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# Stress testing the UK banking system: guidance on the traded risk methodology for participating banks and building societies



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# 1 Overview

## 1.1 Introduction

This document describes the approach that banks and building societies (hereinafter 'banks') are expected to take in the execution of the 2015 Bank of England (hereinafter 'Bank')<sup>(1)</sup> stress test of the UK banking system in respect of trading positions.<sup>(2)</sup>

This document is intended to be used primarily by banks' risk managers and other officers who will execute the traded risk stress test, as well as by other interested finance professionals, and should be read in conjunction with:

- Several other documents published on 30 March, which together describe the 2015 macro stress scenario and provide high-level guidance regarding the execution of the stress test;<sup>(3)</sup>
- The traded risk stress scenario published on 26 May;<sup>(4)</sup>
- The traded risk stress test submission templates (hereinafter, 'templates') and associated guidance already communicated to banks.

More specifically, this document:

- Describes the overall approach that banks should adopt in the execution of the traded risk stress test;
- Describes how the stress and baseline scenarios<sup>(5)</sup> should be translated into the specific loss numbers<sup>(6)</sup> and financial metrics reported via the templates;
- Defines certain important terms and concepts that are used in the templates in the context of the methodology that should be applied.

The document does not concern itself with the specifics of the baseline and stress scenarios themselves, which are described in the documents noted at footnotes (3) and (4) on this page.

The traded risk stress test methodology outlined in this document requires banks to exercise key judgements regarding the application of the method to their exposures. An example of such a judgement is banks' assessment of the likely time in which a material, illiquid trading position could be liquidated under the stress scenario. It should be noted that banks should explain carefully the basis of the key judgements that they have made. Moreover, banks' judgements will be subject to rigorous challenge from the Bank.

## 1.2 Key design features

The Bank's approach to stress testing traded risk represents a departure from the approach taken in the 2014 stress test, and so it is important to highlight the key methodological innovations of the Bank's new approach. There are three key design features that are central to the Bank's approach this year.

First, the Bank has as far as possible linked the traded risk stress scenario to the macroeconomic aspects of the scenario (for example, the international regional impact of the macro scenario and of market risk factor shocks are broadly aligned).

Second, the Bank's approach recognises the importance of market and position liquidity to the losses likely to be sustained under a stress scenario.<sup>(7)</sup> The importance of market liquidity was demonstrated in the recent financial crisis, in which banks' illiquid traded positions sustained the largest losses. This was especially the case for essentially similar, large positions that were held by many banks when the crisis hit. Following the Lehman default, many of these positions incurred significant losses, causing banks to attempt to reduce them at a time when the relevant hedging markets for these positions had practically disappeared. Consequently, such positions were heavily marked down and some of them became very difficult to manage. Under the new approach described in this document, banks are therefore expected to apply risk factor shocks of a size that corresponds to the likely liquidity of each position under the stress scenario, and hence to the likely time for which each position is exposed to the scenario. For example, a position in a major spot FX rate for which market liquidity would likely be relatively robust under

(1) Unless otherwise stated, references in this document to the Bank or Bank of England include the Prudential Regulation Authority.

(2) Throughout this document, the term 'traded risk stress test' refers to the part of the Bank 2015 stress test that relates to traded risk positions; similarly, 'market risk stress test' (or similar) refers to a particular component (or components) of this part of the stress test.

(3) These documents are: 'Stress testing the UK banking system: key elements of the 2015 stress test' (hereinafter 'Key elements of the 2015 stress test'); 'Stress testing the UK banking system: guidance for participating banks and building societies' (hereinafter 'Guidance for participating banks and building societies'); and 'Stress testing the UK banking system: variable paths for the 2015 stress test' hereinafter 'Variable paths for the 2015 stress test'.

(4) The traded risk stress scenario comprises the shocks to be applied to a set of market risk factors (these are the various market rates and prices that drive the valuation of traded risk positions), at different time horizons, and is described in the 'Traded risk shocks' tab of 'Stress testing the UK banking system: traded risk and structured finance scenario for the 2015 stress test' (hereinafter 'Traded risk and structured finance scenario for the 2015 stress test'). The macro stress scenario (described in the documents referred to in the previous bullet point) comprises mainly the paths of macroeconomic variables such as GDP, unemployment, etc; however, the paths of a small number of key market risk factors are also included (for example, short-term interest rates, long-term interest rates, equity indices).

(5) Throughout this document, reference is made to stress and baseline 'scenarios'. Unless otherwise stated, the term 'scenario' refers to both the macro stress scenario and its narrative description, published in 'Key elements of the 2015 stress test'; and 'Variable paths for the 2015 stress test' on 30 March 2015, and the market risk factor shocks published in the 'Traded risk shocks' tab of the 'Traded risk and structured finance scenario for the 2015 stress test' on 26 May.

(6) The outcome of the traded risk stress test or of a particular component of the stress test is often referred to as a loss. However, it is recognised that some components of the stress test may, in fact, constitute profits.

(7) The Bank has a continuing interest in market liquidity and the threat that impaired market liquidity could pose to financial stability. Refer, for example, to *Financial Stability Report*, December 2014, Box 4.

the scenario (and hence which could be liquidated relatively rapidly under the scenario) should be subject to a smaller risk factor shock than a large position in a high-yield corporate bond, which would likely be difficult to liquidate under the stress scenario.

Finally, the Bank's approach to counterparty credit risk asks that banks treat as having defaulted those counterparties/clients that are most vulnerable under the stress scenario. This approach thereby creates consistency between the counterparty credit risk losses that a bank may incur in the traded risk stress scenario and the macro stress scenario.

