



BANK OF ENGLAND

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# Stress testing the UK banking system: 2018 guidance for participating banks and building societies

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## 1 Background

The Bank of England's (hereafter 'the Bank') concurrent stress-testing framework was established following a Recommendation from the Financial Policy Committee (FPC) in March 2013.<sup>(1)</sup> The main purpose of the stress-testing framework is to provide a forward-looking, quantitative assessment of the capital adequacy of the UK banking system as a whole, and individual institutions within it. In doing so, it aims to support both the FPC and Prudential Regulation Authority (PRA) in meeting their statutory objectives.<sup>(2)</sup>

In 2015 the framework was developed further in 'The Bank of England's approach to stress testing the UK banking system',<sup>(3)</sup> and in 2016 the Bank implemented its first annual cyclical scenario (ACS).

In 2018 the Bank is running the ACS for the third time. Further details on the 2018 baseline scenario and ACS are provided in the 'Key Elements of the 2018 Stress Test' (hereafter 'the Key Elements').<sup>(4)</sup>

The 2018 stress test and methodology have been designed and calibrated by Bank staff, under the guidance of the FPC and Prudential Regulation Committee (PRC). Ultimately, the results of the stress test will inform both system-wide policy interventions by the FPC and bank-specific supervisory actions by the PRA.

## 2 Objectives of this guidance

This document provides participating banks with guidance for conducting their own analysis for the 2018 stress test.<sup>(5)</sup> Detailed guidance related to the traded risk element of the test is provided in the annex.

The templates used for collecting data, along with the document setting out definitions of data items, have been provided to participating banks. The Key Elements, 'Stress testing the UK banking system: variable paths for the 2018 stress test' (hereafter 'Variable paths for the 2018 stress test') and 'Stress testing the UK banking system: traded risk scenario for the 2018 stress test (hereafter 'Traded risk scenario for the 2018 stress test') are also published separately.<sup>(6)</sup> These documents should be read in conjunction with this guidance.

This document does not cover the full approach taken by the Bank to arrive at the final stress-test results. In addition to banks' own analysis, Bank staff will perform analysis to independently assess the impact of the baseline and stress scenarios on banks' profitability and capital and leverage ratios. Accordingly, the final stress-test results may differ from banks' own submissions.

## 3 Banks participating in the 2018 stress test

The 2018 stress test will cover seven major UK banks and building societies (hereafter 'banks'): Barclays, HSBC, Lloyds Banking Group, Nationwide, The Royal Bank of Scotland Group, Santander UK Group Holdings plc and Standard Chartered. This is the same group of banks that participated in the 2017 stress test. Unless agreed otherwise with the Bank, participating banks should complete all aspects of the 2018 stress test.

## 4 Scope of consolidation

Banks should provide results at the highest level of UK consolidation. The scope of consolidation is the perimeter of the banking group as defined by the Capital Requirements Regulation (CRR)/Capital Requirements Directive (CRD) IV, which includes investment banks. Insurance activities are excluded, although banks are expected to assess the impact of the scenarios on their insurance activities and model the impact on any dividend streams, significant investments or minority interest capital deductions and risk weightings.

## 5 Definitions of capital and leverage ratios

Banks are expected to submit starting point capital positions and projected capital positions in the baseline and stress scenarios. The adequacy of banks' capital resources will be judged with reference to risk-weighted capital ratios and leverage ratios. Banks should submit projections of both risk-weighted capital ratios and leverage ratios using the following definitions:

- Common equity Tier 1 (CET1), Tier 1 and Total capital ratios as defined in the CRR; and
- End-point Tier 1 leverage ratio as per the UK leverage ratio framework as defined in the Leverage Ratio part of the PRA Rulebook.<sup>(7)</sup>

IFRS 9 came into force on 1 January 2018. The 2018 exercise is therefore the first full stress test run under the new accounting standard. Banks are required to apply IFRS 9 as of the starting date of their first financial year starting on or after 1 January 2018. The application of IFRS 9 may lead to a significant increase in expected credit loss provisions in a downturn and consequently to a decrease in CET1 capital.

(1) See 'Financial Policy Committee statement from its policy meeting, 19 March 2013'; [www.bankofengland.co.uk/statement/fpc/2013/financial-policy-committee-statement-march-2013](http://www.bankofengland.co.uk/statement/fpc/2013/financial-policy-committee-statement-march-2013).

(2) Unless otherwise stated, references to the Bank or Bank of England throughout this document include the PRA.

(3) See [www.bankofengland.co.uk/news/2015/october/boe-publishes-approach-to-stress-testing-the-uk-banking-system](http://www.bankofengland.co.uk/news/2015/october/boe-publishes-approach-to-stress-testing-the-uk-banking-system).

(4) See [www.bankofengland.co.uk/stress-testing](http://www.bankofengland.co.uk/stress-testing).

(5) The term 'bank' is used throughout this document to refer to banks and building societies.

(6) See [www.bankofengland.co.uk/stress-testing](http://www.bankofengland.co.uk/stress-testing).

(7) See [www.prarulebook.co.uk/rulebook/Content/Part/319681/30-01-2018](http://www.prarulebook.co.uk/rulebook/Content/Part/319681/30-01-2018).

Transitional arrangements, which mitigate, on a dynamic basis, the impact on regulatory capital of IFRS 9-related increases in provisions, have been agreed internationally and for use in the UK. Firms were encouraged to use the transitional arrangements from the first day of IFRS 9 application.<sup>(8)</sup>

Firms using transitional arrangements are required to adjust the calculations of regulatory capital/leverage which are directly affected by expected credit loss provisions, as prescribed by the CRR.<sup>(9)</sup>

The Bank will collect both IFRS 9 'transitional' and 'fully loaded' capital resources data for the 2018 stress test.

## 6 Publication of results

The results of the 2018 ACS will be published in 2018 Q4. This year the aggregate results will be incorporated into the Bank's *Financial Stability Report*, with bank-specific disclosures published separately on the Bank of England website. As in previous years, the Bank is committed to disclosing the information necessary to explain the results of the ACS. This will include at least as much bank-specific information about the headline impact of the stress on capital adequacy than was in the 2017 ACS results publication.

## 7 Submission

Submission instructions are outlined in the Operating Model for the Reporting of Stress Test Data that was communicated to all banks with the data request in January 2018. These instructions need to be followed for both structured and unstructured data requests.

## 8 Time horizon and reference date

The 2018 ACS will cover a five-year horizon. Unless otherwise agreed, the reference date will be 31 December 2017. Exceptions include some traded risk elements (see Traded risk annex), as well as some capital elements and IFRS 9 affected balance sheet elements, as per guidance previously provided to firms in January 2018 alongside Core Templates for the stress test. Banks are expected to submit projections as at 31 December for each subsequent year end.

## 9 Macroeconomic scenario

Banks should follow the guidance outlined in this section to assess the impact of the baseline and annual cyclical scenarios. In order to do this, it is likely that banks will need to expand the set of macroeconomic and financial variables provided alongside the Key Elements document. For example, banks may need to derive variable paths for some additional macroeconomic variables (such as different measures of

aggregate household income gearing) or to expand the scenario paths across a broader range of geographies, or at a regional level within geographies. In doing so, banks should adhere to certain standards. In particular, banks are expected to:

- Be able to explain the calibration of any key additional variables in both an absolute sense and relative to their previous ACS stress-test submissions; and
- Use robust statistical techniques as a starting point to derive additional variable paths. These should be calibrated using long periods of historical data in order to capture a full credit cycle, and should ensure that any correlation assumptions are consistent with the negative tail of potential outcomes. Banks are expected to deviate from purely statistical techniques if, for example, there is a lack of historical data that is relevant to conditions today or to account for specific conditions envisaged as part of the stress scenario. Where banks deviate from such statistical techniques, they are expected to explain how and why such judgements were made (see Section 13).

In general, given that the 2018 ACS is very similar to the 2017 ACS, the Bank expects participating banks to produce similar scenario expansions. That said, banks which received feedback on the way they expanded the 2017 ACS should take that feedback on when producing their 2018 ACS projections.

