(10.8)	(9.5)	(8.2)
	5Y	(19.3)	(19.3)	(17.6)	(16.0)	(14.3)	(12.9)	(11.4)	(9.8)	(16.5)	(9.2)	(14.7)	(8.3)	(8.2)	(8.0)
	7Y	(19.1)	(19.1)	(17.4)	(15.6)	(13.9)	(12.7)	(11.4)	(9.9)	(13.9)	(9.0)	(12.6)	(8.5)	(8.3)	(8.0)
	10Y	(18.7)	(18.7)	(17.0)	(15.2)	(13.4)	(12.4)	(11.3)	(10.2)	(10.1)	(8.8)	(9.4)	(8.8)	(8.4)	(8.0)
	15Y	(20.7)	(20.7)	(18.5)	(16.3)	(14.0)	(12.8)	(11.6)	(10.5)	(10.0)	(10.0)	(8.9)	(8.4)	(8.4)	(8.3)
	20Y	(21.1)	(21.1)	(18.8)	(16.6)	(14.3)	(13.1)	(12.0)	(10.9)	(10.4)	(9.9)	(9.1)	(8.5)	(8.1)	(7.7)
30Y	(24.8)	(24.8)	(21.6)	(18.3)	(15.1)	(13.7)	(12.4)	(11.0)	(10.6)	(10.2)	(8.9)	(8.7)	(8.0)	(7.3)	

## Other Rates

### Absolute Change in Inflation (bps)

Currency	MATURITY												
	1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	30Y
AUD	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(19.3)	(27.7)	(43.8)	(45.7)	(54.6)	(66.4)	(65.8)	(72.9)
EUR	(26.1)	(26.1)	(26.1)	(26.1)	(26.1)	(33.6)	(41.2)	(60.3)	(57.2)	(74.0)	(77.9)	(65.4)	(100.3)
GBP	(9.7)	(9.7)	(9.7)	(9.7)	(9.7)	(40.0)	(48.3)	(63.9)	(69.0)	(68.8)	(69.0)	(71.6)	(70.4)
JPY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USD	(2.0)	(2.0)	(2.0)	(2.0)	(2.0)	(4.8)	(59.3)	(89.6)	(101.6)	(112.8)	(115.1)	(120.8)	(106.6)
Other	(26.1)	(26.1)	(26.1)	(26.1)	(26.1)	(40.0)	(59.3)	(89.6)	(101.6)	(112.8)	(115.1)	(120.8)	(106.6)

### 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	11.8	11.8	11.8	11.8	11.8	10.6	5.6	(2.0)	(13.8)	(35.9)	(64.4)	(81.5)	(116.5)
EUR	(7.5)	(7.5)	(15.5)	(23.8)	(20.3)	(24.0)	(22.8)	(20.1)	(15.3)	(9.7)	(5.7)	(5.4)	(5.7)
GBP	(30.3)	(30.3)	(30.3)	(30.3)	(30.3)	(36.0)	(33.8)	(25.2)	(15.5)	(8.7)	(3.5)	0.5	6.8
JPY	(22.8)	(22.8)	(22.8)	(22.8)	(22.8)	(23.9)	(23.8)	(24.3)	(21.4)	(18.5)	(13.0)	(11.0)	(9.3)
Other	(7.5)	(7.5)	(15.5)	(23.8)	(20.3)	(24.0)	(22.8)	(20.1)	(15.3)	(9.7)	(5.7)	(5.4)	(5.7)



# Securitized Products

Trading, PE & Other Fair Value Assets Schedule  
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	Protection	
<b>Relative MV Shock Based on Current Rating (%)</b>																			
<b>AAA Total</b>																			
Pre 2006	-4.3%	-13.2%	-10.8%	-13.2%	-13.2%	-13.2%	-13.2%	-5.1%	-3.1%	-5.1%	-3.1%	-3.1%	-5.1%	-5.1%	-6.1%	-6.1%	-18.4%	18.4%	-2.7%
2006	-4.3%	-13.2%	-12.1%	-13.2%	-13.2%	-13.2%	-13.2%	-2.7%	-1.6%	-2.7%	-1.6%	-1.6%	-2.7%	-2.7%	-6.1%	-6.1%	-22.1%	22.1%	-2.7%
2007	-4.3%	-13.2%	-14.4%	-14.4%	-14.4%	-14.4%	-14.4%	-5.5%	-3.3%	-5.5%	-3.3%	-3.3%	-5.5%	-5.5%	-6.1%	-6.1%	-22.1%	22.1%	-2.7%
Post 2007	-4.3%	-13.2%	-11.7%	-13.2%	-13.2%	-13.2%	-13.2%	-23.4%	-14.1%	-23.4%	-14.1%	-14.1%	-23.4%	-23.4%	-17.7%	-17.7%	-18.4%	18.4%	-2.7%
Unspecified Vintage	-4.3%	-13.2%	-14.4%	-14.4%	-14.4%	-14.4%	-14.4%	-23.4%	-14.1%	-23.4%	-14.1%	-14.1%	-23.4%	-23.4%	-17.7%	-17.7%	-22.1%	22.1%	-2.7%
<b>AA Total</b>																			
Pre 2006	-7.7%	-20.1%	-26.1%	-26.1%	-26.1%	-26.1%	-26.1%	-12.7%	-7.6%	-12.7%	-7.6%	-7.6%	-12.7%	-12.7%	-26.2%	-26.2%	-18.4%	18.4%	-2.7%
2006	-7.7%	-20.1%	-29.0%	-29.0%	-29.0%	-29.0%	-29.0%	-6.8%	-4.1%	-6.8%	-4.1%	-4.1%	-6.8%	-6.8%	-26.2%	-26.2%	-22.1%	22.1%	-2.7%
2007	-7.7%	-20.1%	-34.7%	-34.7%	-34.7%	-34.7%	-34.7%	-13.6%	-8.2%	-13.6%	-8.2%	-8.2%	-13.6%	-13.6%	-26.2%	-26.2%	-22.1%	22.1%	-2.7%
Post 2007	-7.7%	-20.1%	-28.1%	-28.1%	-28.1%	-28.1%	-28.1%	-58.4%	-35.0%	-58.4%	-35.0%	-35.0%	-58.4%	-58.4%	-56.1%	-56.1%	-18.4%	18.4%	-2.7%
Unspecified Vintage	-7.7%	-20.1%	-34.7%	-34.7%	-34.7%	-34.7%	-34.7%	-58.4%	-35.0%	-58.4%	-35.0%	-35.0%	-58.4%	-58.4%	-56.1%	-56.1%	-22.1%	22.1%	-2.7%
<b>A Total</b>																			
Pre 2006	-14.5%	-20.1%	-29.5%	-29.5%	-29.5%	-29.5%	-29.5%	-16.2%	-9.7%	-16.2%	-9.7%	-9.7%	-16.2%	-16.2%	-41.9%	-41.9%	-18.4%	18.4%	-2.7%
2006	-14.5%	-20.1%	-32.8%	-32.8%	-32.8%	-32.8%	-32.8%	-8.6%	-5.2%	-8.6%	-5.2%	-5.2%	-8.6%	-8.6%	-41.9%	-41.9%	-22.1%	22.1%	-2.7%
2007	-14.5%	-20.1%	-39.2%	-39.2%	-39.2%	-39.2%	-39.2%	-17.3%	-10.4%	-17.3%	-10.4%	-10.4%	-17.3%	-17.3%	-41.9%	-41.9%	-22.1%	22.1%	-2.7%
Post 2007	-14.5%	-20.1%	-31.7%	-31.7%	-31.7%	-31.7%	-31.7%	-74.4%	-44.6%	-74.4%	-44.6%	-44.6%	-74.4%	-74.4%	-82.3%	-82.3%	-18.4%	18.4%	-2.7%
Unspecified Vintage	-14.5%	-20.1%	-39.2%	-39.2%	-39.2%	-39.2%	-39.2%	-74.4%	-44.6%	-74.4%	-44.6%	-44.6%	-74.4%	-74.4%	-82.3%	-82.3%	-22.1%	22.1%	-2.7%
<b>BBB Total</b>																			
Pre 2006	-14.5%	-37.9%	-35.4%	-37.9%	-37.9%	-37.9%	-37.9%	-18.7%	-11.2%	-18.7%	-11.2%	-11.2%	-18.7%	-18.7%	-44.7%	-44.7%	-18.4%	18.4%	-43.9%
2006	-14.5%	-37.9%	-39.4%	-39.4%	-39.4%	-39.4%	-39.4%	-10.0%	-6.0%	-10.0%	-6.0%	-6.0%	-10.0%	-10.0%	-44.7%	-44.7%	-22.1%	22.1%	-43.9%
2007	-14.5%	-37.9%	-47.0%	-47.0%	-47.0%	-47.0%	-47.0%	-20.1%	-12.0%	-20.1%	-12.0%	-12.0%	-20.1%	-20.1%	-44.7%	-44.7%	-22.1%	22.1%	-43.9%
Post 2007	-14.5%	-37.9%	-38.1%	-38.1%	-38.1%	-38.1%	-38.1%	-86.2%	-51.7%	-86.2%	-51.7%	-51.7%	-86.2%	-86.2%	-85.9%	-85.9%	-18.4%	18.4%	-43.9%
Unspecified Vintage	-14.5%	-37.9%	-47.0%	-47.0%	-47.0%	-47.0%	-47.0%	-86.2%	-51.7%	-86.2%	-51.7%	-51.7%	-86.2%	-86.2%	-85.9%	-85.9%	-22.1%	22.1%	-43.9%
<b>BB Total</b>																			
Pre 2006	-18.8%	-37.9%	-35.4%	-37.9%	-37.9%	-37.9%	-37.9%	-18.7%	-11.2%	-18.7%	-11.2%	-11.2%	-18.7%	-18.7%	-47.7%	-47.7%	-18.4%	18.4%	-43.9%
2006	-18.8%	-37.9%	-39.4%	-39.4%	-39.4%	-39.4%	-39.4%	-10.0%	-6.0%	-10.0%	-6.0%	-6.0%	-10.0%	-10.0%	-47.7%	-47.7%	-22.1%	22.1%	-43.9%
2007	-18.8%	-37.9%	-47.0%	-47.0%	-47.0%	-47.0%	-47.0%	-20.1%	-12.0%	-20.1%	-12.0%	-12.0%	-20.1%	-20.1%	-47.7%	-47.7%	-22.1%	22.1%	-43.9%
Post 2007	-18.8%	-37.9%	-38.1%	-38.1%	-38.1%	-38.1%	-38.1%	-86.2%	-51.7%	-86.2%	-51.7%	-51.7%	-86.2%	-86.2%	-87.4%	-87.4%	-18.4%	18.4%	-43.9%
Unspecified Vintage	-18.8%	-37.9%	-47.0%	-47.0%	-47.0%	-47.0%	-47.0%	-86.2%	-51.7%	-86.2%	-51.7%	-51.7%	-86.2%	-86.2%	-87.4%	-87.4%	-22.1%	22.1%	-43.9%
<b>B Total</b>																			
Pre 2006	-18.8%	-37.9%	-35.4%	-37.9%	-37.9%	-37.9%	-37.9%	-18.7%	-11.2%	-18.7%	-11.2%	-11.2%	-18.7%	-18.7%	-47.7%	-47.7%	-18.4%	18.4%	-43.9%
2006	-18.8%	-37.9%	-39.4%	-39.4%	-39.4%	-39.4%	-39.4%	-10.0%	-6.0%	-10.0%	-6.0%	-6.0%	-10.0%	-10.0%	-47.7%	-47.7%	-22.1%	22.1%	-43.9%
2007	-18.8%	-37.9%	-47.0%	-47.0%	-47.0%	-47.0%	-47.0%	-20.1%	-12.0%	-20.1%	-12.0%	-12.0%	-20.1%	-20.1%	-47.7%	-47.7%	-22.1%	22.1%	-43.9%
Post 2007	-18.8%	-37.9%	-38.1%	-38.1%	-38.1%	-38.1%	-38.1%	-86.2%	-51.7%	-86.2%	-51.7%	-51.7%	-86.2%	-86.2%	-87.4%	-87.4%	-18.4%	18.4%	-43.9%
Unspecified Vintage	-18.8%	-37.9%	-47.0%	-47.0%	-47.0%	-47.0%	-47.0%	-86.2%	-51.7%	-86.2%	-51.7%	-51.7%	-86.2%	-86.2%	-87.4%	-87.4%	-22.1%	22.1%	-43.9%
<b>&lt;B Total</b>																			
Pre 2006	-18.8%	-37.9%	-35.4%	-37.9%	-37.9%	-37.9%	-37.9%	-18.7%	-11.2%	-18.7%	-11.2%	-11.2%	-18.7%	-18.7%	-47.7%	-47.7%	-18.4%	18.4%	-43.9%
2006	-18.8%	-37.9%	-39.4%	-39.4%	-39.4%	-39.4%	-39.4%	-10.0%	-6.0%	-10.0%	-6.0%	-6.0%	-10.0%	-10.0%	-47.7%	-47.7%	-22.1%	22.1%	-43.9%
2007	-18.8%	-37.9%	-47.0%	-47.0%	-47.0%	-47.0%	-47.0%	-20.1%	-12.0%	-20.1%	-12.0%	-12.0%	-20.1%	-20.1%	-47.7%	-47.7%	-22.1%	22.1%	-43.9%
Post 2007	-18.8%	-37.9%	-38.1%	-38.1%	-38.1%	-38.1%	-38.1%	-86.2%	-51.7%	-86.2%	-51.7%	-51.7%	-86.2%	-86.2%	-87.4%	-87.4%	-18.4%	18.4%	-43.9%
Unspecified Vintage	-18.8%	-37.9%	-47.0%	-47.0%	-47.0%	-47.0%	-47.0%	-86.2%	-51.7%	-86.2%	-51.7%	-51.7%	-86.2%	-86.2%	-87.4%	-87.4%	-22.1%	22.1%	-43.9%
<b>NR Total</b>																			
Pre 2006	-18.8%	-37.9%	-35.4%	-37.9%	-37.9%	-37.9%	-37.9%	-18.7%	-11.2%	-18.7%	-11.2%	-11.2%	-18.7%	-18.7%	-47.7%	-47.7%	-18.4%	18.4%	-43.9%
2006	-18.8%	-37.9%	-39.4%	-39.4%	-39.4%	-39.4%	-39.4%	-10.0%	-6.0%	-10.0%	-6.0%	-6.0%	-10.0%	-10.0%	-47.7%	-47.7%	-22.1%	22.1%	-43.9%
2007	-18.8%	-37.9%	-47.0%	-47.0%	-47.0%	-47.0%	-47.0%	-20.1%	-12.0%	-20.1%	-12.0%	-12.0%	-20.1%	-20.1%	-47.7%	-47.7%	-22.1%	22.1%	-43.9%
Post 2007	-18.8%	-37.9%	-38.1%	-38.1%	-38.1%	-38.1%	-38.1%	-86.2%	-51.7%	-86.2%	-51.7%	-51.7%	-86.2%	-86.2%	-87.4%	-87.4%	-18.4%	18.4%	-43.9%
Unspecified Vintage	-18.8%	-37.9%	-47.0%	-47.0%	-47.0%	-47.0%	-47.0%	-86.2%	-51.7%	-86.2%	-51.7%	-51.7%	-86.2%	-86.2%	-87.4%	-87.4%	-22.1%	22.1%	-43.9%