In summary, therefore, the Bank's innovations in the 2015 traded risk stress test are inspired by what has happened in real stress events (and especially in the crisis that followed the Lehman default) and by a desire to create a link to the forward-looking macro scenario, and are intended to impart a greater sense of realism to the stress test and its outcome.

## 2 Preliminaries

Prior to describing the traded risk stress test method and its separate components, it is helpful to describe both its scope of application and how the different components of the stress test fit together, and to set out several general features of the stress test.

### 2.1 Position scope

Broadly, the scope of positions to which the traded risk stress test is applied is: all Fair Value Through Profit and Loss (P&L) (FVTPL)<sup>(1)</sup> and Available For Sale (AFS) accounted positions.

This scope comprises mainly three parts of a bank's balance sheet:

- The regulatory Trading Book, which banks use for their client-servicing and other trading activities;
- The AFS part of the regulatory Banking Book, which largely comprises banks' Liquid Asset Buffers (LABs) — which are in place to protect banks from adverse liquidity events, such as bank runs — and associated hedge positions;
- The FVO part of the Banking Book, which is used by banks for various purposes and is typically smaller than the Trading Book and AFS part of the Banking Book.

Further details, including refinements and exceptions to this definition of scope, are provided in Annex A.

### 2.2 Components of the stress test

The traded risk stress scenario will have an impact on both capital resources (which would be depleted on account of

losses) and capital requirements (which may increase in response to rises in market volatility and counterparty default risk).

The impact of the traded risk stress test on capital resources is calculated as the sum of the separate impacts arising from:

- Market risk losses (described in Section 3) arising in the Trading Book due to adverse moves in risk factors (that is market prices and rates) and to issuer default;
- Various valuation adjustments (described in Section 4), including the Credit Valuation Adjustment (CVA) and the Prudent Valuation Adjustment (PVA);
- Counterparty credit risk default losses (described in Section 5);
- Revenue and costs of a bank's investment banking business (described in Section 6);
- AFS and FVO losses (described in Section 7).

The impact of the traded risk stress test on capital requirements is calculated as the sum of the separate impacts from:

- Market risk and CVA Risk-Weighted Assets (RWAs) (described in Section 8);
- Counterparty credit risk RWAs (described in Section 8).

The overall impact on a bank's capital ratios will reflect the impact of the traded risk stress test on both capital resources and capital requirements.

### 2.3 Effective date

The stress test should be applied to banks' trading positions as of a specified effective date. The effective date for running the stress test is different for different components of the traded risk stress test (and hence for the corresponding templates), as indicated in the table below.

An effective date of 20 February 2015 was chosen rather than 31 December 2014 for market risk exposures in the Trading Book and for counterparty credit risk exposures because banks tend to reduce their traded positions at year-end. Using positions as at 31 December 2014 would, therefore, be unlikely to yield a representative stress test result. Using instead the 20 February 2015 effective date is more likely to provide a representative snapshot of banks' traded risk positions.

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(1) Including positions accounted for under the Fair Value Option (FVO).

| Structured template  | Position scope  | Effective date |
|--|---|----------------|
| Revenues & Costs for Investment Banking Divisions (Baseline and Stressed) — TEMPLATE v.2 | All investment banking business   | 31 Dec. 2014   |
| Market Risk Stressed P&L — TEMPLATE  | All Trading Book (excluding Capital Requirements Regulation (CRR) Chapter 5 securities) | 20 Feb. 2015   |
| Counterparty Credit Risk Losses — TEMPLATE   | All Trading Book and Banking Book   | 20 Feb. 2015   |
| AFS FVO Gains and Losses — TEMPLATE v.2  | AFS, FVO and all hedges (excluding CRR Chapter 5 securities)                            | 31 Dec. 2014   |
| Stressed PVA — TEMPLATE  | All FVTPL positions   | 31 Dec. 2014   |
| Market Risk and CVA RWA — TEMPLATE v.2<br>Counterparty Credit Risk RWAs — TEMPLATE v.2   | All Trading Book (and Banking Book for counterparty credit risk and CVA only)           | 31 Dec. 2014   |

## 2.4 Reporting currency

Banks have trading positions that would generate P&L under the stress scenario in currencies other than their reporting currency. Such P&L should be translated into a bank's reporting currency via FX spot rates that are consistent with:

- The stress scenario;
- The liquidity (and hence the liquidation horizons) of the positions that generate the P&L, which will determine the time at which the foreign currency P&L is generated and the rate at which it is to be translated into reporting currency.

## 2.5 Loss allocation

The overall stress test horizon is five years and, in line with this, banks should model the impact on their AFS and FVO positions<sup>(1)</sup> for each year of the five-year stress scenario. However, in respect of market risk, CVA movements, PVA movements and counterparty credit defaults, banks should assume that all losses are incurred in the first year of the stress scenario. There are two reasons for this: first, losses on trading activities would typically be concentrated in the early part of a stress scenario, since market prices tend to discount bad news fairly rapidly; second, allocation of losses over the five year horizon would require the creation of five-year paths for the thousands of market risk factors that drive trading P&L, and the costs of doing this are expected to outweigh any benefits.