## 10 Guidance on modelling risks and income

### 10.1 Balance sheet modelling

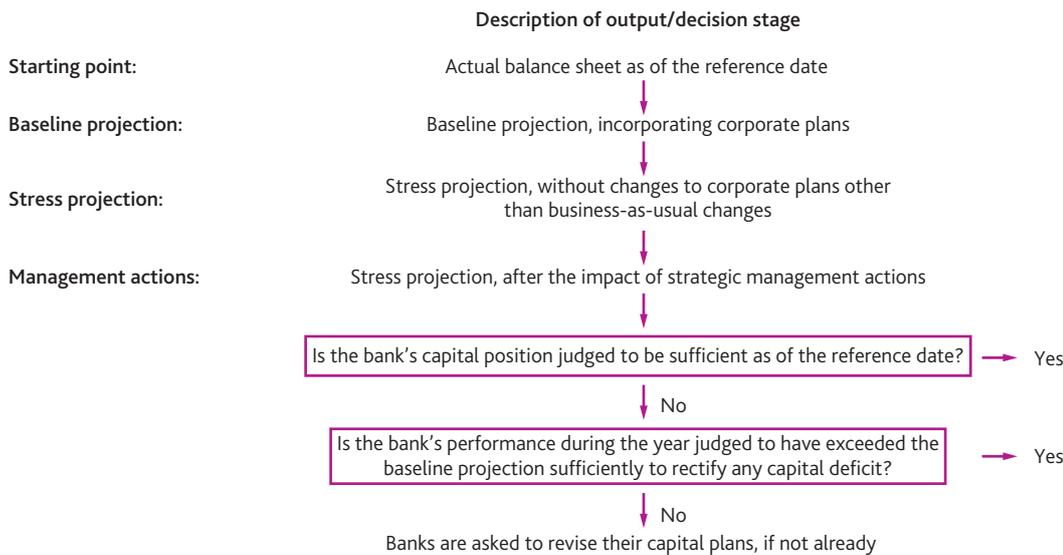
Banks are expected to report baseline and stress projections using their reporting currency. Banks should use actual balance sheet data at the reference date as the starting point for their submissions. After that point, banks should submit projections based on the baseline and stress scenarios (**Figure 1**).

The macroeconomic scenarios begin in 2018 Q1. Banks should not replace projections with actuals where data for actuals exist. Submission of actual rather than projected data should only be considered selectively and in exceptional circumstances, where:

- There is a sale of a material asset scheduled, and completed, immediately after the end of 2017.
- There are assets for which a sale has been agreed at the end of 2017 such that: the timetable for sale was agreed; the contractual terms and price were certain; the contractual terms were binding under a stress; and there is evidence that the counterparty could honour the contract under stress.

(8) See [www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2017/letter-from-sam-woods-on-transitional-arrangements-for-capital-impact-of-ifrs9.pdf](http://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2017/letter-from-sam-woods-on-transitional-arrangements-for-capital-impact-of-ifrs9.pdf).

(9) Please see Article 473a of the Capital Requirements Regulation.

**Figure 1** Stylised stages of the stress-testing process

In these exceptional cases, the Bank may allow banks to include the asset in their data for the end of 2017 only, and for the bank to exclude the asset from the projections submitted as part of the detailed data templates. The same principles, in reverse, should be followed for asset purchases.

The 2018 ACS will be performed on a dynamic balance sheet basis. This means that banks' projections will take into account changes in the size and the composition of their balance sheet, both in the baseline and in the stress scenario.

Banks' submissions should reflect their corporate plans, including any costs and business changes. These should be adjusted appropriately to reflect changes in the expected performance and execution of these plans in each scenario, including business-as-usual changes in the stress scenario (also see Section 11).

Banks should clearly set out their assumptions for forecast balance sheet growth or contraction in the baseline and stress scenarios. These assumptions should be consistent with the macroeconomic scenarios and variable paths for lending provided. To ensure comparability and consistency between banks, the Bank is providing the following guidance on the overall approach to balance sheet growth:

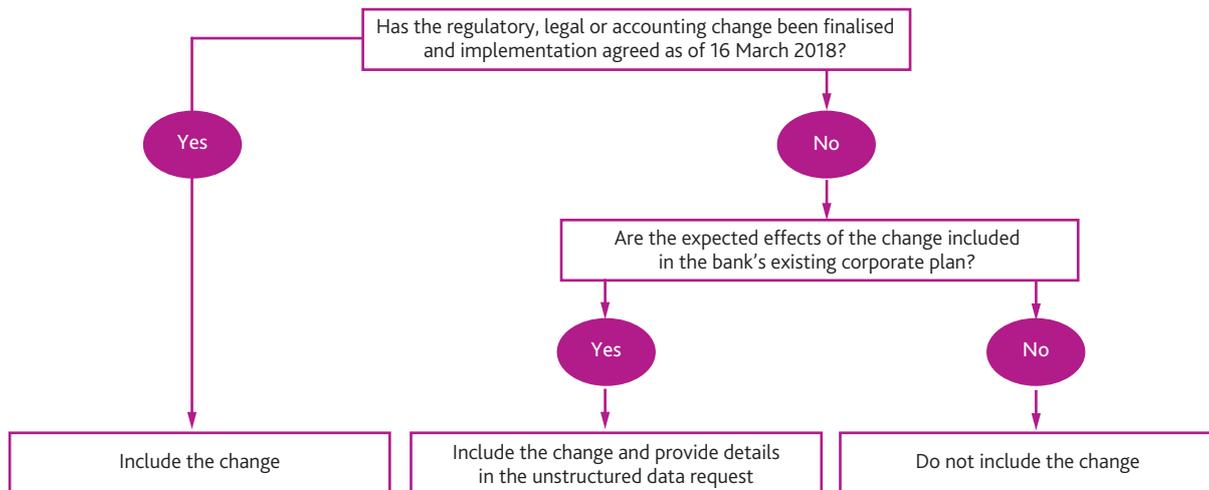
- To the extent that a bank's corporate plan includes a reduction in the size of their balance sheet (or certain portfolios within it), either via outright asset sales or a reduction in new business, they may incorporate that reduction into their baseline and stress projections.<sup>(10)</sup>
- **Where the Bank has provided a variable path for lending** in the Variables paths for the 2018 stress test, banks' market share of the stock of lending in each year of the stress

scenario should be at least as large as their corresponding market share in the baseline scenario. Banks should calculate their market share in each year of the baseline and stress for each of the lending categories by dividing their own stock of lending by the overall stock of lending as implied by the published growth rates. The overall stocks of lending implied by the published growth rates assume there are no provisions or write-offs during the baseline and stress periods. Similarly, banks should exclude the impact of provisions and write-offs on both the projected stocks of own lending and overall market lending for the purposes of calculating their market shares.<sup>(11)</sup>

- **Where the Bank has not provided a variable path for lending and where banks have assumed positive asset growth in the baseline scenario**, banks may assume slower growth in the stress scenario but should not assume a contraction of these portfolios except as a result of higher impairments. Banks can report the impact of reducing these portfolios relative to their end-2017 position as a potential management action (Section 11).
- **Where the Bank has not provided a variable path for lending and where banks have assumed a contraction in the size of assets in the baseline scenario**, relative to the end of 2017, banks should not assume further contraction in the stress scenario except as a result of higher impairments. Banks can report the impact of reducing these portfolios further as a potential management action (Section 11).

<sup>(10)</sup> Balance sheet plans in the baseline scenario are not expected to differ materially from those in a bank's most recent corporate plan.

<sup>(11)</sup> For more information see the 'Sources and definitions' tab in the variable paths document, footnotes 3 to 6; [www.bankofengland.co.uk/-/media/boe/files/stress-testing/2018/stress-testing-the-uk-banking-system-variable-paths-for-the-2018-scenario](http://www.bankofengland.co.uk/-/media/boe/files/stress-testing/2018/stress-testing-the-uk-banking-system-variable-paths-for-the-2018-scenario).

**Figure 2** Stylised guidance for including the effects of regulatory, legal and accounting changes in banks' submissions<sup>(a)</sup>

(a) This does not cover changes to internal models that are subject to regulatory approval — see Sections 10.3 and 10.4.

- Banks are expected to consider the impact of the stress scenario on the timing and price of any planned asset sales that are included in their baseline submissions and should document the reasoning behind the impact. In particular, banks are expected to provide clear supporting evidence in cases where the bank has assumed that an asset disposal in the stress scenario would improve the bank's capital position.

Banks should project the countercyclical capital buffer (CCyB) for all relevant jurisdictions in baseline and stress. Banks should project CCyB rates based on statements provided in those jurisdictions, or with reference to the Basel Committee's guidance for national authorities operating the CCyB.<sup>(12)</sup> Banks should assume that the UK CCyB rate is zero in the ACS, consistent with the hurdle rate framework and previous FPC statements on the nature of the buffer.

Banks should include the effects of regulatory, legal or accounting changes in their projections where final requirements and implementation or effective dates have been announced or endorsed publicly by the relevant authority on or before 16 March 2018. Where relevant, these changes should be modelled in line with their respective implementation dates. Banks' projections should also reflect the expected effects of such changes where requirements or implementation details have not been finalised, to the extent that these effects are included in banks' existing corporate plans.

Banks should include in their projections the expected effects of their current view of ring-fencing arrangements. Banks are not required to provide separate submissions for their ring-fenced and non-ring-fenced entities in the concurrent stress-testing exercise, but their projections should include the expected costs associated with structural reform (one-off and

ongoing), and banks should be able to explain any impact of structural reform on their business planning assumptions.

Banks that have modelled the impacts of future regulatory, legal and accounting changes that are not finalised should clearly identify these as part of the unstructured data request, and should include details of the impact of the change and their rationale for including the change in their projections. **Figure 2** summarises this overall approach.