Trading, PE & Other Fair Value Assets Schedule  
Munis

	Spread Widening (bps)
<b>Bonds</b>	
AAA	56.0
AA	73.0
A	176.0
BBB	419.0
BB	750.0
B	1,074.9
<B	1,611.6
NR	1,611.6
<b>Loans</b>	
AAA	56.0
AA	73.0
A	176.0
BBB	419.0
BB	750.0
B	1,074.9
<B	1,611.6
NR	1,611.6
<b>CDS</b>	
AAA	23.8
AA	29.5
A	51.2
BBB	178.4
BB	412.4
B	591.0
<B	886.1
NR	886.1
<b>Indices</b>	
AAA	23.8
AA	29.5
A	51.2
BBB	178.4
BB	412.4
B	591.0
<B	886.1
NR	886.1
<b>Other / Unspecified Munis</b>	
AAA	56.0
AA	73.0
A	176.0
BBB	419.0
BB	750.0
B	1,074.9
<B	1,611.6
NR	1,611.6

# Agencies

## Trading, PE & Other Fair Value Assets Schedule Agencies

	OAS Widening (bps)
<b>US Residential Agency Products</b>	
IOs	600.0
POs	85.0
Other CMOs	200.0
Pass-Throughs	170.0
Agency Debt/Debentures	170.0
IOS Index	600.0
POS Index	85.0
MBX Index	170.0
Other Agency Derivatives	200.0
TBA's	120.0
Reverse Mortgages	300.0
Residential Other / Unspecified	170.0
<b>US Commercial Agency Products</b>	
Cash Agency CMBS	200.0
Agency CMBS Derivatives	200.0
Commercial Other / Unspecified	200.0
<b>Non-US Agency Products</b>	
AAA	240.0
AA	312.0
A	405.6
BBB	527.3
BB	685.5
B	891.1
<B	1,158.4
NR	1,158.4

# Rates DV01

## DFAST 2016 Market Shocks: Severely Adverse Scenario

Rates DV01

Rates Shocks (bps)	MATURITY												
	1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	30Y
<b>AUD Directional Risks</b>													
Governments	97.9	97.9	83.9	68.5	53.0	(14.8)	(42.8)	(71.2)	(107.5)	(129.0)	(144.4)	(143.2)	(139.8)
Agencies	97.9	97.9	83.9	68.5	53.0	(14.8)	(42.8)	(71.2)	(107.5)	(129.0)	(144.4)	(143.2)	(139.8)
Municipals	97.9	97.9	83.9	68.5	53.0	(14.8)	(42.8)	(71.2)	(107.5)	(129.0)	(144.4)	(143.2)	(139.8)
Swaps / Discounting Curve	68.6	68.6	60.1	51.0	41.9	(10.3)	(37.8)	(64.6)	(89.4)	(110.9)	(117.7)	(119.5)	(123.9)
Instruments shocked by MV**													
Other	68.6	68.6	60.1	51.0	41.9	(10.3)	(37.8)	(64.6)	(89.4)	(110.9)	(117.7)	(119.5)	(123.9)
<b>AUD Basis Risks (Do not include the swap/discounting curve specified above)</b>													
OIS Basis													
1m Basis													
3m Basis													
6m Basis													
12m Basis													
Other Basis													
<b>CAD Directional Risks</b>													
Governments	52.2	52.2	52.9	47.9	43.0	14.0	(8.5)	(46.4)	(67.5)	(83.1)	(79.8)	(80.7)	(78.9)
Agencies	52.2	52.2	52.9	47.9	43.0	14.0	(8.5)	(46.4)	(67.5)	(83.1)	(79.8)	(80.7)	(78.9)
Municipals	52.2	52.2	52.9	47.9	43.0	14.0	(8.5)	(46.4)	(67.5)	(83.1)	(79.8)	(80.7)	(78.9)
Swaps / Discounting Curve	26.0	26.0	34.3	32.5	30.7	1.7	(22.7)	(64.4)	(83.1)	(103.3)	(113.7)	(114.5)	(112.8)
Instruments shocked by MV**													
Other	26.0	26.0	34.3	32.5	30.7	1.7	(22.7)	(64.4)	(83.1)	(103.3)	(113.7)	(114.5)	(112.8)
<b>CAD Basis Risks (Do not include the swap/discounting curve specified above)</b>													
OIS Basis													
1m Basis													
3m Basis													
6m Basis													
12m Basis													
Other Basis													
<b>CHF Directional Risks</b>													
Governments	84.4	84.4	80.0	81.1	82.2	82.5	78.8	58.9	37.2	9.2	(21.0)	(39.0)	(58.1)
Agencies	84.4	84.4	80.0	81.1	82.2	82.5	78.8	58.9	37.2	9.2	(21.0)	(39.0)	(58.1)
Municipals	84.4	84.4	80.0	81.1	82.2	82.5	78.8	58.9	37.2	9.2	(21.0)	(39.0)	(58.1)
Swaps / Discounting Curve	5.1	5.1	6.7	2.8	0.0	0.0	0.0	0.0	0.0	(19.0)	(53.0)	(71.0)	(81.0)
Instruments shocked by MV**													
Other	5.1	5.1	6.7	2.8	0.0	0.0	0.0	0.0	0.0	(19.0)	(53.0)	(71.0)	(81.0)
<b>CHF Basis Risks (Do not include the swap/discounting curve specified above)</b>													
OIS Basis													
1m Basis													
3m Basis													
6m Basis													
12m Basis													
Other Basis													