The allocation of losses over the five years of the stress scenario is summarised in the following table.

| Losses               | 2015   | 2016 | 2017 | 2018 | 2019 |
|----------------------|--|------|------|------|------|
| Market risk          | 100%   | 0%   | 0%   | 0%   | 0%   |
| CVA                  | 100%   | 0%   | 0%   | 0%   | 0%   |
| Counterparty default | 100%   | 0%   | 0%   | 0%   | 0%   |
| PVA                  | 100%   | 0%   | 0%   | 0%   | 0%   |
| AFS and FVO          | Gains/losses on these positions to be calculated per each year of the stress scenario. |      |      |      |      |

Having reviewed at a high level the Bank's approach to the traded risk stress test, its application via the key components of capital resources and capital requirements is now described in more detail.

## 3 Market risk stress

### 3.1 Position types

Banks' Trading Books comprise trading positions of varying liquidity. As was apparent in the financial crisis, the most illiquid positions can inflict the greatest damage to banks' P&L and capital resources. For this reason, banks are expected to clearly identify illiquid positions and to distinguish them from liquid positions.

Three types of position in the Trading Book are distinguished: Liquids, Structural Liquids and Illiquids. Illiquid positions are defined to be those that would take more than two weeks to liquidate or hedge under the stress scenario, while liquid positions would take two weeks or less to liquidate or hedge.

A further position type is distinguished, which is designated Structural Liquids. These are positions which, although possibly reduced or neutralised when an adverse stress scenario has its initial impact, may be subsequently re-opened in order to preserve a bank's ability to provide financial products in a particular market. Market-making positions epitomise this type of position. By virtue of re-opening such a position, a bank exposes itself to further losses associated with further adverse market moves.

### 3.2 Assessment of position liquidity

Banks are expected to make their own assessments as to the liquidity horizons of their positions. General guidance on the degree of market liquidity that characterises the stress scenario is provided in the document 'Key elements of the 2015 stress test'. More specifically, banks should judge how quickly they would be able to exit positions in view of likely market trade volumes under the stress scenario; however, banks should not assume a liquidity horizon shorter than one day. The Bank will carefully assess banks' judgements regarding the liquidity of their traded positions.

(1) And also the impact on their RWAs.

### 3.3 Calibration of risk factor shocks

The risk factor shocks that comprise the traded risk scenario are included in 'Variable paths for the 2015 stress test' published on 30 March 2015 and in the 'Traded risk shocks' tab of the 'Traded risk and structured finance scenario for the 2015 stress test' published on 26 May. Conceptually, the Bank is specifying a core set of risk factor shocks that are intended to transmit an overall shock to the entire set of in-scope positions. The Bank has specified a sufficient number of key risk factor shocks in each material geography and market to provide a secure foundation for the elaboration of the stress scenario in terms of all risk factors that would drive banks' P&L. Moreover, risk factor shocks are specified for a range of different liquidity horizons.

However, the risk factor shocks provided by the Bank are unlikely to include all risk factors to which banks are exposed, and so banks are expected to identify other risk factors that would contribute to their P&L under the stress scenario and to calibrate shocks for these risk factors. These risk factors are expected to be identified based on banks' understanding of the material risk factors that would be expected to drive P&L under the stress scenario. Further, these additional risk factor shocks should be calibrated with reference to the risk factor shocks and scenario narrative that have been provided by the Bank. Beyond this, banks should gauge the severity of shocks applied to these factors with reference to the worst market moves observed in the historical periods per region detailed in the table below.

| Geographical region of positions | Historical period   |
|----------------------------------|---------------------|
| Asia and Emerging Markets        | 2008 H2             |
| Europe and the United States     | 2011 H2 and 2012 H1 |

Whether market risk factor shocks are provided by the Bank or by banks themselves, banks should apply the shocks appropriate to the liquidity of each position. The Bank will assess the appropriateness of the shocks that banks apply to their traded positions.

### 3.4 Issuer default

The 'Market Risk Stressed P&L — TEMPLATE' includes a cell relating to 'Issuer Default' losses. Such losses would be associated with those counterparties identified as defaulting as part of the counterparty credit risk stress described in Section 5.<sup>(1)</sup> That is, if a counterparty were to default under the counterparty credit risk stress, then any issuer exposure to that name arising in the Trading Book (from bonds, equities, traded loans and derivatives where the defaulting counterparty is referenced as an issuer, for example, credit default swap (CDS)) should be defaulted and reported in the 'Market Risk Stressed P&L — TEMPLATE'.

### 3.5 Funding cost

The stress scenario will impact a bank's own cost of funding and induce a funding loss, to the extent that funding cost is reflected in the bank's mark-to-market accounting. To the extent that there is a PVA against funding (specifically, the Investing and Funding Costs component of PVA), then the change in PVA under the stress scenario should be reported in the 'Stressed PVA — TEMPLATE' and deducted from projected capital resources at end-2015.

The remaining parts of this section describe in more detail the approach that banks are expected to take in the calculation of loss per position type.

### 3.6 Liquids stress

Having identified all the risk factors that drive the P&L of liquid portfolios, banks should apply the risk shock (whether supplied by the Bank or by banks themselves) appropriate to the liquidity of each risk factor and thereby obtain the total loss generated by liquid portfolios under the stress scenario. This is to be reported in the 'Liquids' column of the 'Totals' tab in the 'Market Risk Stressed P&L — TEMPLATE'. The total loss should be disaggregated and reported at the level of granularity specified in the template, which is by overall asset class (equity, interest rates, etc).