## 10.2 Credit risk and IFRS 9

Credit risk is the primary area affected by the introduction of IFRS 9, where banks will need to reflect the change from incurred loss provisioning to Expected Credit Loss (ECL) provisioning. While the accounting framework will not affect ultimate crystallised losses, the move to a forward-looking regime will affect the timing of loss recognition; we expect to see provisions raised earlier under IFRS 9 than under the previous IAS 39 standard.

IFRS 9 requires banks to incorporate forward-looking macroeconomic information. The standard also requires consideration of a 'range of possible outcomes'. These requirements evidently overlap with the concepts of stress testing, where economic scenario information is also used. Because of this overlap, we have introduced two key methodological principles for IFRS 9 provisioning calculation in the stress test:

- Perfect foresight:** for the purpose of provision calculation (both in assessing Significant Increase in Credit Risk and the calculation of ECL) banks should assume that they are able to accurately predict the five years of economic and financial market data in the ACS from day one; and

(12) [www.bis.org/publ/bcbs187.pdf](http://www.bis.org/publ/bcbs187.pdf).

- (ii) **Single scenario:** for the purpose of provision calculation, banks should ascribe a 100% probability weight to the ACS.

These two principles have three aims. First, we aim to reflect the core motivation behind the revisions to the accounting standard, namely that provisions are raised earlier, specifically by taking account of potential economic stresses. Second, we are looking to avoid unnecessary complexity, particularly where there would be no tangible benefit from increased complexity. Third, we seek to ensure a level playing field for participating banks.

**The two methodological principles above are solely for the purposes of the 2018 stress test. They are not intended to be used as a guide in the context of financial reporting.**

The baseline and ACS stress scenarios will need to be extended beyond the published five-year horizon for the purpose of modelling IFRS 9 provisions. Firms should use the following rules to do so:

- For both the baseline and stress projections, all variables should return to the 2030 levels or quarterly growth rates specified in the variable path spreadsheet provided by the Bank of England;
- The path between 2022 (the last data point in the Bank of England projections) and 2030 should be linear for each variable; and
- Each variable should remain at the specified level or quarterly growth rate from 2030 onwards.
- For variables not provided in the Bank's variable paths spreadsheet, firms should follow the normal guidelines on scenario expansions (see Section 9).

Information regarding the capital transitional arrangements for IFRS 9 can be found in Section 5 of this document.

We will confirm the approach for IFRS 9 in the 2019 stress test in due course.

### 10.3 General credit risk

Banks should use their own stress-testing methodologies to translate the macroeconomic scenarios provided into projections for impairments and risk-weighted assets (RWAs), categorised by both asset class and country of exposure. In doing so, banks are expected to follow the high-level guidance outlined in Section 9.

When modelling the impact of the rise in interest rates on impairments, banks should take into account a borrower's total borrowing exposure. For example, banks might consider

whether borrowers exposed to interest rate risk on secured mortgage debt would default on unsecured or other debt as a result of the rise in interest rates. Banks' unstructured submissions should explain how borrowers' cross-product holdings have been captured.

Banks should provide details of the assumed impact of any unwind of acquisition-related fair value adjustments relating to impairment losses on loans and advances as part of the unstructured data request, split by asset class and year. Banks should describe any material assumptions used to determine the timing of that impact.

In line with the calculation of capital requirements for all risks:

- Banks should not assume changes to their approach to calculating credit risk capital requirements after the scenario start point, whether anticipated or realised (eg adoption of, or changes to, IRB models) unless by prior agreement with the Bank; and
- Banks' baseline projections should be consistent with the credible execution of their business plans in the baseline scenario. Similarly, banks' RWA projections in the stress scenario should take into account the impact of the stress scenario on the risk profile of the positions associated with these RWAs and of the bank's ability to execute its business plan.

Banks are expected to articulate the following judgements clearly and with justification as part of the unstructured data request (see Section 13):

- Any choices about statistical or judgement-based approaches used to produce banks' projections, including evidence of the effectiveness of their governance process. Governance processes should include effective challenge from senior officials and the use of expert judgement to confirm or adjust key assumptions used within their models or affecting the outputs of models; and
- Assumptions affecting banks' forbearance practices or provisioning model assumptions that have been included within their projections.

### 10.4 Traded risk

This section provides banks with summary guidance for calculating stressed losses, income statement projections and RWAs for fair-value positions that are the subject of the traded risk scenario. For the 2018 stress test, the Bank has produced a set of financial variable shocks that can be applied to such positions that are consistent with the ACS approach.<sup>(13)</sup> More detailed guidance is provided in the annex.

<sup>(13)</sup> For the Traded risk scenario, see [www.bankofengland.co.uk/-/media/boe/files/stress-testing/2018/stress-testing-the-uk-banking-system-traded-risk-and-structured-finance-scenario-2018](http://www.bankofengland.co.uk/-/media/boe/files/stress-testing/2018/stress-testing-the-uk-banking-system-traded-risk-and-structured-finance-scenario-2018).

The approach covers all fair value positions on the group balance sheet, excluding securitisation positions and covered bonds. In so doing it extends beyond regulatory Trading Book positions to include other fair-valued instruments such as the Liquid Asset Buffer.

Banks are expected to assess the impact on both fair and prudent value under stress due to: market risk exposures arising in both the Trading and Banking Books; the default of vulnerable counterparties; changes to valuation adjustments such as the increase in Credit Valuation Adjustment (CVA) due to the deterioration in the creditworthiness of counterparties; and regulatory adjustments under stress such as the impact on the Prudent Valuation Adjustment (PVA).<sup>(14)</sup>

In addition, banks are expected to assess the franchise impacts on revenues and costs for their investment banking activities (a principal source of trading income). Banks should also assess the impact on capital requirements by projecting their RWAs for market risk, CVA risk and counterparty credit risk. Notwithstanding Section 10.1, banks are expected to include the impact of regulatory changes (ie the Fundamental Review of the Trading Book) where the terms are largely known and the effects are included in their corporate plan, but are not allowed to include benefits from models that have not been approved before 16 March 2018 except by prior agreement with the Bank.

### 10.5 Structured finance

For the purpose of the 2018 stress test, structured finance (covering Trading Book and non-Trading Book assets) includes the following assets:

- Exposures to third-party cash or synthetic securitisations, including liquidity lines for securitisation transactions, as specified in Chapter 5 Part 3 of the CRR;
- Exposures to own-originated securitisations which have achieved significant risk transfer; and
- Exposures to third-party covered bonds that are risk weighted as per CRR Articles 120, 121 or 129.

The structured finance component should exclude: securitisations issued or guaranteed by international organisations, multilateral development banks, governments, or government agencies; covered bond exposures capitalised under Value-at-Risk (VaR); and derivatives related to eligible assets that are not capitalised under the relevant securitisation or covered bond framework as per the CRR.

Own-originated securitisations should only be treated as securitisations during the period that these are expected to achieve significant risk transfer. If banks expect this to cease during the scenario horizon, then parameters pertaining to the

underlying assets should be considered for the parts of banks' submissions relating to the remainder of the scenario horizon.

Banks should provide details of these considerations as additional comments as part of the relevant structured finance data templates.

For individual structured finance assets, banks should produce projections of the following variables for each year of each scenario:

- Regulatory carry value (RCV), which should be gross of impairment provision. For Fair Value Through Other Comprehensive Income (FVOCI), RCV should be net of OCI reserve balance. For Fair Value Through Profit or Loss (FVTPL) assets, RCV should be net of market value movements;
- Incremental market value movements (ie the annual change in market value) for FVOCI and FVTPL assets;
- Annual impairment charges taking into account the impact of credit enhancements and other structural features;
- OCI reserve balances (ie the balance sheet value of OCI reserves), which should be consistent with projected market value movements and impairment charges;
- Expected losses (Expected Loss Regulatory), for assets whose risk weights are calculated using the internal rating based (IRB) approach, over the full economic life of the asset (re-estimated at the end of each projection year); and
- RWAs should be calculated after impairment charges and market value movements have been estimated.

Banks should use their own stress-testing methodologies to translate the macroeconomic scenarios provided into projections for the variables detailed above. In doing so, banks are expected to follow the same high-level guidance set out in Section 9. Moreover, banks should not assume that there is a material lag between the macroeconomic shock materialising and credit quality deteriorating that might delay the impact of the scenario.

Banks are expected to articulate the following judgements clearly and with justification as part of the unstructured data request (see Section 13):

- Any choices about statistical or judgement-based approaches used to produce banks' projections, including evidence of the effectiveness of their governance process.

<sup>(14)</sup> The scope of the PVA has increased to include all categories in the 2018 stress test. See the Traded risk annex for details.

Governance processes should include effective challenge from senior officials and the use of expert judgement to confirm or adjust key assumptions used within their models or affecting the outputs of models; and

- Any choices regarding asset prepayment rate assumptions, default rate assumptions and other cash flow related assumptions.

As part of the unstructured data request, banks should provide details of the assumed impact of any unwind of acquisition-related fair value adjustments relating to impairment losses, split by asset class and year. Banks should describe any material assumptions used to determine the timing of that impact.