## Rates DV01 (Continued)

### DKK Directional Risks

Governments	82.9	82.9	81.1	75.7	70.2	51.0	27.0	(6.0)	(36.0)	(71.0)	(106.0)	(112.7)	(107.6)
Agencies	82.9	82.9	81.1	75.7	70.2	51.0	27.0	(6.0)	(36.0)	(71.0)	(106.0)	(112.7)	(107.6)
Municipals	82.9	82.9	81.1	75.7	70.2	51.0	27.0	(6.0)	(36.0)	(71.0)	(106.0)	(112.7)	(107.6)
Swaps / Discounting Curve	31.0	31.0	27.5	28.4	29.4	10.0	(4.0)	(45.0)	(76.9)	(89.2)	(100.2)	(105.0)	(110.5)
Instruments shocked by MV**													
Other	31.0	31.0	27.5	28.4	29.4	10.0	(4.0)	(45.0)	(76.9)	(89.2)	(100.2)	(105.0)	(110.5)

### 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	38.1	44.7	51.3	51.1	51.0	41.0	30.0	(1.0)	(35.0)	(75.6)	(116.3)	(125.2)	(131.0)
Governments: Belgium	38.1	46.0	51.3	51.1	51.0	41.0	29.0	(4.0)	(40.0)	(78.1)	(116.3)	(125.2)	(131.0)
Governments: Finland	38.1	44.7	51.3	51.1	51.0	42.0	30.0	(1.0)	(36.0)	(78.0)	(116.3)	(125.2)	(131.0)
Governments: France	64.5	64.5	56.9	56.3	55.8	42.0	29.0	(3.0)	(37.0)	(78.0)	(117.4)	(127.7)	(134.1)
Governments: Germany	38.1	44.7	51.3	51.1	51.0	44.0	35.0	10.0	(16.0)	(53.0)	(96.0)	(120.0)	(131.0)
Governments: Greece	760.3	901.7	1,113.9	1,326.0	1,538.2	2,386.8	2,295.6	1,555.7	1,245.0	1,017.3	845.5	759.5	673.1
Governments: Ireland	38.1	38.1	51.3	51.1	51.0	34.0	19.0	(18.0)	(58.0)	(97.9)	(116.3)	(125.2)	(131.0)
Governments: Italy	101.3	101.3	93.9	78.1	62.4	26.0	0.0	(52.0)	(94.7)	(131.5)	(146.8)	(151.2)	(158.4)
Governments: Netherlands	62.5	62.5	69.4	63.3	58.0	45.0	33.0	4.0	(27.0)	(69.0)	(110.0)	(123.4)	(129.1)
Governments: Portugal	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
Governments: Spain	66.0	66.0	57.0	47.5	38.0	10.0	(15.0)	(66.0)	(110.0)	(148.7)	(173.7)	(184.3)	(187.4)
Governments: Other	62.5	62.5	69.4	63.3	58.0	45.0	33.0	4.0	(27.0)	(69.0)	(110.0)	(123.4)	(129.1)
Agencies	62.5	62.5	69.4	63.3	58.0	45.0	33.0	4.0	(27.0)	(69.0)	(110.0)	(123.4)	(129.1)
Municipals	62.5	62.5	69.4	63.3	58.0	45.0	33.0	4.0	(27.0)	(69.0)	(110.0)	(123.4)	(129.1)
Swaps / Discounting Curve	15.4	15.4	19.3	28.2	37.2	27.6	12.0	(21.0)	(50.5)	(87.2)	(99.4)	(109.4)	(114.0)
Instruments shocked by MV**													
Other	15.4	15.4	19.3	28.2	37.2	27.6	12.0	(21.0)	(50.5)	(87.2)	(99.4)	(109.4)	(114.0)

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

OIS Basis	(15.5)	(15.5)	(15.5)	(15.5)	(15.5)	(14.4)	(12.2)	(11.6)	(11.0)	(10.6)	(9.9)	(9.4)	(9.3)
1m Basis	(0.1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2
3m Basis													
6m Basis	(1.0)	(0.6)	(0.2)	(0.4)	(0.2)	(0.1)	0.1	0.5	0.7	0.8	0.9	0.8	0.6
12m Basis	(2.8)	(1.6)	(0.5)	(1.0)	(0.7)	(0.3)	0.2	1.0	1.5	1.8	1.9	1.7	1.2
Other Basis													

### GBP Directional Risks

Governments	101.7	101.7	91.5	73.1	54.8	16.1	(17.6)	(54.8)	(84.9)	(94.6)	(102.2)	(107.4)	(104.2)
Agencies	101.7	101.7	91.5	73.1	54.8	16.1	(17.6)	(54.8)	(84.9)	(94.6)	(102.2)	(107.4)	(104.2)
Municipals	101.7	101.7	91.5	73.1	54.8	16.1	(17.6)	(54.8)	(84.9)	(94.6)	(102.2)	(107.4)	(104.2)
Swaps / Discounting Curve	22.5	22.5	44.5	43.2	41.9	9.9	(15.3)	(51.8)	(73.6)	(90.7)	(97.5)	(94.6)	(88.4)
Instruments shocked by MV**													
Other	22.5	22.5	44.5	43.2	41.9	9.9	(15.3)	(51.8)	(73.6)	(90.7)	(97.5)	(94.6)	(88.4)

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

OIS Basis	(15.5)	(15.5)	(15.5)	(15.5)	(15.5)	(14.4)	(12.2)	(11.6)	(11.0)	(10.6)	(9.9)	(9.4)	(9.3)
1m Basis	(4.1)	(4.3)	(4.5)	(4.7)	(5.8)	(5.2)	(5.0)	(4.7)	(4.4)	(4.2)	(3.8)	(3.6)	(3.2)
3m Basis													
6m Basis	3.6	3.8	3.9	4.1	5.1	3.9	3.5	3.2	3.1	3.0	3.0	3.0	3.1
12m Basis	7.8	8.3	8.6	9.0	11.1	10.2	10.3	9.2	8.4	7.8	7.0	6.7	6.3
Other Basis													

## Rates DV01 (Continued)

### JPY Directional Risks

Governments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agencies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Municipals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Swaps / Discounting Curve	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Instruments shocked by MV**													
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

OIS Basis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1m TIBOR Basis	0.6	0.8	1.0	0.8	1.0	0.8	0.6	0.6	0.6	0.7	1.1	1.3	1.5
3m TIBOR Basis													
6m TIBOR Basis	0.7	0.8	1.1	0.9	1.0	0.5	0.3	0.5	0.4	0.5	0.5	0.4	0.3
12m TIBOR Basis													
1m LIBOR Basis	0.6	0.8	1.0	0.8	1.0	0.8	0.6	0.6	0.6	0.7	1.1	1.3	1.5
3m LIBOR Basis													
6m LIBOR Basis	0.7	0.8	1.1	0.9	1.0	0.5	0.3	0.5	0.4	0.5	0.5	0.4	0.3
12m LIBOR Basis													
Other Basis													

### NOK Directional Risks

Governments	84.3	84.3	80.4	66.3	52.1	18.0	(16.0)	(47.3)	(78.5)	(81.7)	(80.8)	(80.9)	(80.3)
Agencies	84.3	84.3	80.4	66.3	52.1	18.0	(16.0)	(47.3)	(78.5)	(81.7)	(80.8)	(80.9)	(80.3)
Municipals	84.3	84.3	80.4	66.3	52.1	18.0	(16.0)	(47.3)	(78.5)	(81.7)	(80.8)	(80.9)	(80.3)
Swaps / Discounting Curve	90.2	90.2	83.6	67.1	50.6	7.1	(16.3)	(51.3)	(70.6)	(82.5)	(84.8)	(90.9)	(89.0)
Instruments shocked by MV**													
Other	90.2	90.2	83.6	67.1	50.6	7.1	(16.3)	(51.3)	(70.6)	(82.5)	(84.8)	(90.9)	(89.0)

### 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	59.7	59.7	48.5	41.4	34.2	(1.7)	(29.8)	(75.1)	(100.1)	(123.1)	(126.6)	(135.2)	(135.2)
Agencies	59.7	59.7	48.5	41.4	34.2	(1.7)	(29.8)	(75.1)	(100.1)	(123.1)	(126.6)	(135.2)	(135.2)
Municipals	59.7	59.7	48.5	41.4	34.2	(1.7)	(29.8)	(75.1)	(100.1)	(123.1)	(126.6)	(135.2)	(135.2)
Swaps / Discounting Curve	59.7	59.7	48.5	41.4	34.2	(1.7)	(29.8)	(75.1)	(100.1)	(123.1)	(126.6)	(135.2)	(135.2)
Instruments shocked by MV**													
Other	59.7	59.7	48.5	41.4	34.2	(1.7)	(29.8)	(75.1)	(100.1)	(123.1)	(126.6)	(135.2)	(135.2)

### 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	82.6	82.6	75.8	69.0	66.0	48.0	26.0	(23.0)	(62.0)	(99.8)	(107.6)	(108.6)	(109.9)
Agencies	82.6	82.6	75.8	69.0	66.0	48.0	26.0	(23.0)	(62.0)	(99.8)	(107.6)	(108.6)	(109.9)
Municipals	82.6	82.6	75.8	69.0	66.0	48.0	26.0	(23.0)	(62.0)	(99.8)	(107.6)	(108.6)	(109.9)
Swaps / Discounting Curve	72.3	72.3	71.3	61.0	59.5	27.0	(1.2)	(59.2)	(75.1)	(84.3)	(89.1)	(92.4)	(92.5)
Instruments shocked by MV**													
Other	72.3	72.3	71.3	61.0	59.5	27.0	(1.2)	(59.2)	(75.1)	(84.3)	(89.1)	(92.4)	(92.5)

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

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

### USD Directional Risks

Governments	(75.3)	(67.4)	(61.4)	(61.2)	(60.9)	(85.2)	(109.0)	(141.9)	(160.9)	(164.2)	(171.3)	(166.9)	(166.6)
Agencies	(75.3)	(67.4)	(61.4)	(61.2)	(60.9)	(85.2)	(109.0)	(141.9)	(160.9)	(164.2)	(171.3)	(166.9)	(166.6)
Municipals	(75.3)	(67.4)	(61.4)	(61.2)	(60.9)	(85.2)	(109.0)	(141.9)	(160.9)	(164.2)	(171.3)	(166.9)	(166.6)
Swaps / Discounting Curve	8.1	8.1	(3.2)	(17.9)	(32.6)	(70.2)	(99.9)	(139.2)	(157.6)	(167.6)	(174.1)	(174.9)	(179.9)
Instruments shocked by MV**													
Other	8.1	8.1	(3.2)	(17.9)	(32.6)	(70.2)	(99.9)	(139.2)	(157.6)	(167.6)	(174.1)	(174.9)	(179.9)