Regarding the calculation of the Liquids market risk loss under the stress scenario, the Bank recognises that some banks currently submit the Firm Data Submission Framework (FDSF) market risk template. This template is designed to deliver the P&L impacts of a wide range of pre-defined market risk factor shocks and, therefore, it is likely that some of these P&L impacts will be useful in calculating the outcome of the 2015 stress test (that is, where the pre-defined risk factor shocks of the FDSF template equal — or approximate — the corresponding shocks specified in the 2015 stress scenario). In Annex B further guidance is provided to banks regarding the possible use of the data submitted via the FDSF market risk template.

### 3.7 Structural liquids stress

Structural Liquids positions held for market-making purposes may suffer a loss at the onset of a stressed market environment. This is likely to cause a bank to reduce its inventory in the associated products. However, for the franchise reasons noted in Section 3.1 such positions may be re-opened, thereby exposing the bank to further loss associated with adverse market moves later in the stress scenario. Banks are expected to take due account of the nature of this exposure in calculating the loss sustained by structural liquid positions under the stress scenario.

(1) Counterparty credit default losses should be reported via the 'Counterparty Credit Risk Losses — TEMPLATE'.

Specifically, banks are expected to apply the following approach:

- Banks should identify client-servicing desks that are among the 'top five' dealers in their market (using trading volumes as the metric);
- For each such desk, banks should identify the risk factor that typically has the greatest market risk;
- In respect of this risk factor, banks should identify a 'normal' level of exposure;<sup>(1)</sup>
- For this risk factor, banks should create two measures of loss:
  - The measure of loss associated with the liquidity horizon of the risk factor (where this horizon is the time it would take to close exposure to the risk factor) applied to the 'normal' size of exposure; and
  - The measure of loss associated with the application of the one-year shock of the risk factor to the 'normal' size of exposure in this risk factor;
- The total loss per structural liquid portfolio is the sum of these two components.

As an example, if a bank were a 'top five' market-maker in euro interest rate swaps, then it should identify the most material risk factor for that desk. If that were the five-year euro swap rate, the bank would first measure the 'normal' exposure to that risk factor. It should then apply the risk factor shock associated with the liquidity horizon of a five-year euro swap rate sensitivity to produce the first component of loss, and then add to that the loss produced by the one-year shock applied to the five-year euro swap rate exposure.

### 3.8 Illiquids stress

The loss sustained by each portfolio of illiquid positions should be identified separately and reported in the Illiquids column of the 'Totals' tab in the 'Market Risk Stressed P&L — TEMPLATE'. For guidance purposes, examples of illiquid positions are provided as follows:

- Positions that are difficult to value and consequently may have significant non-modelled characteristics that are not captured in the stressed value, for example, legal enforceability risk, rating downgrade contingencies;
- Positions for which values may be modelled, but with significant uncertainty;

- Positions for which there are only thin or one-way hedging markets available, and so the ability to ascribe a liquidity horizon to the position may be very impaired;
- Positions that would take longer than two weeks to liquidate or hedge fully, whether complex or not. This could, for example, include an illiquid corporate bond held in large size relative to the amount of the bond in issue.

Banks should articulate their approach to calculation of the Illiquids stress test loss in sufficient detail to put the Bank in a position to understand, in respect of each illiquid portfolio:

- The nature of the positions that comprise the portfolio;
- The risk factors that drive portfolio P&L;
- The risk factor shocks utilised (and how they were calibrated);
- The details of the stress loss calculation applied;
- The loss outcome itself; and
- Which trading desk manages the portfolio.

In identifying the risk factors that drive P&L of illiquid portfolios and in calibrating the corresponding risk factor shocks, banks should take due account of:

- The risk factor shocks and scenario narrative published by the Bank;<sup>(2)</sup>
- The market structure and dynamics for the products that comprise the illiquid positions. Specifically, banks are expected to take due account of the fact that illiquid product valuations are heavily influenced by other broker-dealer activity, and to assume that the stress scenario produces a market environment similar to that following the Lehman default.

## 4 Valuation adjustments

Banks' valuations of their fair value positions are subject to various adjustments intended to render more prudent the measure of capital resources. It is likely that these valuation adjustments will be impacted by the traded risk stress scenario, and so the following sections provide guidance to banks on how these adjustments should be modified under the stress scenario.

(1) This could, for example, be estimated as the average exposure over 2013 and 2014. Note that for Structural Liquids the effective date is therefore not 20 February 2015, as for other parts of the Trading Book.

(2) As described in the documents: 'Key elements of the 2015 stress test'; 'Variable paths for the 2015 stress test' and the 'Traded risk shocks' tab of the 'Traded risk and structured finance scenario for the 2015 stress test'.

## 4.1 Credit Valuation Adjustment (CVA)

In their trading activities banks enter into derivative contracts with counterparties. If a derivative contract is at any time in-the-money to a bank — in other words, the contract has produced a mark-to-market profit for the bank — then there is a risk that the counterparty will default and fail to pay what is owed under the contract. The CVA measures the negative adjustment to the contract's value in order to take account of this risk of default by the counterparty. Under the traded risk stress scenario, credit quality will deteriorate for some counterparties and credit spreads will widen and so the CVA should be modified to reflect this aspect (and other aspects) of the stress scenario.