For the purpose of the 2018 stress test, projections for any structured finance positions included in the Trading Book should be made using a firm's stress-testing methodology and the relevant macroeconomic scenario and not using the traded risk scenario.

### 10.6 Interest income and interest expense

Banks should assess the vulnerability of projected net interest income (NII) under the baseline and stress scenarios. Banks will be expected to demonstrate that they have analysed the potential impacts of the interest rate and economic environments set out in the Key Elements document in detail. In particular:

- Banks should critically analyse any potential benefit from rising interest rates, and should not automatically assume that historic examples of margin-widening in a rising rate environment are applicable in the ACS;
- Banks should not assume that they will benefit from a 'flight to quality' in the stress scenario;
- Banks should consider the possible effects that reduced liquidity and higher risk premia in wholesale funding markets might have on competition in the retail saving markets and on deposit volumes and pricing; and
- Banks should also consider a range of related effects, including the likely impact of credit quality and demand when pricing assets and liabilities.

In addition, banks are expected to assess the impact of the following factors on NII in all material currencies:

- Balance sheet evolution;
- Funding mix and pricing, including consideration of liabilities issued to meet total capital requirements and minimum requirements for own funds and eligible liabilities (MREL);

- Product interest rate and margin movements;
- Foreign exchange movements; and
- Structural hedging programmes.

The data submitted should be consistent with that supplied for other workstreams and be aligned with FINREP reporting.

Banks should separately assess the impact of their liquidity position under the baseline and stress scenarios. Banks will be expected to demonstrate that they have analysed the potential impacts of the traded risk shock in the short term and movements in their balance sheet over the stress scenario in the longer term. Specifically, banks should explain if movements in their liquidity position (assets as well as projected outflows and inflows) are a result of the stress or due to any management actions taken.

Banks should separately identify and provide details of any existing use of central bank facilities (including the Bank of England's Funding for Lending Scheme, Term Funding Scheme and liquidity insurance facilities and the European Central Bank's longer-term refinancing operations). Banks that intend to make additional use of central bank facilities, in either the baseline or stress scenarios, should calculate the marginal effect on funding costs and interest expenses of using these facilities compared with wholesale market funding. This should be identified separately as a strategic management action (see Section 11).

### 10.7 Other income and costs

Banks are expected to model the impact of the baseline and stress scenarios on their 'Other income', such as income from fees and commissions on both retail and wholesale products, and how this relates to the variable paths for activity (GDP, unemployment etc).

Banks may include lower costs where there is a direct relationship with profitability and may also include business-as-usual cost reductions. However, these reductions are expected to be modest. Significant cost reductions that would require additional senior management or board decisions, such as redundancy programmes in response to a stress event, should be included as a strategic management action and should not be included as part of banks' pre-management action submissions (see Section 11). Banks should provide details of how they expect to achieve any cost reductions, including key judgements affecting their ability to achieve these, as part of the unstructured data request.

### 10.8 Operational risks and misconduct costs

Banks should project operational risk losses (excluding misconduct costs, which are covered below) and RWAs (in line with their current Pillar 1 approach). In addition banks should

**Table A** Guidance for estimating stressed projections of misconduct costs**Existing treatment of the misconduct issue**

An accounting provision has been raised. There is a high degree of certainty over the eventual cost.

An accounting provision has been raised. There is not a high degree of certainty over the eventual settlement cost. While the IAS 37 provision strikes a balance between potential upside and downside, the likelihood of adverse outcomes exceeding existing provisions is greater than remote.

An accounting provision has not been raised. While a settlement cost is not probable, there is sufficient evidence to determine a range of settlement outcomes and the possibility of a significant settlement cost is greater than remote.

An accounting provision has not been raised. Current evidence is insufficient to be able to reliably quantify any actual or potential liability, or range of liabilities, that may exist. The possibility of a significant settlement cost is greater than remote.

(a) The Bank of England accepts that for the majority of misconduct issues significant judgement over and above statistical methods is required to achieve a specified level of confidence; however, specifying a target level is believed to be the most appropriate way to achieve greater consistency in the interpretation of a 'high level of confidence'.

**Approach to modelling stressed future misconduct costs**

The stressed projection will equal the existing IAS 37 provisions.

The stressed projection shall exceed the existing IAS 37 provision. Banks are expected to provide a stressed projection, even if they are unable to reliably quantify the full range of potential outcomes, by exercising expert judgement and targeting a high level of confidence (90%)<sup>(a)</sup> of settling at or below their stressed projection.

A stressed estimate should be determined by evaluating a range of settlement outcomes and assigning probabilities to these outcomes.

A stressed projection should be determined by exercising expert judgement and targeting a high level of confidence (90%) of settling at or below the stressed projection.

provide details of the methodology used to produce these projections, in line with the guidance that accompanied the unstructured data request.

Banks should not include any additional misconduct costs beyond their end-2017 IAS 37 provisions in their baseline projections. In the stress scenario banks should include a stressed projection of all potential costs relating to known misconduct risks, in excess of existing IAS 37 provisions, allocated to time periods on a systematic basis. Banks' stressed projections of future misconduct costs should be determined, irrespective of whether a provision has been recognised, by evaluating a range of settlement outcomes and assigning probabilities to these outcomes. On a case by case basis, stressed projections are expected to exceed provisions, unless there is a high degree of certainty over the eventual cost (**Table A** provides further details).

Banks may ignore individual risks and outcomes where the likelihood of settlement is remote. However, banks should assess the need to include costs in the stressed projections to cover the possibility that, at the aggregate level, one or more remote settlement outcomes crystallise. Banks should provide the Bank with any information they have used in forming this assessment.

Misconduct costs for known issues may vary as a result of the impact of the macroeconomic stress scenario. For example, the amount of redress or damages due may depend mechanically upon market prices such as securities prices, interest rates or foreign exchange rates. Such impacts should be included in the stressed projections and identified separately in the projections template.

Banks should provide a breakdown of the stressed projection by material misconduct risks. Banks are expected to identify each risk that amounts to 10% or more of the total additional

misconduct costs each year during the stress-test horizon. Banks should also provide quantitative and qualitative information to support material assumptions underlying their stressed projections of misconduct costs. For example, where future customer redress is estimated using statistical data, banks should provide details (by vintage) of the volume and value of past business written, the proportion of business that the bank expects to pay redress for, and the average expected value of redress.

In rare cases where a bank is unable to provide a stressed projection for an individual misconduct risk due to the extent of uncertainty, banks should clarify that this is the case and provide evidence to support their assessment.

**10.9 Pension risk**

Banks are expected to apply a stress across all balance sheet assets and liabilities. This includes banks' pension schemes. Banks should therefore model the change in their pension scheme surplus or deficit in each year of the scenario, as measured using the IAS 19 accounting standard. Remeasurements of the pension scheme should flow through into 'Other Comprehensive Income' thereby affecting banks' retained earnings. Other changes to the value of pension schemes should be recorded as a cost within banks' income statement. Banks should also take account of the restriction that disallows any pension scheme surplus when calculating capital resources.

This restriction means that banks will need to consider how contributions to a pension scheme might change over the projected period, since additional contributions to a scheme already in accounting surplus will act to reduce capital resources. For UK schemes, it will be necessary to estimate a future funding position and recovery plan. The sophistication required for this estimate will depend on the timing of the expected future triennial valuations and likely interaction with

the scenario. This in turn will require particular care that the contributions to the scheme are consistent with projections of the non-pensions items of the balance sheet.

Banks should take appropriate account of the scenario and narrative when modelling pension assets and liabilities and should pay particular attention to profiles for gilt yields, inflation, expected inflation and equity prices.

### 10.10 UK impact

As set out in 'The Bank of England's approach to stress testing the UK banking system', stress-test results are one input to the FPC's decision regarding the level at which to set the UK CCyB rate.<sup>(15)</sup> To help inform this decision, it is important to isolate the 'UK impact' of the stress scenario.

As in 2017, banks have been requested to provide a 'UK' and 'non-UK' split for some profit and loss and balance sheet items that affect capital resources and requirements. In addition, as part of the Basis of Preparation request (see Section 13), banks should supply information on the methodology adopted for splitting these items.

## 11 Management actions

Banks are asked to consider what realistic strategic and business-as-usual management actions could be taken in response to the stress scenario:

- Strategic management actions are defined as extraordinary actions taken in response to the stress scenario. Typically, the Bank would expect these to include any actions that require Board sign-off before they can be undertaken. These actions should not be included within banks' projections. Instead they should be set out separately in the management actions section of the projections templates. Banks are asked to provide all the strategic management actions that they could take in the stress, along with the triggers for taking each action, and indicate in their submissions which actions they would choose to enact based on their projected results.
- Business-as-usual management actions represent any other actions that the banks could and would take in response to the stress scenario. These actions would be in the control of the bank and would be a natural response to weakening economic conditions.

A qualitative listing of all material business-as-usual actions should be submitted alongside banks' projections (also see the unstructured data request).