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

Prime Basis	(5.0)	(6.5)	(7.1)	(7.5)	(8.0)	(6.4)	(4.2)	(3.6)	(1.1)	(0.7)	(0.7)	(0.8)	(0.8)
CP Basis	(5.8)	(7.4)	(8.1)	(8.6)	(9.2)	(7.5)	(6.9)	(4.8)	(2.6)	(3.7)	(4.0)	(4.1)	(4.2)
OIS Basis	(48.9)	(48.9)	(32.9)	(24.4)	(23.6)	(15.4)	(8.0)	(6.0)	(3.8)	(3.5)	(3.5)	(3.5)	(3.5)
1m Basis	(11.3)	(14.5)	(9.8)	(7.5)	(7.0)	(4.4)	(3.0)	(1.3)	(0.4)	0.6	0.6	2.0	2.6
3m Basis													
6m Basis	4.4	5.7	6.2	6.6	7.1	6.1	5.7	4.9	4.6	4.8	5.1	5.2	5.4
12m Basis	9.2	11.8	12.9	13.7	14.7	13.0	12.0	10.2	9.5	10.3	8.1	7.3	5.6
Other Basis													

Absolute increase in Muni SIFMA/Libor Ratio (Pts)	(31.4)	8.8	(2.5)	8.3	19.2	19.5	20.1	21.3	21.2	20.1	15.1	12.1	8.5
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### Other Advanced Economies Directional Risks

Governments	(75.3)	(67.4)	(61.4)	(61.2)	(60.9)	(85.2)	(109.0)	(141.9)	(160.9)	(164.2)	(171.3)	(166.9)	(166.6)
Agencies	(75.3)	(67.4)	(61.4)	(61.2)	(60.9)	(85.2)	(109.0)	(141.9)	(160.9)	(164.2)	(171.3)	(166.9)	(166.6)
Municipals	(75.3)	(67.4)	(61.4)	(61.2)	(60.9)	(85.2)	(109.0)	(141.9)	(160.9)	(164.2)	(171.3)	(166.9)	(166.6)
Swaps / Discounting Curve	8.1	8.1	(3.2)	(17.9)	(32.6)	(70.2)	(99.9)	(139.2)	(157.6)	(167.6)	(174.1)	(174.9)	(179.9)
Instruments shocked by MV**													
Other	8.1	8.1	(3.2)	(17.9)	(32.6)	(70.2)	(99.9)	(139.2)	(157.6)	(167.6)	(174.1)	(174.9)	(179.9)

## Rates DV01 (Continued)

### Directional Risks: Emerging Europe

BGN	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
CZK	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(34.0)	(57.0)	(84.0)	(116.3)	(125.2)	(131.0)
HRK	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
HUF	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
PLN	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
RON	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)
RUB	200.0	198.9	197.2	195.5	193.9	187.2	180.5	167.1	153.8	133.7	100.3	66.9	0.0
Other Emerging Europe	38.1	38.1	51.3	51.1	51.0	24.0	(0.5)	(45.2)	(73.2)	(97.9)	(116.3)	(125.2)	(131.0)

### Directional Risks: Latin America & Caribbean

ARS	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
BRL	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
CLP	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
COP	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
MXN	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
PEN	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
VEF	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
Other Latam & Caribbean	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)

### Directional Risks: Asia Ex-Japan

CNY	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
HKD	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
IDR	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
INR	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
KRW	50.0	45.7	39.1	32.6	26.1	0.0	(1.8)	(5.4)	(8.9)	(14.3)	(23.2)	(32.1)	(50.0)
MYR	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
PHP	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)
SGD	50.0	45.7	39.1	32.6	26.1	0.0	(1.8)	(5.4)	(8.9)	(14.3)	(23.2)	(32.1)	(50.0)
THB	50.0	45.7	39.1	32.6	26.1	0.0	(1.8)	(5.4)	(8.9)	(14.3)	(23.2)	(32.1)	(50.0)
TWD	50.0	45.7	39.1	32.6	26.1	0.0	(1.8)	(5.4)	(8.9)	(14.3)	(23.2)	(32.1)	(50.0)
Other Asia Ex-Japan	100.0	91.3	78.3	65.2	52.2	0.0	(3.6)	(10.7)	(17.9)	(28.6)	(46.4)	(64.3)	(100.0)

### Directional Risks: Middle East/North Africa

ILS	(9.0)	(9.0)	(9.0)	(11.0)	(13.0)	(32.0)	(56.0)	(103.0)	(146.0)	(164.2)	(171.3)	(166.9)	(166.6)
TRY	(62.0)	(87.0)	(99.0)	(103.0)	(96.0)	(158.0)	(190.0)	(225.0)	(238.0)	(237.0)	(245.0)	(219.0)	(219.0)
Other Middle East/Africa	106.7	106.7	141.6	97.2	52.9	(51.4)	(69.3)	(92.8)	(113.4)	(125.6)	(132.2)	(150.1)	(167.7)

### Directional Risks: Sub-Saharan Africa

ZAR	106.7	106.7	141.6	97.2	52.9	(51.4)	(69.3)	(92.8)	(113.4)	(125.6)	(132.2)	(150.1)	(167.7)
Other Sub-Saharan Africa	106.7	106.7	141.6	97.2	52.9	(51.4)	(69.3)	(92.8)	(113.4)	(125.6)	(132.2)	(150.1)	(167.7)

# Relative Normal Interest Rate Shocks

## Rates Vega

### Relative Normal Interest Rate Shocks (%)

		MATURITY													
		1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	25Y	30Y
<b>AUD</b>															
<b>EXPIRY</b>	<b>1M</b>	147.2%	147.2%	134.1%	121.0%	108.0%	42.4%	37.0%	21.6%	14.9%	10.0%	8.3%	13.9%	15.0%	16.5%
	<b>3M</b>	107.2%	107.2%	97.6%	88.1%	78.6%	39.8%	32.8%	19.7%	14.8%	9.9%	8.3%	13.8%	14.9%	16.5%
	<b>6M</b>	85.0%	85.0%	77.5%	69.9%	62.4%	39.4%	31.6%	19.4%	14.5%	9.9%	8.3%	13.8%	15.0%	16.6%
	<b>9M</b>	75.6%	75.6%	68.8%	62.1%	55.4%	39.1%	30.5%	18.8%	14.3%	9.8%	8.2%	13.7%	14.9%	16.5%
	<b>1Y</b>	68.0%	68.0%	61.9%	55.9%	49.9%	38.5%	29.2%	18.2%	14.1%	9.6%	8.1%	13.6%	14.8%	16.4%
	<b>2Y</b>	63.4%	63.4%	56.3%	49.3%	42.2%	34.6%	29.1%	17.2%	11.4%	8.2%	31.9%	11.2%	15.9%	21.1%
	<b>3Y</b>	62.6%	62.6%	54.7%	46.8%	38.9%	31.2%	24.3%	16.3%	10.4%	6.3%	16.9%	6.6%	11.6%	17.2%
	<b>5Y</b>	67.7%	67.7%	58.1%	48.5%	38.8%	32.3%	25.2%	14.0%	9.3%	4.2%	4.0%	2.7%	6.2%	10.0%
	<b>7Y</b>	65.0%	65.0%	55.8%	46.7%	37.5%	29.8%	23.0%	14.0%	9.7%	4.5%	4.2%	2.9%	6.2%	9.8%
	<b>10Y</b>	51.7%	51.7%	44.5%	37.3%	30.1%	28.1%	21.4%	13.0%	9.0%	7.0%	6.7%	4.5%	8.9%	13.8%
<b>15Y</b>	49.6%	49.6%	42.4%	35.3%	28.1%	26.4%	20.6%	14.1%	9.1%	8.2%	5.7%	6.1%	6.8%	7.4%	
<b>20Y</b>	49.7%	49.7%	42.4%	35.1%	27.9%	26.3%	20.7%	14.1%	9.9%	7.7%	5.9%	4.1%	2.2%	0.0%	
<b>30Y</b>	90.4%	90.4%	77.4%	64.4%	51.4%	48.4%	38.1%	24.8%	13.5%	9.6%	9.6%	4.4%	-1.8%	-8.4%	
<b>EUR</b>															
<b>EXPIRY</b>	<b>1M</b>	107.1%	107.1%	100.3%	93.5%	86.6%	70.8%	48.2%	29.6%	23.4%	18.5%	16.5%	13.5%	12.6%	11.8%
	<b>3M</b>	111.5%	111.5%	104.4%	97.3%	90.2%	70.3%	49.5%	30.3%	23.0%	18.3%	16.3%	13.5%	12.8%	12.0%
	<b>6M</b>	112.5%	112.5%	105.3%	98.2%	91.0%	71.4%	50.3%	30.7%	22.4%	17.8%	15.9%	13.3%	12.5%	11.8%
	<b>9M</b>	107.2%	107.2%	100.4%	93.6%	86.7%	63.6%	45.4%	29.6%	21.8%	17.2%	15.7%	13.2%	12.5%	11.8%
	<b>1Y</b>	104.1%	104.1%	97.5%	90.8%	84.2%	59.7%	42.9%	29.0%	21.2%	16.7%	15.5%	13.2%	12.4%	11.8%
	<b>2Y</b>	73.5%	73.5%	66.3%	59.1%	51.9%	40.7%	30.9%	22.8%	18.7%	15.3%	15.1%	11.2%	11.2%	11.3%
	<b>3Y</b>	51.1%	51.1%	44.6%	38.0%	31.5%	26.6%	20.7%	13.0%	10.5%	8.5%	6.1%	6.1%	8.5%	11.1%
	<b>5Y</b>	45.9%	45.9%	41.3%	36.6%	31.9%	28.3%	23.3%	17.5%	-0.3%	13.7%	-1.0%	10.7%	9.6%	8.6%
	<b>7Y</b>	43.2%	43.2%	38.7%	34.2%	29.7%	25.8%	21.1%	17.4%	6.3%	14.1%	5.1%	11.8%	11.0%	10.1%
	<b>10Y</b>	43.9%	43.9%	39.1%	34.4%	29.6%	25.1%	21.4%	18.1%	16.4%	14.7%	14.7%	13.7%	13.2%	12.4%
<b>15Y</b>	56.8%	56.8%	49.9%	43.1%	36.2%	29.9%	24.6%	19.1%	17.9%	16.1%	15.8%	16.0%	14.7%	13.6%	
<b>20Y</b>	60.7%	60.7%	53.3%	45.8%	38.4%	31.2%	25.8%	21.1%	19.2%	17.7%	17.7%	17.4%	16.8%	15.2%	
<b>30Y</b>	73.9%	73.9%	63.7%	53.4%	43.2%	41.2%	34.5%	28.2%	26.3%	23.2%	22.8%	21.7%	21.0%	20.2%	
<b>GBP</b>															
<b>EXPIRY</b>	<b>1M</b>	191.7%	191.7%	174.7%	157.7%	140.6%	67.8%	46.2%	20.9%	16.3%	11.0%	10.0%	17.3%	19.2%	21.0%
	<b>3M</b>	117.7%	117.7%	107.2%	96.8%	86.3%	51.9%	36.8%	19.6%	15.4%	10.7%	9.7%	16.7%	18.6%	20.5%
	<b>6M</b>	87.0%	87.0%	79.2%	71.5%	63.8%	43.6%	33.2%	18.8%	14.8%	10.3%	9.4%	16.4%	18.4%	20.3%
	<b>9M</b>	75.5%	75.5%	68.8%	62.1%	55.3%	39.8%	31.0%	17.9%	14.2%	10.0%	9.2%	16.0%	18.0%	19.9%
	<b>1Y</b>	65.6%	65.6%	59.7%	53.9%	48.1%	36.4%	29.1%	17.0%	13.7%	9.7%	9.0%	15.7%	17.6%	19.5%
	<b>2Y</b>	57.3%	57.3%	50.9%	44.5%	38.2%	31.6%	26.8%	15.7%	10.5%	7.8%	33.6%	12.4%	17.9%	23.7%
	<b>3Y</b>	54.8%	54.8%	47.9%	40.9%	34.0%	27.9%	21.6%	15.0%	9.6%	5.9%	16.9%	6.9%	12.4%	18.1%
	<b>5Y</b>	55.5%	55.5%	47.6%	39.7%	31.9%	27.0%	21.2%	13.2%	8.5%	3.9%	3.9%	2.8%	6.4%	10.1%
	<b>7Y</b>	53.2%	53.2%	45.7%	38.2%	30.7%	25.6%	20.5%	12.6%	8.8%	4.4%	4.4%	3.1%	6.6%	10.2%
	<b>10Y</b>	54.2%	54.2%	46.6%	39.1%	31.5%	25.3%	19.6%	12.2%	9.3%	5.3%	5.4%	3.7%	7.0%	10.5%
<b>15Y</b>	64.6%	64.6%	55.3%	45.9%	36.6%	29.4%	22.5%	15.2%	10.7%	7.2%	5.0%	5.1%	5.5%	5.9%	
<b>20Y</b>	71.3%	71.3%	60.9%	50.4%	40.0%	32.9%	25.6%	17.4%	12.5%	6.9%	4.9%	3.2%	1.7%	0.0%	
<b>30Y</b>	78.1%	78.1%	66.9%	55.6%	44.4%	35.7%	27.3%	17.9%	10.3%	5.4%	5.5%	2.6%	-1.2%	-5.7%	
<b>JPY</b>															
<b>EXPIRY</b>	<b>1M</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>3M</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>6M</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>9M</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>1Y</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>2Y</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>3Y</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>5Y</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>7Y</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	<b>10Y</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>15Y</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
<b>20Y</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
<b>30Y</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