Stressed CVA should be reported as a separate element of stressed P&L and included in both the 'Market Risk Stressed P&L — TEMPLATE' and the 'Counterparty Credit Risk Losses — TEMPLATE', with consistency required between the template CVA entries. More specifically, banks are asked to note the following:

- Shocks to the risk factors that drive the uncollateralised CVA should be calibrated to a one-year liquidity horizon for both CVA and all the hedges to CVA, regardless of the frequency of hedge-adjustment used by the CVA hedging desk;
- Shocks to the risk factors that drive the collateralised CVA should be calibrated to a two-week liquidity horizon for both CVA and all the hedges to CVA, regardless of the frequency of hedge-adjustment used by the CVA hedging desk;
- The P&L impact of CVA hedges in place as at the effective date should be recognised; however, no hedge adjustment should be assumed;
- The CVA before and after the application of the risk factor shocks should be reported in the 'Counterparty Credit Risk Losses — TEMPLATE' inclusive of all types of hedges (credit and market risk hedges);
- Banks should pay particular attention to the more complex CVA risks, such as CVA basis risks, for example rate/credit-spread cross gamma, and index/single-name proxy basis. Banks should decompose the aggregate CVA loss so that the incremental contributions of these bespoke illiquid CVA risk factor shocks are apparent;
- In calculating the adjustment to CVA to reflect the impact of the stress scenario, banks should maintain consistency with the calculation of CVA in their accounts. Specifically, where the accounting CVA calculation uses market-implied measures of probability of default (PD) and loss given default (LGD), these should be used; where the calculation

of accounting CVA uses actual PDs and LGDs, these should be used;

- Banks should provide detailed commentary on the resulting CVA adjustment and provide historic risk reports for their CVA hedging desks as of the effective date of the stress test, to support the calculations that they have made.

## 4.2 Debit Valuation Adjustment (DVA)

In symmetry with CVA, which adjusts valuations to account for the risk of counterparty default, the Debit Valuation Adjustment (DVA) adjusts valuations to reflect variations in a bank's own credit quality.

The approach that banks are expected to follow in respect of DVA under the stress test requires that any impact of DVA is not recognised. This is because regulatory capital treatment assumes that any DVA benefit cannot be realised and so any impact of DVA is not recognised in the calculation of regulatory capital resources. Nonetheless, if a bank is hedging its DVA, then any profit or loss from these fair value hedges should be included in the stress test. If such hedge P&L arises in the Trading Book, then it should be separately identified in the accompanying descriptive text. If it arises outside the Trading Book, and so is not captured by the 'Market Risk Stressed P&L — TEMPLATE', then it should be reported as an unstructured data submission separate to the templates and this P&L will be added to other market risk losses.

## 4.3 Prudent Valuation Adjustment (PVA)

The scope of the traded risk stress test is fair valued positions. However, fair value may fall short of what would be considered prudent in the context of regulatory capital resources. For example, when valuation of a security is subject to a large degree of uncertainty — perhaps because the market for the security is very sparse — fair value would require the security be marked within the range of possible prices for the security, whereas prudence would require the security to be marked at a lower (upper) estimate of price if the position were long (short).

As the detailed requirements for banks to produce a PVA are a recent regulatory innovation, banks are expected to report only changes to the investing and funding cost component of PVA, via the 'Stressed PVA — TEMPLATE'.<sup>(1)</sup> This will ensure that a material impact from stressed PVA is captured. In future years, the Bank plans to extend the scope of the traded risk stress test to include other parts of PVA.

Note that changes to investing and funding cost should be partly captured in the market risk stress, given that a bank's own cost of funding is increased in the stress scenario, and this

(1) Also known as the Investing and Funding Costs Additional Valuation Adjustment (AVA).

will alter the accounting mark-to-market valuations. However, banks may be carrying PVA on the part of the investing and funding cost that is not currently recognised in accounting value, and the PVA stress test is intended to capture this incremental amount.

#### 4.4 Bid/offer reserve

Banks are expected to calculate a bid/offer reserve for inclusion in their accounts. This reserve is intended to measure the cost of exiting their positions.

Banks should assess the impact on bid/offer spreads arising from the Liquids stress, applying the level of granularity for this analysis that they would apply to their own, internal analysis, and using their own method. The loss should be reported in the bid/offer entry of the 'Market Risk Stressed P&L — TEMPLATE'. In addition, however, banks are expected to include in their assessment of specific illiquid positions any changes in bid-offer spreads and any pricing model valuation adjustments.

## 5 Counterparty risk default stress

This section discusses counterparty default loss, which comprises two parts: portfolio-wide default losses across particular cohorts of uncollateralised small and medium-sized enterprise (SME) clients, and additional losses arising from the default of specifically named, large counterparties that are deemed to be vulnerable to default under the stress scenario. The Bank will carefully assess the appropriateness of firms' choices of which counterparties to default under the stress scenario (both in terms of SME sector and specific names).

### 5.1 Portfolio default losses

Regarding portfolio losses, banks are expected to:

- Identify their most significant geographical SME cohort exposure under the stress scenario;<sup>(1)</sup>
- For this cohort, use the stressed PD and LGD from the Banking Book stress test analysis. Specifically, banks should use the default rate (for PDs, and using the one-year PD) and severity rate (for LGDs) consistent with the projection of impairments in the Banking Book;
- Estimate the expected loss from the cohort as the proportion of the CVA implied by the PD and LGD and deduct this from the cohort loss under the stress scenario;
- Estimate loss based on a one-year shock followed by immediate default at the end of the first year of the stress scenario and with no further losses beyond the one year point.