Banks should ensure that the strategic management actions they propose:

- Are consistent with a market-wide stress. For example, attempts to raise capital in a stress scenario are unlikely to be permitted;
- Have a material benefit to the bank's capital position and can be executed, in practice, with no material impediments envisaged. For example, the sale of a business unit may not be executable in the stress scenario or may not yield the full capital benefit the bank expects; and
- Are part of, or consistent with, the bank's recovery plan. A bank's recovery plan details the range of actions it could take in a stress. The Bank will ordinarily only accept actions that meet its expectations set out in the Supervisory Statement on recovery planning, to reflect the strong link between banks' strategic management actions and their recovery plans.<sup>(16)</sup>

The Bank will assess whether the management actions proposed by banks are realistic actions that a bank could and would take in the stress scenario. For these purposes, banks should provide: a detailed qualitative assessment of the main risks to executing a management action; a numerical trigger for authorising each action; and an accompanying explanation for why the numerical trigger has been selected. Banks should also provide a quantitative assessment of the impact of actions across the balance sheet and capital position.

Banks should take into account the time necessary for full implementation of a management action (due to the normal governance process of identifying an issue, deciding an action and implementing an action), and the time it takes for the action to take effect (such as the lag between changing lending standards and observed changes in arrears). Banks should also consider how modelled actions would be perceived by market participants. Actions that are likely to evoke a negative market reaction — such as ceasing discretionary coupons on preference shares — are unlikely to be permitted unless supported by conclusive evidence to the contrary.

The following areas of specific guidance should be noted:

- Under stress, banks should model ordinary dividend payments as moving in line with their publicly quantified payout ratio range. Where a public payout range does not exist, then stressed annual ordinary dividend payments should be fixed at the level projected in the baseline scenario. Any further reductions in the payment of ordinary dividends should be classified as a strategic management action and should be: consistent with banks' payout policies;

<sup>(15)</sup> [www.bankofengland.co.uk/news/2015/october/boe-publishes-approach-to-stress-testing-the-uk-banking-system](http://www.bankofengland.co.uk/news/2015/october/boe-publishes-approach-to-stress-testing-the-uk-banking-system).

<sup>(16)</sup> See [www.bankofengland.co.uk/prudential-regulation/publication/2017/recovery-planning-ss](http://www.bankofengland.co.uk/prudential-regulation/publication/2017/recovery-planning-ss).

in line with historical precedent; and supported by a qualitative explanation for the approach taken.

- Asset disposals that have not been publicly announced prior to 2018 will generally only be considered if they have been included in banks' recovery plans with sufficient details on the technicalities of the sale and an analysis of the plausibility of the sale under stress together with appropriate haircuts.
- When proposing strategic cost cuts, banks should take into consideration whether these: would be damaging to the bank's franchise; result in offsetting reductions in income or lead to additional risk for the business; and are plausible in the context of other continuing or past cost-cutting programmes.
- Banks should categorise any regulatory restrictions on distributions in relation to the Maximum Distributable Amount (MDA) as strategic management actions (see Section 12).
- Banks should ensure that any proposed actions that might lead to a reduction in lending in the stress scenario are in line with the guidance outlined in Section 10.1.

## 12 Capital actions

Where a bank does not meet its combined buffer in the stress before strategic management actions, it should not include in its projections any restrictions on distributions that would ordinarily be required in relation to the MDA. Restrictions on distributions up to the MDA should only be modelled where a bank does not meet its combined buffer after strategic management actions, and the restrictions should be submitted separately in the management actions section of the capital projections templates.

Banks should model their Tier 1 and Total Capital positions and their MREL resources. This will include assumptions for the issuance, redemption, amortisation and maturity of additional Tier 1 (AT1) and Tier 2 capital instruments and MREL-eligible liabilities. In the baseline banks should set out the assumptions they make in this regard. In the stress banks should consider the impact of the scenario on the feasibility, timing and pricing of any issuances and redemptions.

Banks should also consider whether they would be able to undertake other capital management exercises that rely on third parties, including capital injections from parent institutions. Written justification must be provided by banks to support the inclusion of any of these capital actions as part of their submissions for the stress scenario. The Bank's default

position is that such exercises are unlikely to be realistic in the stress scenario.

Banks should not model the impact of any contingent capital instruments being triggered as part of their pre-management action submission. Banks should supply the impact of a trigger event as part of the management actions template; this should be supplied regardless of whether the banks model a trigger event to have occurred in their projections.

## 13 Basis of Preparation

In January 2018, participating banks received a Basis of Preparation request. This includes the following key requests:

- Methods and governance arrangements related to the extrapolation of scenario variables and risk factor shocks;
- An assessment of the key sensitivities of the results, including the impact of limitations to data availability, an assessment of the variables to which the results are most sensitive and details of the impact of foreign exchange rate movements over the stress horizon;
- Details of how the baseline and stress scenarios have been translated into impacts on the income statement and balance sheet, including details of the assumptions made in applying methodologies and any deviations from the methodologies and frameworks that were provided; and
- Specific details for selected retail and commercial portfolios, pension schemes, tax rates, deferred tax assets, dividends and management actions.

The request was updated in March 2018 to ask banks for further scenario specific information in relation to their results. Banks should refer to this request for the specific documentation and data required.

## 14 Qualitative review

A key objective of the Bank's stress-testing framework is to contribute to an improvement in banks' risk and capital management practices. The Bank has assessed banks' practices and has provided feedback to them individually, highlighting areas where the Bank expects further improvements, as well as areas in which they have strengthened their stress-testing framework and their delivery of stress-test data and analysis.

In 2018, the qualitative assessment will gauge the effectiveness of the model risk management frameworks implemented in banks. This is an area where Bank staff have engaged with the banks over the past year, releasing a consultation paper on model risk management for stress

testing (CP26/17) in December 2017.<sup>(17)</sup> The consultation paper is expected to be published as a Supervisory Statement and become effective in June 2018. Bank staff will assess banks against the principles described in the final supervisory statement. The scope of the review will cover the appropriateness of the model risk management frameworks to comprehensively cover model risks, the effectiveness of their implementation and the quality of the model development and validation processes.

Similar to previous years, Bank staff will continue to evaluate the quality of stress-test results delivery, which will be assessed based on the quality of stress-test data and result submissions, methodology used for deriving stress-test results, appropriate use of judgement, supporting documentation and engagement with Bank staff.

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(17) See [www.bankofengland.co.uk/prudential-regulation/publication/2017/model-risk-management-principles-for-stress-testing](http://www.bankofengland.co.uk/prudential-regulation/publication/2017/model-risk-management-principles-for-stress-testing).

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## TI Overview

### T1.1 Introduction

This annex describes the approach that banks are expected to take in the execution of the 2018 ACS stress test with respect to fair valued and Trading Book positions as defined in the Position scope Section T2.1.<sup>(18)</sup>

More specifically, this annex:

- Describes the overall approach that banks should adopt in the execution of the traded risk stress test;
- Outlines how the stress and baseline scenarios should be translated into specific loss numbers<sup>(19)</sup> and financial and regulatory metrics reported via the templates;
- Defines certain terms and concepts that are used in the templates in the context of the methodology that should be applied.

This annex does not outline the baseline and stress scenarios themselves, as they are described in the Key elements, Variable paths for the 2018 stress test and traded risk scenario for the 2018 stress test.<sup>(20)</sup>

The traded risk stress-test methodology outlined in this annex expects banks to exercise judgement in the application of the method to their exposures. For example, banks may exercise judgement on the likely time period over which a material, illiquid trading position could be liquidated or hedged under the stress scenario. Banks are expected to explain the judgements that they have made as part of the unstructured data request.

### T1.2 Key design features

The Bank's approach to stress testing traded risk is similar to the approach taken in the 2015, 2016 and 2017 stress tests. The traded risk element of the 2018 stress test incorporates experience of previous historical episodes that is linked to the forward-looking macroeconomic scenario.

The 2018 traded risk stress scenario continues to be linked to the macroeconomic aspects of the stress test. The market risk factor shocks are broadly aligned to the global and regional impacts of the macroeconomic scenario. Reflecting the ACS framework, the calibration of the shocks takes into account the severity associated with the state of the financial cycle.

The Bank's approach continues to recognise the importance of market and position liquidity when assessing loss projections under a stress scenario. Banks are expected to apply risk factor shocks that correspond to the likely liquidity of each position under the stress scenario, and hence the time for which each position is exposed to the scenario.

Finally, the Bank's approach to counterparty credit risk asks banks to identify and default counterparties that are particularly vulnerable to the stress scenario. This approach creates consistency between the counterparty credit risk losses and the macroeconomic stress scenario. The overall approach to ranking and defaulting counterparties is similar to last year.

## T2 Preliminaries

This section sets out the scope of application and how the different components of the stress test fit together, and outlines several general features of the stress test.