# Relative Normal Interest Rate Shocks (Continued)

USD															
EXPIRY	1M	125.5%	125.5%	114.4%	103.2%	92.0%	54.9%	37.2%	19.6%	15.7%	11.4%	10.0%	16.9%	18.2%	19.4%
	3M	102.2%	102.2%	93.1%	84.1%	75.0%	46.8%	31.8%	17.9%	14.5%	10.3%	9.1%	15.3%	17.1%	17.6%
	6M	80.7%	80.7%	73.5%	66.3%	59.2%	39.1%	29.3%	17.4%	13.2%	9.9%	8.7%	14.7%	16.0%	17.2%
	9M	69.4%	69.4%	63.2%	57.0%	50.9%	37.1%	28.7%	16.9%	13.1%	9.7%	8.5%	15.3%	16.0%	17.1%
	1Y	61.4%	61.4%	56.0%	50.5%	45.1%	34.8%	27.5%	16.7%	13.0%	9.6%	8.8%	14.8%	15.9%	17.0%
	2Y	53.7%	53.7%	47.8%	41.8%	35.8%	31.4%	26.4%	15.3%	10.0%	7.7%	31.9%	12.0%	16.4%	21.1%
	3Y	52.4%	52.4%	45.8%	39.2%	32.6%	25.8%	20.3%	14.1%	9.3%	5.6%	16.0%	6.6%	11.8%	16.2%
	5Y	52.7%	52.7%	45.2%	37.8%	30.3%	25.2%	19.7%	12.0%	7.8%	3.5%	3.6%	2.6%	5.8%	9.3%
	7Y	51.8%	51.8%	44.5%	37.2%	29.9%	24.5%	19.0%	11.5%	7.9%	4.0%	4.0%	2.9%	5.9%	9.1%
	10Y	50.0%	50.0%	43.1%	36.1%	29.1%	23.7%	18.4%	11.1%	8.5%	4.7%	4.9%	3.3%	6.2%	9.2%
	15Y	57.9%	57.9%	49.5%	41.1%	32.8%	26.7%	20.6%	14.1%	9.7%	6.3%	4.4%	4.4%	4.6%	4.8%
20Y	62.7%	62.7%	53.5%	44.3%	35.2%	28.9%	22.4%	15.2%	10.7%	5.8%	4.0%	2.6%	1.3%	0.0%	
30Y	65.9%	65.9%	56.4%	46.9%	37.4%	30.3%	23.0%	14.5%	8.3%	4.3%	4.2%	1.9%	-0.8%	-3.8%	

## US MBS Vega

### Other Advanced Economies

EXPIRY	1M	147.2%	147.2%	134.1%	121.0%	108.0%	42.4%	37.0%	21.6%	14.9%	10.0%	8.3%	13.9%	15.0%	16.5%
	3M	107.2%	107.2%	97.6%	88.1%	78.6%	39.8%	32.8%	19.7%	14.8%	9.9%	8.3%	13.8%	14.9%	16.5%
	6M	85.0%	85.0%	77.5%	69.9%	62.4%	39.4%	31.6%	19.4%	14.5%	9.9%	8.3%	13.8%	15.0%	16.6%
	9M	75.6%	75.6%	68.8%	62.1%	55.4%	39.1%	30.5%	18.8%	14.3%	9.8%	8.2%	13.7%	14.9%	16.5%
	1Y	68.0%	68.0%	61.9%	55.9%	49.9%	38.5%	29.2%	18.2%	14.1%	9.6%	8.1%	13.6%	14.8%	16.4%
	2Y	63.4%	63.4%	56.3%	49.3%	42.2%	34.6%	29.1%	17.2%	11.4%	8.2%	31.9%	11.2%	15.9%	21.1%
	3Y	62.6%	62.6%	54.7%	46.8%	38.9%	31.2%	24.3%	16.3%	10.4%	6.3%	16.9%	6.6%	11.6%	17.2%
	5Y	67.7%	67.7%	58.1%	48.5%	38.8%	32.3%	25.2%	14.0%	9.3%	4.2%	4.0%	2.7%	6.2%	10.0%
	7Y	65.0%	65.0%	55.8%	46.7%	37.5%	29.8%	23.0%	14.0%	9.7%	4.5%	4.2%	2.9%	6.2%	9.8%
	10Y	51.7%	51.7%	44.5%	37.3%	30.1%	28.1%	21.4%	13.0%	9.0%	7.0%	6.7%	4.5%	8.9%	13.8%
	15Y	49.6%	49.6%	42.4%	35.3%	28.1%	26.4%	20.6%	14.1%	9.1%	8.2%	5.7%	6.1%	6.8%	7.4%
20Y	49.7%	49.7%	42.4%	35.1%	27.9%	26.3%	20.7%	14.1%	9.9%	7.7%	5.9%	4.1%	2.2%	0.0%	
30Y	90.4%	90.4%	77.4%	64.4%	51.4%	48.4%	38.1%	24.8%	13.5%	9.6%	9.6%	4.4%	-1.8%	-8.4%	

### Total Emerging Europe

EXPIRY	1M	330.2%	330.2%	309.2%	288.2%	267.1%	200.9%	137.5%	82.1%	56.5%	42.1%	32.0%	25.4%	23.9%	22.6%
	3M	329.9%	329.9%	308.9%	287.8%	266.8%	194.0%	131.6%	79.1%	55.0%	41.2%	31.6%	25.2%	23.8%	22.5%
	6M	324.5%	324.5%	303.9%	283.2%	262.5%	181.8%	122.3%	74.6%	52.7%	39.8%	31.0%	24.9%	23.6%	22.4%
	9M	302.9%	302.9%	283.6%	264.3%	245.1%	169.4%	113.7%	70.4%	50.6%	38.5%	30.4%	24.7%	23.4%	22.3%
	1Y	277.9%	277.9%	260.2%	242.5%	224.8%	157.0%	105.3%	66.4%	48.5%	37.3%	29.9%	24.4%	23.2%	22.1%
	2Y	203.9%	203.9%	184.0%	164.0%	144.1%	103.8%	78.0%	51.1%	41.3%	32.1%	27.6%	20.0%	20.2%	20.6%
	3Y	144.0%	144.0%	125.6%	107.2%	88.8%	68.2%	48.7%	28.7%	22.7%	16.9%	14.9%	10.4%	14.8%	19.6%
	5Y	106.7%	106.7%	95.9%	85.0%	74.2%	58.8%	47.7%	35.2%	-0.6%	24.2%	-1.6%	17.2%	15.5%	14.1%
	7Y	89.7%	89.7%	80.4%	71.0%	61.6%	50.4%	40.9%	30.9%	10.4%	22.7%	7.8%	18.1%	17.1%	16.1%
	10Y	68.6%	68.6%	61.2%	53.8%	46.3%	38.9%	32.1%	26.5%	24.0%	21.3%	21.8%	20.0%	19.9%	19.5%
	15Y	76.3%	76.3%	67.1%	57.9%	48.6%	41.5%	34.8%	28.0%	27.1%	25.4%	23.7%	23.9%	22.8%	21.2%
20Y	97.4%	97.4%	85.5%	73.5%	61.5%	52.8%	44.3%	37.2%	33.2%	29.8%	28.6%	28.0%	26.7%	25.1%	
30Y	151.1%	151.1%	130.2%	109.2%	88.3%	76.2%	64.2%	53.2%	50.6%	44.2%	39.2%	38.1%	36.5%	34.7%	