### 5.2 Specific name default losses

Banks are also expected to treat a number of specifically named, vulnerable counterparties as defaulting under the stress scenario, as described in this section. The approach to determining the size of the default loss varies according to whether a bank's positions with its client are collateralised or uncollateralised. Banks should determine specific default losses as follows:

- For uncollateralised counterparty losses, banks should:
  - Estimate default exposure by applying one-year market risk factor shocks and assuming the default occurs at the end of the one-year period (and with no additional losses beyond the one-year point);
  - Identify and rank their top ten Asian exposures under the stress scenario;
  - From this list, default at least the two most vulnerable counterparties. A bank should default more than two if it deems that more than two names are likely to default under the scenario;
  - In respect of European counterparties, perform the same exercise, but default at least the most vulnerable from the top ten;
  - To calculate default losses, banks should use the severity rate from the Banking Book analysis to inform their choice of LGD, with appropriate consideration of the specific name being defaulted.
- For collateralised counterparty losses, banks should:
  - Estimate default exposure for each counterparty on the assumption that the counterparty's trades will be closed out and that the market risk arising from the collateral will be neutralised;
  - Assess the total time to close out open positions per counterparty (including allowance for any delays in seizing the collateral) when determining the market risk shocks that should be applied to the collateral;
  - Identify and rank their global top 20 exposures under the stress scenario and default at least the two most vulnerable;
  - Assume that no further margin calls are either made or honoured;

(1) In this context, the significance of a cohort should be judged in terms of both vulnerability and materiality of exposure under the stress scenario.

- Banks should use the severity rate from the Banking Book analysis to inform their choice of LGD, with appropriate consideration of the specific name being defaulted.

Where a name is treated as having defaulted, no additional impact on the market due to the default of that name need be modelled, and the pre-stress CVA should be deducted.

## 6 Revenue and cost projections

Banks are expected to calculate baseline and stress scenario income and expense projections for their investment banking business, where relevant.<sup>(1)</sup> As well as providing these projections for their entire investment banking business (via the 'Revenues & Costs for Investment Banking Divisions (Baseline & Stressed) — TEMPLATE v.2'), banks should provide analysis for the individual business lines that comprise the investment banking business and provide a split by geographical region.

Baseline scenario income and expense projections should reflect plausible execution of a bank's business plan. Similarly, the stress scenario income and expense projections should reflect a plausible execution of a bank's business plan under the stress scenario; or, if execution of the business plan would not be plausible under the stress scenario, the projections should reflect the execution of a plausible variation to its business plan.

Banks should assume for the baseline scenario revenue projections that market volumes are similar to current volumes, and that volumes become lower under the stress scenario as a result of reduced economic activity. Banks should not assume an increase in revenues, as was seen in some business lines in the years following the Lehman's default. Neither should banks assume that there is any reduction in the aggregate investment banking sector capacity as a consequence of the stress scenario.

## 7 Available For Sale (AFS) and Fair Value Option (FVO) positions

Losses for AFS and FVO positions under the stress scenario should be calculated with respect to each of the five years of the scenario; specifically, these positions should be revalued five times, once for each year-end of the scenario.

In constructing the stress scenario to be applied to the AFS and FVO positions, banks are expected to refer to:

- The macro scenario, published in 'Key elements of the 2015 stress test'; and 'Variable paths for the 2015 stress test', which provide full five-year paths for a small number of the market risk factors relevant to AFS and FVO positions;

- The 'Traded risk shocks' tab of the 'Traded risk and structured finance scenario for the 2015 stress test', which provides more detailed risk factor shocks for the first year of the scenario, for more of the risk factors relevant to AFS and FVO positions.

Banks are expected to infer from these parts of the Bank stress scenario the complete five-year stress scenario that should be applied to AFS and FVO positions.

Calculation of losses for the AFS and FVO positions should be conducted in two stages:

1. Banks should re-value the positions they held as at 31 December 2014 five times, once at each year-end, and thereby produce P&L projections for each of the five years. In calculating the valuations for each year, banks should not age nor change any of the positions. For instance, if a bank holds a ten-year gilt this position should be re-valued each year-end as a ten-year gilt; it should not be re-valued in year one of the stress scenario as a nine-year gilt;
2. For businesses where a bank makes material changes to the balance sheet in the stress scenario in such a way as to impinge on the AFS and FVO books, the bank should make corresponding adjustments to the P&L calculated under step 1. However, banks should not adjust individual positions in the AFS and FVO books.

Where banks wish to make material changes to the weightings of the constituents of the LAB in response to any changes in regulation, these should be identified and their impact noted.

Where banks have in place written procedures requiring the sell down of foreign currency P&L from AFS/FVO positions, then banks should follow these procedures in their stress test calculation. This is the only type of re-hedging permitted in stress testing AFS/FVO positions.

Note the following points of clarification regarding the treatment of the default risk of AFS and FVO positions:

1. The 'Counterparty Credit Risk Losses — TEMPLATE' only covers derivative and Security Financing Transaction (SFT) counterparty defaults, and excludes both lending and issuer defaults on bond and equity holdings. Also excluded are positions where the loan is designated at fair value under FVO. No default losses should therefore be reported in the counterparty template for AFS and FVO assets. These should instead be reported in the 'Default Loss' tab of the AFS and FVO template;

<sup>(1)</sup> The definition of the investment banking business per bank has been provided to banks under separate guidance.

2. However, counterparty default losses on derivative hedges to AFS and FVO items should be reported in 'Counterparty Credit Risk Losses — TEMPLATE', as this template covers all Trading Book and Banking Book derivatives;
3. Unlike market risk losses on AFS and FVO positions, which are allocated across the full five years of the stress scenario, default losses for AFS and FVO positions should be allocated to year one of the stress scenario.