### T2.1 Position scope

Broadly, the scope of positions to which the traded risk stress test is applied is: all Fair Value Through Profit and Loss ('FVTPL')<sup>(21)</sup> and Fair Value Through Other Comprehensive Income ('FVOCI') accounted positions. The assets to which the stress is applied can be broken down into several parts as follows:

- All positions that fall within the perimeter of the regulatory Trading Book;
- All other fair valued items outside the perimeter of the regulatory Trading Book, including:
  - The FVOCI part of the regulatory Banking Book, which includes banks' Liquid Asset Buffers (LABs), and associated hedge positions;
  - The FVO part of the regulatory Banking Book and associated hedge positions; and
  - Other financial assets mandatorily accounted as FVTPL that are not included in the regulatory Trading Book perimeter, such as underwriting positions and associated hedge positions.

<sup>(18)</sup> Throughout this annex the term 'traded risk stress test' refers to the part of the Bank 2018 stress test that captures traded risk positions; similarly, 'market risk stress test' (or similar) refers to a particular component (or components) of the traded risk stress test.

<sup>(19)</sup> 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 the outcome of some components of the stress test may, in fact, result in profits.

<sup>(20)</sup> The traded risk stress scenario comprises the shocks to be applied to a set of market risk factors (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 the traded risk scenario for the 2018 stress test. The macroeconomic stress scenario (described in the Key Elements and the Variable paths for the 2018 stress test) 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).

<sup>(21)</sup> Including positions accounted for under the Fair Value Option (FVO).

Exceptions to the scope of the traded risk stress are as follows:

- Where a position has a prudential filter that eliminates the impact of changes in its value from capital, then such positions should be omitted in line with the filtering applied in the capital treatment unless explicitly noted otherwise.
- Securitisation positions (per the CRR Chapter 5 definition) and covered bonds are excluded from the traded risk stress test. These are captured as part of the credit stress test but any non-Chapter 5 hedges to these positions should be included. For example, a Collateralised Loan Obligation (CLO) hedged with an untranching index Credit Default Swap (CDS) would result in the inclusion of losses from the CLO in the credit stress test and the gains from the CDS hedge in the traded risk stress test.
- Securities financing transactions held at amortised cost in 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.
- Hedges to amortised cost loans are excluded.

## T2.2 Components of the stress test

The traded risk stress scenario will have an impact on both capital resources (which would be depleted in the event of losses being incurred) 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 to take into account the separate impacts arising from:

- Market risk losses (described in Section T3) arising in the Trading Book due to adverse moves in risk factors (market prices and rates) and issuer default;
- Counterparty credit risk default losses (described in Section T4);
- Changes in various valuation adjustments (described in Section T5) such as to the Funding Valuation Adjustment (FVA), and Credit Valuation Adjustment (CVA), which are collectively categorised under the banner of XVA losses;
- Regulatory adjustments due to stressed Prudent Valuation Adjustment (PVA) changes (described in Section T6);
- Other Fair Valued Items losses on FVOCI, FVO and non-trading book FVTPL positions (described in Section T7); and

- Revenue and cost changes in the bank's investment banking business (described in Section T8).

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 T9); and
- Counterparty credit risk RWAs (described in Section T9).

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.

## T2.3 Effective date

The stress test should be applied to banks' fair value 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 **Table 1**.

**Table 1** Effective dates for the 2018 ACS traded risk stress

Template	Position scope	Effective date
Market Risk Stressed P&L projections	All Trading Book	26 Jan. 2018
Counterparty Credit Risk Losses projections	All Trading Book and Banking Book	26 Jan. 2018
Stressed XVA projections	All Trading Book and Banking Book	26 Jan. 2018
Stressed PVA projections	All Trading Book and fair valued Banking Book	31 Dec. 2017
Other Fair Valued Items projections	Fair valued Banking Book	31 Dec. 2017
Revenues & Costs for Investment Banking Divisions projections	All Investment Banking activities	31 Dec. 2017
Market Risk and CVA RWA template and Counterparty Credit Risk RWAs template	All positions within the scope of the market risk, CVA risk and counterparty credit risk RWA requirements	31 Dec. 2017

An effective date of 26 January 2018 was chosen for market risk, counterparty credit risk and XVA exposures because banks typically reduce their traded positions at year end. Using 26 January 2018 as the effective date instead of 31 December 2017 is more likely to provide a representative view of banks' traded risk positions.

## T2.4 Reporting currency

For traded risk positions that would generate P&L under the stress scenario in currencies other than banks' reporting

currency, such P&L should be translated into the bank's reporting currency via FX spot rates that are consistent with:

- The stress scenario; and
- 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 the reporting currency.

## T2.5 Loss allocation and relationship to management actions

The ACS stress-test horizon is five years and, in line with this, banks should model the stress impact on the fair value positions that are outside of the regulatory Trading Book, the impact on PVA for positions held in the Banking Book and the impact on investment banking revenues and costs for each year of the stress scenario. Further details on this are provided in the relevant sections of this annex.

In relation to market risk, counterparty credit defaults, XVA movements and PVA movements on Trading Book positions, banks should assume that all losses are incurred in the first year of the stress. This is because losses on trading activities would typically be concentrated in the early part of a stress scenario, since market prices tend to reflect worsening conditions relatively quickly.

The allocation of losses over the five years of the ACS stress scenario is summarised in **Table 2**.

**Table 2** Allocation of losses in the 2018 ACS traded risk stress

Losses	2018	2019	2020	2021	2022
Market risk	100%	0%	0%	0%	0%
Counterparty credit risk losses	100%	0%	0%	0%	0%
Stressed XVA	100%	0%	0%	0%	0%
Stressed PVA (Trading Book)	100%	0%	0%	0%	0%
Stressed PVA (Banking Book)	Gains/losses on these positions to be calculated in each year of the stress scenario.				
Other Fair Valued Items	Gains/losses on these positions to be calculated in each year of the stress scenario.				
Revenues and Costs	Gains/losses on these positions to be calculated in each year of the stress scenario.				

Consistent with the overall stress-test results only being collected at an annual frequency, traded risk projections are also annual (the only exception is for the 'Other Fair Valued Items Projections' template). However, the intra-year distribution may impact the timing of any assumed

management actions, and as a point of reference banks should equally distribute the full year losses across the four quarters and take this as a floor to possible actions. Banks should then motivate their actions by reference to the liquidity horizon of the positions, and the evolution of the underlying market as represented in the traded risk and macroeconomic scenarios, subject to this floor.

For example, in a real period of market stress, liquid market risk losses may manifest in only a short interval of a few days but structural liquid and illiquid losses will be incurred over several quarters. Uncollateralised counterparty losses are subject to one-year shocks because it is expected these defaults will not occur immediately but only on a lag in quarter four. Losses on bond holdings in the Liquid Asset Buffer may occur as the scenario unwinds but the extent of bond sales will be motivated by the information available up to the point of sale and not with foresight of future interest rate movements. As a result, the losses incurred in the first year of the stress event may be weighted towards the latter end of the first year of the stress rather than being equally distributed across the quarters. The timing of any management actions that are necessitated by these losses are therefore expected to be late in the first year. An action should not be motivated by an allocation of losses to quarter one that is larger than would occur under an equal-quarters loss allocation. This applies to both business-as-usual and strategic management actions.

Section 11 on page 10 provides guidance on the difference between strategic and business-as-usual management actions. Traded risk projections should only include business-as-usual management actions and these should be motivated by precise policies and procedures that support the business-as-usual actions eg to stay within limits, to meet enforced limit reductions under stress or in response to activated stop-loss triggers. Traded risk strategic management actions should be recorded alongside banks' other strategic management actions.

## T3 Market risk stress

### T3.1 Position types

Banks' Trading Books comprise trading positions of varying liquidity. As was apparent in the global 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 distinguish them from liquid positions.

For the purpose of the traded risk stress test, banks are requested to classify Trading Book positions into three categories:

- (1) **Liquid positions** are defined to be those which would take two weeks or less to liquidate or hedge under the stress scenario;
- (2) **Illiquid positions** are defined to be those that would take more than two weeks to liquidate or hedge under the stress scenario. This longer liquidation period may arise due to the bespoke features outlined in Section T3.6; and
- (3) **Structural Liquids** is a further designated position type that is intended to capture positions which, although possibly reduced or neutralised when an adverse stress scenario has its initial impact, may need to be subsequently reopened in order to preserve a bank's ability to provide financial products in a particular market, for example market-making positions. By virtue of reopening such a position, a bank exposes itself to further losses associated with further adverse market movements. The bank's financial and RWA projections, and any suggested management actions, should be consistent with the existence and sizing of these positions.

Stresses applied to Structural Liquids and Illiquids are incremental to the Liquids stress test.

### T3.2 Assessment of position liquidity

Banks are expected to make their own assessments of the liquidity horizons of their positions. General guidance on the degree of market liquidity that characterises the stress scenario is provided in the Key Elements published on 16 March 2018. 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 assess banks' judgements regarding the liquidity of their traded positions.

### T3.3 Calibration of risk factor shocks

The risk factor shocks that comprise the traded risk scenario are included in Variable paths for the 2018 stress test and in the 'Traded risk shocks' tab of the traded risk scenario for the 2018 stress test. The Bank is specifying a core set of risk factor shocks that are intended to induce an overall shock to the entire set of in-scope positions. The Bank has specified a 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 do not 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 should

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. If this proves insufficient, 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 **Table 3**.