### Total Latam & Caribbean

EXPIRY	1M	53.8%	53.8%	49.0%	44.2%	39.4%	30.3%	26.8%	13.3%	9.6%	6.1%	5.1%	8.5%	9.1%	9.9%
	3M	49.6%	49.6%	45.2%	40.8%	36.4%	28.1%	24.8%	12.5%	9.1%	5.8%	4.9%	8.3%	8.9%	9.8%
	6M	48.7%	48.7%	44.4%	40.0%	35.7%	27.6%	24.4%	12.6%	8.6%	5.0%	4.2%	7.1%	7.7%	8.4%
	9M	45.6%	45.6%	41.6%	37.5%	33.5%	26.5%	23.2%	11.7%	8.2%	4.9%	4.2%	7.0%	7.6%	8.4%
	1Y	41.6%	41.6%	37.9%	34.2%	30.5%	25.1%	21.8%	10.6%	7.7%	4.8%	4.1%	6.9%	7.5%	8.3%
	2Y	32.1%	32.1%	28.6%	25.0%	21.4%	17.6%	17.6%	8.1%	5.2%	3.7%	14.7%	5.2%	7.3%	9.6%
	3Y	29.1%	29.1%	25.4%	21.8%	18.1%	14.4%	16.7%	7.3%	4.5%	2.6%	7.1%	2.8%	4.9%	7.1%
	5Y	27.6%	27.6%	23.7%	19.7%	15.8%	12.5%	17.2%	5.8%	3.6%	1.6%	1.5%	1.0%	2.3%	3.7%
	7Y	25.6%	25.6%	22.0%	18.4%	14.8%	12.1%	12.8%	5.1%	3.5%	1.7%	1.6%	1.1%	2.3%	3.7%
	10Y	19.6%	19.6%	16.8%	14.1%	11.4%	9.7%	7.7%	4.1%	3.2%	1.9%	1.9%	1.2%	2.4%	3.7%
	15Y	19.4%	19.4%	16.6%	13.8%	11.0%	9.4%	7.5%	4.6%	3.2%	2.3%	1.5%	1.7%	1.8%	2.0%
20Y	18.1%	18.1%	15.5%	12.8%	10.2%	8.8%	7.1%	4.3%	3.3%	2.0%	1.6%	1.1%	0.6%	0.0%	
30Y	59.2%	59.2%	50.6%	42.1%	33.6%	28.9%	23.0%	13.2%	8.0%	4.5%	4.5%	2.1%	-0.9%	-4.1%	

## Relative Normal Interest Rate Shocks (Continued)

### Total Asia Ex-Japan

EXPIRY	1M	103.8%	103.8%	94.6%	85.3%	76.1%	62.5%	49.7%	29.3%	24.0%	16.4%	14.2%	24.3%	27.8%	31.4%
	3M	105.3%	105.3%	95.9%	86.6%	77.2%	62.7%	49.7%	29.2%	23.9%	16.3%	14.2%	24.3%	27.8%	31.4%
	6M	104.3%	104.3%	95.0%	85.8%	76.5%	63.2%	50.5%	30.1%	24.0%	16.8%	14.6%	25.1%	28.7%	32.5%
	9M	103.6%	103.6%	94.4%	85.2%	76.0%	63.6%	51.3%	31.2%	24.6%	16.9%	14.8%	25.5%	29.2%	33.1%
	1Y	103.0%	103.0%	93.8%	84.7%	75.5%	63.8%	52.2%	32.5%	25.2%	17.1%	15.1%	26.0%	29.8%	33.7%
	2Y	107.0%	107.0%	95.1%	83.2%	71.3%	61.7%	51.9%	30.3%	19.9%	14.7%	59.8%	21.7%	32.2%	43.3%
	3Y	105.5%	105.5%	92.2%	78.9%	65.6%	54.2%	42.4%	29.4%	18.5%	11.2%	30.8%	12.6%	23.0%	34.2%
	5Y	107.5%	107.5%	92.2%	76.9%	61.7%	52.8%	41.1%	25.0%	16.1%	7.2%	6.9%	5.1%	11.8%	19.0%
	7Y	96.1%	96.1%	82.5%	69.0%	55.4%	47.1%	36.4%	22.4%	15.8%	7.8%	7.7%	5.5%	11.9%	18.7%
	10Y	83.9%	83.9%	72.2%	60.5%	48.9%	41.2%	32.4%	20.6%	15.6%	8.8%	9.1%	6.3%	12.2%	18.4%
	15Y	90.0%	90.0%	77.0%	64.0%	51.0%	43.3%	33.2%	22.9%	17.2%	11.9%	8.3%	8.6%	9.2%	9.8%
	20Y	116.9%	116.9%	99.8%	82.7%	65.5%	56.4%	43.9%	30.5%	22.4%	12.4%	8.7%	5.6%	2.9%	0.0%
30Y	134.5%	134.5%	115.2%	95.8%	76.4%	65.3%	50.3%	32.7%	19.2%	9.8%	9.7%	4.4%	-1.8%	-8.3%	

### Total ME/N. Africa

EXPIRY	1M	75.4%	75.4%	68.7%	62.0%	55.3%	40.5%	30.2%	16.7%	11.9%	7.3%	7.0%	12.9%	14.9%	17.1%
	3M	70.7%	70.7%	64.5%	58.2%	51.9%	38.6%	29.1%	16.2%	11.6%	7.3%	7.0%	12.8%	14.9%	17.0%
	6M	64.9%	64.9%	59.1%	53.4%	47.6%	36.1%	27.6%	15.6%	11.2%	7.2%	6.9%	12.7%	14.8%	17.0%
	9M	60.5%	60.5%	55.1%	49.8%	44.4%	34.2%	26.4%	15.0%	10.9%	7.1%	6.9%	12.7%	14.8%	16.9%
	1Y	56.7%	56.7%	51.7%	46.6%	41.6%	32.5%	25.3%	14.5%	10.6%	7.0%	6.8%	12.6%	14.7%	16.9%
	2Y	52.6%	52.6%	46.7%	40.9%	35.0%	28.8%	23.5%	12.6%	7.6%	5.7%	25.8%	9.9%	15.0%	20.5%
	3Y	49.5%	49.5%	43.3%	37.0%	30.8%	24.0%	17.5%	11.0%	6.5%	4.3%	13.0%	5.6%	10.4%	15.7%
	5Y	42.9%	42.9%	36.8%	30.7%	24.6%	19.4%	14.4%	8.1%	5.7%	2.8%	3.0%	2.3%	5.3%	8.7%
	7Y	34.2%	34.2%	29.4%	24.5%	19.7%	15.6%	11.8%	8.3%	6.2%	3.3%	3.6%	2.6%	5.7%	9.1%
	10Y	51.8%	51.8%	44.6%	37.4%	30.2%	24.6%	18.7%	11.5%	8.7%	5.0%	5.2%	3.5%	6.8%	10.4%
	15Y	61.6%	61.6%	52.7%	43.8%	34.9%	28.4%	21.7%	14.7%	10.3%	6.9%	4.8%	5.0%	5.3%	5.7%
	20Y	72.2%	72.2%	61.6%	51.0%	40.4%	33.0%	25.4%	16.9%	12.2%	6.8%	4.8%	3.2%	1.6%	0.0%
30Y	90.0%	90.0%	77.0%	64.1%	51.1%	41.4%	31.5%	19.7%	11.3%	5.8%	5.8%	2.7%	-1.1%	-5.1%	

### Total Sub-Saharan Africa

EXPIRY	1M	20.7%	20.7%	18.9%	17.0%	15.2%	12.1%	9.8%	6.0%	4.8%	3.3%	2.9%	5.0%	5.6%	6.2%
	3M	20.0%	20.0%	18.2%	16.4%	14.6%	11.9%	9.6%	5.9%	4.7%	3.3%	2.9%	5.0%	5.6%	6.2%
	6M	19.1%	19.1%	17.4%	15.7%	14.0%	11.5%	9.4%	5.9%	4.6%	3.2%	2.9%	5.0%	5.5%	6.1%
	9M	18.5%	18.5%	16.8%	15.2%	13.6%	11.3%	9.2%	5.8%	4.6%	3.2%	2.9%	5.0%	5.5%	6.1%
	1Y	18.0%	18.0%	16.4%	14.8%	13.2%	11.1%	9.1%	5.7%	4.6%	3.2%	2.8%	4.9%	5.5%	6.1%
	2Y	19.0%	19.0%	16.9%	14.8%	12.7%	10.9%	9.2%	5.4%	3.6%	2.6%	10.7%	3.9%	5.6%	7.4%
	3Y	19.5%	19.5%	17.0%	14.6%	12.1%	9.8%	7.5%	5.2%	3.2%	1.9%	5.3%	2.2%	3.8%	5.6%
	5Y	20.3%	20.3%	17.4%	14.5%	11.6%	9.5%	7.4%	4.4%	2.8%	1.2%	1.2%	0.8%	1.9%	3.1%
	7Y	19.2%	19.2%	16.5%	13.8%	11.0%	8.9%	6.8%	4.1%	2.7%	1.3%	1.3%	0.9%	1.9%	3.0%
	10Y	17.2%	17.2%	14.8%	12.4%	10.0%	8.1%	6.0%	3.6%	2.7%	1.5%	1.5%	1.0%	2.0%	3.1%
	15Y	17.9%	17.9%	15.3%	12.7%	10.1%	8.3%	6.3%	4.3%	3.0%	2.0%	1.4%	1.5%	1.7%	1.8%
	20Y	19.8%	19.8%	16.9%	14.0%	11.1%	9.1%	7.0%	4.7%	3.5%	2.0%	1.6%	1.1%	0.6%	0.0%
30Y	59.8%	59.8%	51.2%	42.6%	34.0%	27.6%	21.1%	13.3%	7.7%	4.0%	4.1%	1.9%	-0.8%	-3.7%	