## 8 Risk-Weighted Assets (RWA) projections

Banks should submit information on their projected RWAs under the baseline and stress scenarios for each year-end date over the time horizon via the following two structured data templates:

- 'Market Risk and CVA RWA — TEMPLATE v.2'
- 'Counterparty Credit Risk RWAs — TEMPLATE v.2'

The 'Market Risk and CVA RWA — TEMPLATE v.2' captures projected capital requirements for both market risk and CVA risk, while 'Counterparty Credit Risk RWAs — TEMPLATE v.2' captures projected capital requirements for counterparty default risk.

### 8.1 General guidance

RWA projections (whether per the baseline scenario or per the stress scenario) should:

- Be consistent with the scenario as at the year-end calculation dates;
- Reflect a plausible execution of a bank's business plan under the stress scenario; otherwise, the projections should reflect plausible variation to the bank's business plan, where these variations are clearly identified. In particular, projections should reflect:
  - The business plan's balance sheet and income and expense growth assumptions. Specifically, an increase in projected balance sheet size should be reflected in an increase in RWAs. Similarly, a bank's plans to increase risk appetite should be reflected in an increase in RWAs;
  - The bearing of the stress scenario on a bank's ability to execute its business plans.

### 8.2 Specific guidance

Further details of the methodology that banks are expected to apply in the production of RWA projections under the baseline and stress scenarios are provided in Annex C.

## Annex A

### Clarifications and exceptions to traded risk stress test scope

Clarifications and exceptions to the scope of the traded risk stress test are provided below:

1. Where a position has a prudential filter that eliminates its impact from capital, then such a position should be omitted in line with the filtering applied in the capital treatment;
2. Securitisations (per the CRR Chapter 5 definition) and covered bonds are excluded from the traded risk stress test (since they are part of the credit stress test) but any non-Chapter 5 hedges to these positions should be included;
3. Securities financing transactions held at amortised cost on the Banking Book should be included for the purpose of calculating counterparty default losses. This includes all collateral types, even Chapter 5 securities. For clarity, all other types of amortised cost lending are excluded, as they will be captured via the Banking Book stress test;
4. Hedges to accrual accounted loans are excluded;
5. Equity, bond, loan and pre-securitisation syndication pipelines that are FVTPL should be included, as well as all FVTPL hedges against these commitments. In this context, loan commitments refer to conditional agreements to proceed to full loan documentation, where the commitment has a fair value, but is not yet fully documented or funded. An example of equity commitment risk would be the underwriting of rights issues. Pre-securitisation syndication pipeline refers to whole loans warehousing, gestation repo, or other pre-issuance activity where the associated exposure is FVTPL and not subject to amortised cost accounting; if accounted for at amortised cost, then the exposures should be excluded. Where the activity described in this point is on the Trading Book, it should be included in the 'Market Risk Stressed P&L — TEMPLATE'. Where the exposure is FVTPL but on the Banking Book, and does not fit into one of the templates, then it should be reported as an unstructured data item supplementary to the templates.

## Annex B

### Guidance regarding possible use of the FDSF market risk template

Banks may find the FDSF market risk template for February 2015 useful in providing part of the market risk loss figure that is generated under the stress scenario.<sup>(1)</sup> Banks are permitted to use this FDSF market risk template. However, if banks elect to use the template, they should be able to demonstrate that the figures used provide a materially accurate representation of the outcome of the 2015 traded risk stress test. Specifically, banks should be mindful of the following potential inaccuracies associated with such use of the FDSF template:

- For a particular risk factor, the shock specified in the 2015 stress scenario may be outside the range of pre-defined shocks included in the FDSF template and extrapolation from these pre-defined shock impacts may produce a materially inaccurate loss figure;
- Similarly, while the shock specified in the stress scenario may be within the range of pre-defined shocks included in the FDSF template, it may be far from any particular shock in the template and interpolation may produce a materially inaccurate loss figure;<sup>(2)</sup>
- Certain cross-risk-factor P&L impacts may not be well represented in the FDSF template.

Banks that choose to use data from the FDSF market risk template should be mindful of the above issues and present their loss results in the Market Risk template ('Market Risk Stressed P&L — TEMPLATE') inclusive of all necessary adjustments in respect of these issues. In the descriptive analysis of the results, the numbers should be decomposed into a 'FDSF-inferred' result constructed purely from FDSF shock data, together with the variation to this result due to addressing any of the issues above (or, indeed, in respect of any other issues).

Banks that elect not to use FDSF data will, however, be expected to maintain at least the standards embodied in the FDSF template as regards risk factor granularity and P&L calculation.

(1) To be clear, it is expected that the FDSF template numbers would be relevant to the Liquids stress test component; it is not expected that they would be relevant to the Structural Liquids and Illiquids stress test components.

(2) Both the extrapolation and interpolation problems will be magnified when risk factor exposures are non-linear, as would be the case for options portfolios.