**Table 3** Historical reference periods for risk factor shocks across regions

Geographical region of positions	Historical period
Asia and Emerging Markets	2008 H2
Europe excluding United Kingdom	2011 H2
United Kingdom	2008 H2
United States	2008 H2
FX (globally)	2015 H2

The Bank has provided a separate reference period for the FX asset class; this overrides the other periods in **Table 3** and applies globally to that asset class.

Daily, two-weekly and monthly shocks can be directly sampled from these half-year periods to identify the worst shocks. To identify the worst yearly shock, banks should calculate the yearly shock as at each day of the specified half-year period, by subtracting the value on the given day from its value one year prior, and then choose the worst such shock from this set.

Whether market risk factor shocks are provided by the Bank or identified and calibrated 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.

When applying risk factor shocks to any part of their portfolios, banks should consider whether the resulting losses are realistic. Where the profit or loss is material and unrealistic banks should highlight this and provide a realistic assessment of stress results (eg where the size of a position under stress would exceed limits and necessarily be reduced or hedged).

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

### T3.4 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 calculated by the 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.

### T3.5 Structural liquids stress

Structural Liquids positions 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 T3.1, such positions may be reopened and thereby expose the bank to further losses associated with adverse market moves later in the stress scenario. Banks are expected to take due account of this exposure in building their financial and RWA projections under stress over year one and in calculating the loss sustained by these structural liquid positions under the scenario. The approach banks are expected to take is detailed as follows:

- Banks should identify desks or position types that are significant for strategic reasons, eg they require a minimum level of inventory in order to maintain a credible market-making franchise. For example, this could be a bond or swaps market-making desk whose relative standing in the market (as indicated by rankings or otherwise) needs to be preserved;
- For each such desk or position type, and the risk factors they are exposed to, banks should identify the risk factor that typically has the greatest market risk and identify a typical level of exposure to it. This may coincide with the value as of the effective date or be a representative trailing average calculated as of the effective date; and
- As the exposure will be present throughout year one, albeit potentially run down and replenished throughout on a rolling basis, it is reasonable to consider that a longer liquidity horizon, and as a result a larger shock should be applied to this position. This is because even though the position could in principle be liquidated faster, the size of the position is not discretionary because of its strategic importance for the overall franchise. Therefore, the loss should be calculated by following a two-stage procedure as follows.
- In stage one the loss should be estimated by applying the risk factor one-year shock to the typical structural liquid exposure and adding together the losses from each of the structural liquids identified. The one-year shock should not be downscaled to account for the proportion of the shock already suffered in the Liquids stress (eg if the risk factor has a one-day liquidity horizon and the one-day shock is 20%, while the one-year shock is 30%, the Structural Liquids shock to be applied is 30% and not 30% minus 20%). The rationale for this is that the overall size of the one-year shock is used as a proxy measure to capture the effect of

multiple repeat losses and also to account for any significant deviations in exposure away from the typical level.

- In stage two, banks should assess whether there are any material artefacts in the loss that make it unrealistic. For example, material gains that would not occur in a real stress and are a by-product of using a point in time stress approach. When identifying such artefacts banks should consider, but not be limited to, the following:
  - significant differences between the inventory size on the effective date and the typical size;
  - changes to the P&L if the one-year shock were to be realised over the period of several days, rather than instantaneously;
  - the cost of re-establishing positions at (increasingly) stressed levels over the course of a year; and
  - whether option positions would be re-established at current strikes as the stress progresses.

As an example, if a firm expects to be persistently carrying a certain amount of short-dated variance swap or option risk with an average expiry of three months then the application of a one-year shock with no offsetting adjustments would not be realistic. The bank should consider the instances where it would have to rollover the three-month position and the fact that the purchase price may be increasing, and use this to adjust the one-year shock results.

It is not considered necessary at the current time for banks to model the detailed intra-year profile of risk to combat the artefact problem. However, banks should assess the results for the existence of material artefacts, identify and report them in their submissions, and make approximate adjustments for their effect. The Bank does not expect banks to be generating large gains from structural liquids.

### T3.6 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 template. Banks should clearly articulate their approach to the identification of illiquid portfolios. As noted in Section T3.1, a position is designated as illiquid if it is likely to take more than two weeks to liquidate or hedge under the stress scenario. For guidance purposes, examples of illiquid positions are provided as follows:

- Positions that would take longer than two weeks to liquidate or hedge, whether complex or not. This could, for example, include a corporate bond held in large size relative to the amount of the bond in issue;

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

Banks should articulate their approach when calculating 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 to be consistent with the scenario);
- 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>(22)</sup> and
- The market structure and dynamics for the products that comprise the illiquid positions. Banks are expected to take into account that illiquid product valuations are heavily influenced by other broker-dealer activity, and to reference the market dynamics in the historical calibration periods given in **Table 3** in Section T3.3.

As with structural liquids, banks should review their results for material artefacts, disclose any that are identified and apply appropriate adjustments.

The Bank does not typically expect banks to generate large gains from illiquids in the stress.

### T3.7 Issuer default

The market risk template includes a tab relating to 'Issuer Default' losses. Such losses would be associated with those counterparties identified as defaulting in the counterparty credit risk stress described in Section T4.<sup>(23)</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, eg CDSs) should also be assumed to default and be reported in the 'Market Risk Stressed P&L' template.

## T4 Counterparty risk default stress

This section discusses counterparty default loss, which comprises two parts: portfolio-wide default losses across particular cohorts of uncollateralised sub-investment grade 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 banks' choices as to which counterparties to default under the stress scenario (both in terms of the sub-investment grade sector and specific names).

### T4.1 Definition of vulnerable counterparties

The selection of vulnerable counterparties requires expert judgement regarding the creditworthiness of counterparties, and banks are expected to consider multiple factors in making this determination. For example, banks should consider both the current creditworthiness of counterparties, and how that creditworthiness might deteriorate under the stress scenario. Banks should also consider the nature of the exposure and, in particular, whether it exhibits wrong-way risk. Therefore, the selection of vulnerable counterparties should not be based solely on simple application of measures such as banking book PDs (or external ratings), but should also take into account idiosyncratic credit factors arising from the stress scenario itself.

### T4.2 Portfolio default losses

Regarding portfolio losses, banks are expected to:

- Identify their most significant geographical cohort of uncollateralised sub-investment grade exposure under the stress scenario.<sup>(24)</sup> The significance of a cohort should be judged in terms of both the materiality and the vulnerability of the exposure under the stress scenario;
- Estimate a cohort default loss that would arise from a portion of this portfolio defaulting at the end of the first year of the stress scenario, and with no further losses beyond the one-year point. Banks should estimate this cohort default loss as follows:
  - Calculate the stressed exposures of the counterparties in the cohort by applying one-year market risk factor shocks.

(22) As described in the documents 'Key elements of the 2018 stress test', 'Variable paths for the 2018 stress test', and the Traded risk shocks' tab of 'Traded risk scenario for the 2018 stress test'.

(23) Counterparty credit default losses should be reported via the 'Counterparty Credit Risk Losses' template.

(24) For the avoidance of doubt, the counterparty country or region allocation is to be determined using the 'ultimate risk' approach that applies to all credit exposures for this year's stress test, in line with the definition of 'Country of Exposure' of the STDF dictionary.

- Calculate the stressed expected loss, using market-implied stressed PD and LGD rather than those used to project impairments in the Banking Book.
- Using the stressed PD implied from the cohort's stressed expected loss, estimate the proportion of pre-stress CVA that relates to the defaulted portion of the overall cohort and deduct this from the stressed expected loss to arrive at the cohort default loss.
- Calculate stressed current exposure for each counterparty;
- Rank the top exposures as detailed in the traded risk scenario. Banks should rank their counterparties by stressed current exposure (net of stressed collateral);
- Identify and default vulnerable counterparties from these rankings according to the minimum numbers set out in the traded risk scenario; and

#### T4.3 Specific name default losses

Banks are also expected to default a number of specifically named, vulnerable counterparties under the stress scenario. Details of the minimum number of counterparties that banks should default will be provided as part of the traded risk scenario. The approach to determining the default loss varies according to whether a bank's exposures to a counterparty are collateralised or uncollateralised.

For uncollateralised counterparty losses, banks should:

- Estimate stressed current 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 exposures under the stress scenario as detailed in the traded risk scenario. Banks should rank counterparties by stressed current exposure;
- Identify and default vulnerable counterparties from these rankings according to the minimum numbers set out in the traded risk scenario. A bank should default more than the minimum number of counterparties if it deems that more than the minimum number are likely to default under the scenario; and
- For calculating default losses, 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:

- Assume the counterparty does not post any additional margin or honour existing margin calls that are still unpaid.
- Assess the total time to close out all the open positions for each of the counterparties, including allowance for any delays in exercising collateral rights. Depending on the strength of the collateralisation this close out period may not be the same for all counterparties;
- Apply market risk shocks to the exposures and collateral that are appropriate to the close out period identified;

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

Where a counterparty is treated as having defaulted, no additional impact on the market due to the default of that name needs to be modelled, and the pre-stress CVA should be deducted from the default loss. For all counterparties chosen to default, banks should consider the impact on other templates consistent with guidance in Section T3.7 and Section T7.1.