# Absolute Normal Interest Rate Shocks

## Rates Vega

### Absolute Normal Interest Rate Shocks (bps)

		MATURITY													
		1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	25Y	30Y
<b>AUD</b>															
<b>EXPIRY</b>	<b>1M</b>	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	<b>3M</b>	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	<b>6M</b>	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	<b>9M</b>	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	<b>1Y</b>	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	<b>2Y</b>	43.9	43.9	39.0	34.1	29.2	25.6	21.9	13.2	8.7	6.5	26.5	9.5	13.6	17.6
	<b>3Y</b>	46.5	46.5	40.7	34.8	28.9	23.6	18.3	12.7	8.0	4.8	13.3	5.3	9.3	13.4
	<b>5Y</b>	50.2	50.2	43.0	35.9	28.8	23.6	18.3	10.9	7.0	3.1	3.0	2.1	4.6	7.1
	<b>7Y</b>	47.6	47.6	40.9	34.2	27.5	22.3	17.1	10.2	6.9	3.3	3.2	2.2	4.5	6.8
	<b>10Y</b>	43.8	43.8	37.7	31.6	25.5	20.4	15.3	9.1	6.7	3.7	3.6	2.4	4.3	6.3
	<b>15Y</b>	43.8	43.8	37.4	31.1	24.8	19.9	15.0	9.9	6.8	4.4	2.9	2.8	2.9	3.0
	<b>20Y</b>	44.1	44.1	37.6	31.2	24.7	19.9	15.1	9.9	7.0	3.8	2.5	1.6	0.8	0.0
<b>30Y</b>	42.6	42.6	36.4	30.3	24.2	19.4	14.6	9.0	5.1	2.5	2.4	1.1	(0.4)	(1.9)	
<b>EUR</b>															
<b>EXPIRY</b>	<b>1M</b>	28.2	28.2	26.4	24.6	22.8	19.1	15.4	12.6	11.2	10.5	10.5	9.2	8.8	8.4
	<b>3M</b>	28.2	28.2	26.4	24.6	22.8	19.1	15.4	12.6	11.2	10.5	10.5	9.2	8.8	8.4
	<b>6M</b>	28.2	28.2	26.4	24.6	22.8	19.1	15.4	12.6	11.2	10.5	10.5	9.2	8.8	8.4
	<b>9M</b>	28.2	28.2	26.4	24.6	22.8	19.1	15.4	12.6	11.2	10.5	10.5	9.2	8.8	8.4
	<b>1Y</b>	28.2	28.2	26.4	24.6	22.8	19.1	15.4	12.6	11.2	10.5	10.5	9.2	8.8	8.4
	<b>2Y</b>	28.9	28.9	26.1	23.3	20.4	17.6	14.7	12.0	11.1	10.2	10.4	7.9	8.0	8.0
	<b>3Y</b>	28.2	28.2	24.6	21.0	17.4	14.4	11.4	7.9	6.9	6.0	5.9	4.3	6.0	7.8
	<b>5Y</b>	30.0	30.0	27.0	23.9	20.9	18.0	15.0	12.1	(0.2)	10.1	(0.7)	7.3	6.5	5.7
	<b>7Y</b>	30.0	30.0	26.9	23.8	20.6	17.8	15.0	12.5	4.5	10.2	3.5	7.9	7.2	6.5
	<b>10Y</b>	30.0	30.0	26.8	23.5	20.3	17.6	15.0	13.0	11.6	10.4	9.9	8.8	8.3	7.7
	<b>15Y</b>	34.5	34.5	30.3	26.2	22.0	19.1	16.2	13.3	12.2	10.9	9.8	9.2	8.3	7.4
	<b>20Y</b>	36.3	36.3	31.8	27.4	22.9	19.8	16.6	13.9	12.4	11.2	9.9	9.2	8.4	7.6
<b>30Y</b>	42.4	42.4	36.5	30.6	24.8	21.3	17.8	14.6	13.7	11.8	10.2	9.7	9.1	8.4	
<b>GBP</b>															
<b>EXPIRY</b>	<b>1M</b>	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	<b>3M</b>	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	<b>6M</b>	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	<b>9M</b>	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	<b>1Y</b>	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	<b>2Y</b>	43.9	43.9	39.0	34.1	29.2	25.6	21.9	13.2	8.7	6.5	26.5	9.5	13.6	17.6
	<b>3Y</b>	46.5	46.5	40.7	34.8	28.9	23.6	18.3	12.7	8.0	4.8	13.3	5.3	9.3	13.4
	<b>5Y</b>	50.2	50.2	43.0	35.9	28.8	23.6	18.3	10.9	7.0	3.1	3.0	2.1	4.6	7.1
	<b>7Y</b>	47.6	47.6	40.9	34.2	27.5	22.3	17.1	10.2	6.9	3.3	3.2	2.2	4.5	6.8
	<b>10Y</b>	43.8	43.8	37.7	31.6	25.5	20.4	15.3	9.1	6.7	3.7	3.6	2.4	4.3	6.3
	<b>15Y</b>	43.8	43.8	37.4	31.1	24.8	19.9	15.0	9.9	6.8	4.4	2.9	2.8	2.9	3.0
	<b>20Y</b>	44.1	44.1	37.6	31.2	24.7	19.9	15.1	9.9	7.0	3.8	2.5	1.6	0.8	0.0
<b>30Y</b>	42.6	42.6	36.4	30.3	24.2	19.4	14.6	9.0	5.1	2.5	2.4	1.1	(0.4)	(1.9)	
<b>JPY</b>															
<b>EXPIRY</b>	<b>1M</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>3M</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>6M</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>9M</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>1Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>2Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>3Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>5Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>7Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>10Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>15Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>20Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>30Y</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	



# Absolute Normal Interest Rate Shocks (Continued)

USD															
EXPIRY	1M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	3M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	6M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	9M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	1Y	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	2Y	43.9	43.9	39.0	34.1	29.2	25.6	21.9	13.2	8.7	6.5	26.5	9.5	13.6	17.6
	3Y	46.5	46.5	40.7	34.8	28.9	23.6	18.3	12.7	8.0	4.8	13.3	5.3	9.3	13.4
	5Y	50.2	50.2	43.0	35.9	28.8	23.6	18.3	10.9	7.0	3.1	3.0	2.1	4.6	7.1
	7Y	47.6	47.6	40.9	34.2	27.5	22.3	17.1	10.2	6.9	3.3	3.2	2.2	4.5	6.8
	10Y	43.8	43.8	37.7	31.6	25.5	20.4	15.3	9.1	6.7	3.7	3.6	2.4	4.3	6.3
	15Y	43.8	43.8	37.4	31.1	24.8	19.9	15.0	9.9	6.8	4.4	2.9	2.8	2.9	3.0
	20Y	44.1	44.1	37.6	31.2	24.7	19.9	15.1	9.9	7.0	3.8	2.5	1.6	0.8	0.0
30Y	42.6	42.6	36.4	30.3	24.2	19.4	14.6	9.0	5.1	2.5	2.4	1.1	(0.4)	(1.9)	

## US MBS Vega

### Other Advanced Economies

EXPIRY	1M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	3M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	6M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	9M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	1Y	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	2Y	43.9	43.9	39.0	34.1	29.2	25.6	21.9	13.2	8.7	6.5	26.5	9.5	13.6	17.6
	3Y	46.5	46.5	40.7	34.8	28.9	23.6	18.3	12.7	8.0	4.8	13.3	5.3	9.3	13.4
	5Y	50.2	50.2	43.0	35.9	28.8	23.6	18.3	10.9	7.0	3.1	3.0	2.1	4.6	7.1
	7Y	47.6	47.6	40.9	34.2	27.5	22.3	17.1	10.2	6.9	3.3	3.2	2.2	4.5	6.8
	10Y	43.8	43.8	37.7	31.6	25.5	20.4	15.3	9.1	6.7	3.7	3.6	2.4	4.3	6.3
	15Y	43.8	43.8	37.4	31.1	24.8	19.9	15.0	9.9	6.8	4.4	2.9	2.8	2.9	3.0
	20Y	44.1	44.1	37.6	31.2	24.7	19.9	15.1	9.9	7.0	3.8	2.5	1.6	0.8	0.0
30Y	42.6	42.6	36.4	30.3	24.2	19.4	14.6	9.0	5.1	2.5	2.4	1.1	(0.4)	(1.9)	

### Total Emerging Europe

EXPIRY	1M	28.2	28.2	26.4	24.6	22.8	19.1	15.4	12.6	11.2	10.5	10.5	9.2	8.8	8.4
	3M	28.2	28.2	26.4	24.6	22.8	19.1	15.4	12.6	11.2	10.5	10.5	9.2	8.8	8.4
	6M	28.2	28.2	26.4	24.6	22.8	19.1	15.4	12.6	11.2	10.5	10.5	9.2	8.8	8.4
	9M	28.2	28.2	26.4	24.6	22.8	19.1	15.4	12.6	11.2	10.5	10.5	9.2	8.8	8.4
	1Y	28.2	28.2	26.4	24.6	22.8	19.1	15.4	12.6	11.2	10.5	10.5	9.2	8.8	8.4
	2Y	28.9	28.9	26.1	23.3	20.4	17.6	14.7	12.0	11.1	10.2	10.4	7.9	8.0	8.0
	3Y	28.2	28.2	24.6	21.0	17.4	14.4	11.4	7.9	6.9	6.0	5.9	4.3	6.0	7.8
	5Y	30.0	30.0	27.0	23.9	20.9	18.0	15.0	12.1	(0.2)	10.1	(0.7)	7.3	6.5	5.7
	7Y	30.0	30.0	26.9	23.8	20.6	17.8	15.0	12.5	4.5	10.2	3.5	7.9	7.2	6.5
	10Y	30.0	30.0	26.8	23.5	20.3	17.6	15.0	13.0	11.6	10.4	9.9	8.8	8.3	7.7
	15Y	34.5	34.5	30.3	26.2	22.0	19.1	16.2	13.3	12.2	10.9	9.8	9.2	8.3	7.4
	20Y	36.3	36.3	31.8	27.4	22.9	19.8	16.6	13.9	12.4	11.2	9.9	9.2	8.4	7.6
30Y	42.4	42.4	36.5	30.6	24.8	21.3	17.8	14.6	13.7	11.8	10.2	9.7	9.1	8.4	