## Annex C

## Specific guidance regarding calculation of RWA scenario (baseline and stress) projections

| Risk type                | Capital component                           | Expectations regarding RWA projections  |
|--------------------------|---|---|
| Market risk              | Structural FX                               | To the extent that the scenario includes a sustained and significant change in exchange rates that are relevant to material positions held by a bank (for example, USD/GBP), the risk and capital measures are expected to be adjusted accordingly.   |
|                          | Standardised approach                       | Increases in line with projected growth in business for which capital is calculated under standard rules.   |
|                          | Value at Risk (VaR) and Stressed VaR (SVaR) | Projected combined (VaR and SVaR) capital component increases in line with increases in scenario volatility. Where projected VaR calculations are not based on a recalculation under scenarios, our expectation is that VaR-based capital increases to at least twice current SVaR when the scenario is characterised by an increase in market volatility.  |
|                          | Risk Not in VAR (RNIV)                      | Banks should produce RNIV measures consistent with the scenario. RNIVs calculated using a VaR-type methodology should be scaled in a comparable way to VaR under the scenario.<br><br>Stress-test type RNIVs should be assessed for whether their calibration is consistent with the traded risk stress scenario and, if inconsistent, should be recalibrated appropriately.  |
|                          | Incremental Risk Charge (IRC)               | A bank should adjust its IRC capital measure to be consistent with the scenario and at the very least, scale its IRC capital measure in a way that is consistent with the uplift in capital due to credit rating movements applied to comparable wholesale credit assets under the scenario.  |
|                          | Comprehensive risk measure (CRM)            | There is no expectation that modelled CRM-derived RWAs should increase as a result of the stress scenario if the credit risk floor is binding.<br><br>If the scenario results in losses against the CRM portfolio, CRM RWAs should be reduced to reflect the loss in value of the positions.  |
| CVA risk                 | Overall                                     | In respect of defaulted counterparties, there should be no corresponding reduction in CVA RWAs, as it should be assumed that the defaulted positions are replaced on a like-for-like basis. However, in respect of a highly material counterparty default (for example, the assumed default of a large uncollateralised counterparty), the potential decrease in CVA that this would occasion should be noted as a memo item.   |
|                          | Standardised method                         | Other relevant quantities that are used to calculate the CVA charge using the standardised method, for example, exposures and projected credit rating downgrades under the scenario, should inform the projected capital component.<br><br>Increases in credit risk capital due to increases in risk weights arising from downward credit migration are expected to be reflected in the weights used to calculate CVA RWAs using the standardised method.   |
|                          | Advanced method                             | Stressing of other relevant quantities, namely the stressed VaR and stressed exposure calculations, should inform the stressed CVA RWA.<br><br>It is expected that the VaR component of CVA own funds approach is consistent with the market risk approach.<br><br>It is also expected that the exposure is stressed in a way that is consistent with the treatment of counterparty credit risk RWAs.<br><br>Where the scenario has an impact on credit spreads, this impact should be reflected in a change in the level of CVA RWAs.  |
| Counterparty credit risk | Collateralised counterparties               | For exposures calculated using the counterparty credit risk mark-to-market (MtM) method, there is no expectation that exposure will change; for the purposes of RWA calculation, it is assumed that collateral is received from counterparties and that margin agreements with non-defaulting counterparties will perform.<br><br>Since Internal Model Method (IMM) exposure is the maximum of current and stressed measures, there is no expectation that exposures will change, unless sustained market volatilities in the scenario are expected to be larger than those used to calibrate the stressed EEPE component of exposure. For the purposes of RWA calculation, it is assumed that collateral is received from the counterparties and the extended margin period of risk criteria are not triggered.<br><br>Risk weights are expected to be adjusted in line with the credit risk RWA calculation for all scenarios.  |
|                          | Uncollateralised counterparties             | For exposures calculated using the counterparty credit risk MtM method, projected increases in position MtM should be incorporated into the exposure.<br><br>For exposures calculated using the IMM method, projected increases in position MtM should be incorporated into the exposure.<br><br>Since IMM exposure is the maximum of current and stressed measures, there is no expectation that exposures will change in addition to stressed MtM adjustments, unless sustained market volatilities in the scenario are expected to be larger under the than those used to calibrate the current and stressed Effective Expected Positive Exposure (EEPE) component of exposure.<br><br>Projected accounting unilateral CVA (as defined in CRR Article 273 para 6) that is deducted from exposures, should be consistent with the projected accounting unilateral CVA losses as at the end-of-year reporting dates and correspond to accounting unilateral CVA utilised for exposure at default (EAD) offset.<br><br>Increased projected CVAs can provide RWA relief, if the bank calculates projected accounting CVA on a counterparty-specific basis. Otherwise, for the purposes of the RWA projection, we would not expect the RWA-mitigating impact of increased projected accounting CVA to be reflected in the projected RWAs.<br><br>The Bank permits banks that calculate counterparty level projected accounting unilateral CVAs to reduce EAD for the calculation of projected RWAs under the scenarios. |

## Glossary

**AFS** – Available For Sale.  
**AVA** – Additional Valuation Adjustment.  
**CDS** – credit default swap.  
**CRM** – Comprehensive Risk Measure.  
**CRR** – Capital Requirements Regulation.  
**CVA** – Credit Valuation Adjustment.  
**DVA** – Debit Valuation Adjustment.  
**EAD** – Exposure at Default.  
**EEPE** – Effective Expected Positive Exposure.  
**FDSF** – Firm Data Submission Framework.  
**FVO** – Fair Value Option.  
**FVTPL** – Fair Value Through P&L.  
**IMM** – Internal Model Method.  
**IRC** – Incremental Risk Charge.  
**LAB** – Liquid Asset Buffer.  
**LGD** – loss given default.  
**MtM** – mark-to-market.  
**P&L** – profit and loss.  
**PD** – probability of default.  
**PVA** – Prudent Valuation Adjustment.  
**RNIV** – Risks Not in VaR.  
**RWA** – Risk-Weighted Assets.  
**SFT** – securities financing transaction.  
**SME** – small and medium-sized enterprises.  
**SVaR** – Stressed Value at Risk.  
**VaR** – Value at Risk.