### Total Latam & Caribbean

EXPIRY	1M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	3M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	6M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	9M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	1Y	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	2Y	43.9	43.9	39.0	34.1	29.2	25.6	21.9	13.2	8.7	6.5	26.5	9.5	13.6	17.6
	3Y	46.5	46.5	40.7	34.8	28.9	23.6	18.3	12.7	8.0	4.8	13.3	5.3	9.3	13.4
	5Y	50.2	50.2	43.0	35.9	28.8	23.6	18.3	10.9	7.0	3.1	3.0	2.1	4.6	7.1
	7Y	47.6	47.6	40.9	34.2	27.5	22.3	17.1	10.2	6.9	3.3	3.2	2.2	4.5	6.8
	10Y	43.8	43.8	37.7	31.6	25.5	20.4	15.3	9.1	6.7	3.7	3.6	2.4	4.3	6.3
	15Y	43.8	43.8	37.4	31.1	24.8	19.9	15.0	9.9	6.8	4.4	2.9	2.8	2.9	3.0
	20Y	44.1	44.1	37.6	31.2	24.7	19.9	15.1	9.9	7.0	3.8	2.5	1.6	0.8	0.0
30Y	42.6	42.6	36.4	30.3	24.2	19.4	14.6	9.0	5.1	2.5	2.4	1.1	(0.4)	(1.9)	

## Absolute Normal Interest Rate Shocks (Continued)

### Total Asia Ex-Japan

EXPIRY	1M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	3M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	6M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	9M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	1Y	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	2Y	43.9	43.9	39.0	34.1	29.2	25.6	21.9	13.2	8.7	6.5	26.5	9.5	13.6	17.6
	3Y	46.5	46.5	40.7	34.8	28.9	23.6	18.3	12.7	8.0	4.8	13.3	5.3	9.3	13.4
	5Y	50.2	50.2	43.0	35.9	28.8	23.6	18.3	10.9	7.0	3.1	3.0	2.1	4.6	7.1
	7Y	47.6	47.6	40.9	34.2	27.5	22.3	17.1	10.2	6.9	3.3	3.2	2.2	4.5	6.8
	10Y	43.8	43.8	37.7	31.6	25.5	20.4	15.3	9.1	6.7	3.7	3.6	2.4	4.3	6.3
	15Y	43.8	43.8	37.4	31.1	24.8	19.9	15.0	9.9	6.8	4.4	2.9	2.8	2.9	3.0
	20Y	44.1	44.1	37.6	31.2	24.7	19.9	15.1	9.9	7.0	3.8	2.5	1.6	0.8	0.0
30Y	42.6	42.6	36.4	30.3	24.2	19.4	14.6	9.0	5.1	2.5	2.4	1.1	(0.4)	(1.9)	

### Total ME/N. Africa

EXPIRY	1M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	3M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	6M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	9M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	1Y	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	2Y	43.9	43.9	39.0	34.1	29.2	25.6	21.9	13.2	8.7	6.5	26.5	9.5	13.6	17.6
	3Y	46.5	46.5	40.7	34.8	28.9	23.6	18.3	12.7	8.0	4.8	13.3	5.3	9.3	13.4
	5Y	50.2	50.2	43.0	35.9	28.8	23.6	18.3	10.9	7.0	3.1	3.0	2.1	4.6	7.1
	7Y	47.6	47.6	40.9	34.2	27.5	22.3	17.1	10.2	6.9	3.3	3.2	2.2	4.5	6.8
	10Y	43.8	43.8	37.7	31.6	25.5	20.4	15.3	9.1	6.7	3.7	3.6	2.4	4.3	6.3
	15Y	43.8	43.8	37.4	31.1	24.8	19.9	15.0	9.9	6.8	4.4	2.9	2.8	2.9	3.0
	20Y	44.1	44.1	37.6	31.2	24.7	19.9	15.1	9.9	7.0	3.8	2.5	1.6	0.8	0.0
30Y	42.6	42.6	36.4	30.3	24.2	19.4	14.6	9.0	5.1	2.5	2.4	1.1	(0.4)	(1.9)	

### Total Sub-Saharan Africa

EXPIRY	1M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	3M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	6M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	9M	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	1Y	39.3	39.3	35.8	32.4	28.9	24.9	20.8	13.5	10.9	7.7	7.0	12.0	13.3	14.6
	2Y	43.9	43.9	39.0	34.1	29.2	25.6	21.9	13.2	8.7	6.5	26.5	9.5	13.6	17.6
	3Y	46.5	46.5	40.7	34.8	28.9	23.6	18.3	12.7	8.0	4.8	13.3	5.3	9.3	13.4
	5Y	50.2	50.2	43.0	35.9	28.8	23.6	18.3	10.9	7.0	3.1	3.0	2.1	4.6	7.1
	7Y	47.6	47.6	40.9	34.2	27.5	22.3	17.1	10.2	6.9	3.3	3.2	2.2	4.5	6.8
	10Y	43.8	43.8	37.7	31.6	25.5	20.4	15.3	9.1	6.7	3.7	3.6	2.4	4.3	6.3
	15Y	43.8	43.8	37.4	31.1	24.8	19.9	15.0	9.9	6.8	4.4	2.9	2.8	2.9	3.0
	20Y	44.1	44.1	37.6	31.2	24.7	19.9	15.1	9.9	7.0	3.8	2.5	1.6	0.8	0.0
30Y	42.6	42.6	36.4	30.3	24.2	19.4	14.6	9.0	5.1	2.5	2.4	1.1	(0.4)	(1.9)	

## Other Rates

### Absolute Change in Inflation (bps)

Currency	MATURITY												
	1M	3M	6M	9M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	30Y
AUD	(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(19.3)	(27.7)	(43.8)	(45.7)	(54.6)	(66.4)	(65.8)	(72.9)
EUR	(26.1)	(26.1)	(26.1)	(26.1)	(26.1)	(33.6)	(41.2)	(60.3)	(57.2)	(74.0)	(77.9)	(65.4)	(100.3)
GBP	(9.7)	(9.7)	(9.7)	(9.7)	(9.7)	(40.0)	(48.3)	(63.9)	(69.0)	(68.8)	(69.0)	(71.6)	(70.4)
JPY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
USD	(2.0)	(2.0)	(2.0)	(2.0)	(2.0)	(4.8)	(59.3)	(89.6)	(101.6)	(112.8)	(115.1)	(120.8)	(106.6)
Other	(26.1)	(26.1)	(26.1)	(26.1)	(26.1)	(40.0)	(59.3)	(89.6)	(101.6)	(112.8)	(115.1)	(120.8)	(106.6)

### 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	11.8	11.8	11.8	11.8	11.8	10.6	5.6	(2.0)	(13.8)	(35.9)	(64.4)	(81.5)	(116.5)
EUR	(7.5)	(7.5)	(15.5)	(23.8)	(20.3)	(24.0)	(22.8)	(20.1)	(15.3)	(9.7)	(5.7)	(5.4)	(5.7)
GBP	(30.3)	(30.3)	(30.3)	(30.3)	(30.3)	(36.0)	(33.8)	(25.2)	(15.5)	(8.7)	(3.5)	0.5	6.8
JPY	(22.8)	(22.8)	(22.8)	(22.8)	(22.8)	(23.9)	(23.8)	(24.3)	(21.4)	(18.5)	(13.0)	(11.0)	(9.3)
Other	(7.5)	(7.5)	(15.5)	(23.8)	(20.3)	(24.0)	(22.8)	(20.1)	(15.3)	(9.7)	(5.7)	(5.4)	(5.7)

## Appendix 12: Data Notes

Sources for data through 2015:Q4 (as released through 1/20/2016). The 2015:Q4 values of variables marked with an asterisk (\*) are projected.

**U.S. real GDP growth\***: Percent change in real Gross Domestic Product at an annualized rate, Bureau of Economic Analysis.

**U.S. nominal GDP growth\***: Percent change in nominal Gross Domestic Product at an annualized rate, Bureau of Economic Analysis.

**U.S. real disposable income growth\***: Percent change in nominal disposable personal income divided by the price index for personal consumption expenditures at an annualized rate, Bureau of Economic Analysis.

**U.S. nominal disposable income growth\***: Percent change in nominal disposable personal income at an annualized rate, Bureau of Economic Analysis.

**U.S. unemployment rate**: Quarterly average of monthly data, Bureau of Labor Statistics.

**U.S. CPI inflation**: Percent change in the quarterly average of the Consumer Price Index at an annualized rate, Bureau of Labor Statistics.

**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.

**U.S. 5-year Treasury yield**: Quarterly average of the yield on 5-year U.S. Treasury bonds, constructed for 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 bonds, constructed for 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. BBB corporate yield**: Quarterly average of the yield on 10-year BBB-rated corporate bonds, constructed for FRB/U.S. model by Federal Reserve staff using a Nelson-Siegel smoothed yield curve model; see Charles R. Nelson and Andrew F. Siegel (1987), "Parsimonious Modeling of Yield Curves," Journal of Business, vol. 60, pp. 473–89. Data prior to 1997 is based on the WARGA database. Data after 1997 is based on the Merrill Lynch database.

**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.

**U.S. Dow Jones Total Stock Market (Float Cap) Index**: End of

quarter value, Dow Jones.

**U.S. House Price Index\***: CoreLogic, index level, seasonally adjusted by Federal Reserve staff.

**U.S. Commercial Real Estate Price Index\***: From the Financial Accounts of the United States, Federal Reserve Board (Z.1 release); the series corresponds to the data for price indexes: Commercial Real Estate Price Index (series FL075035503.Q divided by 1000).

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

**Euro area real GDP growth\***: 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\***: Percent change in real gross domestic product at an annualized rate, staff calculations based on Bank of Korea via Haver, Chinese National Bureau of Statistics via CEIC; Indian Central Statistical Organization via CEIC; Census and Statistics Department of Hong Kong via CEIC; and Taiwan Directorate-General of Budget, Accounting, and Statistics via CEIC.

**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 Chinese National Bureau of Statistics via CEIC; Indian Ministry of Statistics and Programme Implementation via Haver; Labour Bureau of India via CEIC; National Statistical Office of Korea via CEIC; Census and Statistic Department of Hong Kong via CEIC; and Taiwan Directorate-General of Budget, Accounting, and Statistics via CEIC.

**Japan real GDP growth\***: Percent change in gross domestic product at an annualized rate, Cabinet Office via Haver.

**Japan inflation\***: Percent change in the quarterly average of the Consumer Price Index at an annualized rate, Ministry of Internal Affairs and Communications via Haver.

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

**U.K. inflation**: Percent change in the quarterly average of the Consumer Price Index at an annualized rate, Office for National Statistics via Haver.

**Exchange rates**: Quarterly average of daily rates, Bloomberg.