## T5 Stressed XVA

Banks' fair value positions are subject to various types of valuation adjustment. 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.

### T5.1 Credit Valuation Adjustment (CVA)

In their trading activities banks enter into derivative contracts with counterparties. If a derivative contract gives rise to credit exposure for a bank — in other words, the contract has produced or may produce 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 Credit Valuation Adjustment measures the negative adjustment to the contract's value today 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 and other aspects of the stress scenario.

CVA should be reported in three traded risk templates, with consistency between the entries:

- The 'Counterparty Credit Risk Losses' template should show CVA before and after the application of the risk factor shocks and exclusive and inclusive of all associated hedges (credit and market risk hedges);

- The 'Stressed XVA projections' template should report the change in the CVA under the stress both with and without associated hedges; and
- The 'Stressed PVA projections' template should report the CVA as a related fair value adjustment on the 'Totals' and 'Unearned Credit Spreads' tabs.

Banks are asked to note the following when calculating the CVA impact:

- When 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, banks should use either market-implied or actual measures of Probability of Default (PD) and Loss Given Default (LGD), in line with their accounting CVA;
- Shocks to the risk factors that drive CVA should be calibrated to a one-year liquidity horizon for both CVA and the associated credit and market risk hedges in place at the effective date, regardless of the frequency of hedge-adjustment used by the CVA hedging desk;
- For collateralised counterparties, banks should assume the counterparty continues to post additional margin;
- Banks should pay particular attention to the more complex CVA risks, such as rate/credit-spread cross gamma and index/single-name proxy basis. Further to this, in specifying the credit-spread shocks for individual counterparties, banks should conservatively explore how proxy hedges may react differently from the underlying credit and how the maturity of hedges may differ from the underlying exposures;
- Banks should decompose the aggregate CVA loss in their accompanying submissions so that the incremental contributions of these bespoke illiquid CVA risk factor shocks are apparent; and
- Banks should provide detailed commentary on the resulting CVA adjustment to support the calculations that they have made.

### T5.2 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 in the ultimate bottom line loss reported in traded risk templates. 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, because of the complications of how DVA is related to and managed alongside FVA and particularly in circumstances where a bank is hedging its DVA, banks are asked to report DVA gross in the XVA template and show the explicit deduction taken to remove the DVA in the bottom line loss number. Hedges are also separately included.

### T5.3 Funding Valuation Adjustment (FVA)

The stress scenario will impact a bank's own cost of funding and should induce a funding loss, to the extent that funding costs are partly or wholly reflected in the bank's mark-to-market accounting. Banks should ensure that this funding loss is included in the XVA template. To determine the loss, banks should estimate their stressed funding curve in line with the overall narrative and severity of the macroeconomic scenario, and with the funding shocks supplied in the traded risk scenario. This stressed funding curve should then be used to determine any fair values that are a function of it, in line with banks' existing valuation methodologies.

To the extent that there is also a PVA against funding costs (specifically, the Investment and Funding Cost component of PVA), then there may be additional capital erosion due to changes in PVA under the stress scenario. This additional PVA amount should be calculated according to banks' existing methodologies and reported in the Stressed PVA template. Further details are provided in Section T6.

## T6 Stressed Prudent Valuation Adjustment (PVA)

The scope of the traded risk stress test is fair-valued positions. However, accounting 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 liquidity in the market for the security is thin — fair value would require the security to 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).

In the 2018 ACS, the scope of PVA stress has been expanded to include all components of PVA as set out in the CRR, namely Market Price Uncertainty Additional Value Adjustment (AVA), Close-Out Cost Uncertainty AVA, Model Risk AVA, Concentrated Position AVA, Unearned Credit Spreads AVA, Investing and Funding Cost AVA Future Administration Cost AVA, Early Termination AVA and Operational Risk AVA. It now also includes the accounting bid/offer stress.

Firms should project each component of PVA consistently with the traded risk scenario and where necessary maintain consistency with accounting fair value adjustment projections already reported in other templates eg for CVA, FVA. Projections for accounting fair value adjustments related to components of PVA should also be reported on the PVA template.

For Trading Book related losses or deductions (ie increases in fair value adjustments or PVA in relation to FVTPL Trading Book positions), the resulting losses or deductions should be allocated to year one with no recovery assumed in subsequent years.

For Banking Book related losses or deductions (ie PVA in relation to FVOCI or FVO positions), the resulting losses or deductions should be projected over the scenario horizon in accordance with conditions implied by the macroeconomic and traded risk scenarios.

### T6.1 PVA projections under stress

PVA is motivated by the concept that there is often a range of values when estimating the fair value of a position. This valuation uncertainty range may change when market conditions change. Therefore, when projecting PVA, firms should apply this principle and design their methodology to capture the changes in valuation uncertainty in the market as implied from the macroeconomic and traded risk scenarios. Additional calibration periods are also given in **Table 3**.

We expect that firms will utilise their existing PVA framework to project future PVA in stress. Therefore, the level of granularity of the analysis will be the same as for PVA that is calculated in the ordinary course of business.

For example, when projecting Market Price Uncertainty and Close-Out Uncertainty AVAs for interest rate swaps, firms should take into account whether a sharp rise in an interest rate curve may lead to increased valuation uncertainty in the market price and bid-offer spread for this product.

As another example, when projecting Concentrated Position AVA in stress, firms should incorporate the liquidity horizon assessment described in Section T3 so as to identify any concentrated positions that might arise due to a change in market liquidity under the stressed scenario.

### T6.2 Fair value adjustment projections under stress

Several accounting fair value adjustments are reported in the PVA template, including the bid offer reserve, which was previously reported in the market risk stress losses template. This is necessary whenever PVAs rely on accounting fair value adjustments as a starting point. Where such adjustments are also captured in the XVA template over the same projection horizon the reported values should be consistent.

Firms should also utilise their existing fair value adjustments framework as much as possible to project future fair value adjustments in stress. The level of granularity of the analysis, where applicable, should be the same as for fair value adjustments that are calculated in the ordinary course of business.

For the bid-offer reserve stress, banks should assess the impact on bid-offer spreads arising from the traded risk scenario, applying the level of granularity that they would apply to their own internal analysis and using their own netting method. The historical calibration periods used to determine the bid/offer increases should be the same as the periods noted in Section T3.3. Bid-offer increases should be calculated as averages over those stressed periods for each of the regions. In order to maintain scenario consistency, other averaging, for example over unrelated periods or combining multiple periods, should not be used.

For XVA, the detailed changes should be captured in the XVA template but a high-level summary should also be recorded in the PVA template to allow holistic analysis on Unearned Credit Spread PVA and Investing and Funding Cost PVA. Specifically, the approach for stressing funding costs should be identical to that laid out in Section T5.3 and banks should use the same stressed funding curve.

## T7 Other Fair Valued Items (OFVI)

The 'Other Fair Valued Items projections' template is intended to capture positions measured at fair value which reside outside of the regulatory Trading Book (OFVI positions). It is intended to be a comprehensive balancing item to capture a wide variety of fair valued items whose impact on capital resources would otherwise not be captured in other traded risk templates.

### T7.1 OFVI projection assumptions

Losses for OFVI positions under the stress scenario should be calculated with respect to each year of the scenario. Banks should revalue positions at the first month-end and at each quarter-end in the first year and at each year end in subsequent years.

In constructing the stress scenario to be applied to the OFVI positions, banks are expected to refer to:

- The macroeconomic scenario, published in the Key elements; and Variable paths for the 2018 stress test, which provide full paths for a small number of the market risk factors relevant to OFVI positions;
- The 'Traded risk shocks' tab of the traded risk scenario for the 2018 stress test, which provides more detailed risk

factor shocks for the first year of the scenario, for more of the risk factors relevant to OFVI positions.

Banks are expected to infer from these parts of the Bank's stress scenario the complete scenario horizon that should be applied to OFVI positions.

For all OFVI positions except the Liquid Asset Buffer, the balance sheet size should be held constant with no ageing or changing of positions. Where banks have in place written procedures requiring the sell down of foreign currency gains or losses from OFVI positions, then banks should follow these procedures in their stress-test calculation. This is the only type of re-hedging permitted in stress-testing OFVI positions that are not part of the Liquid Asset Buffer.

Different treatment of Liquid Asset Buffer positions is permitted and should be considered in two stages:

- (1) At each period end banks should revalue the positions they held as at 31 December 2017, and thereby produce gain or loss projections under the scenario. In calculating the valuations for each period, banks should not age nor change any of the positions. For instance, if a bank holds a ten-year gilt this position should be revalued 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. This will be reported in the pre-management action area of the template.
- (2) The buffer may be adjusted in accordance with justifiable business-as-usual management actions. Where an action applies, the bank should report the adjusted gains or losses in the post management action area of the template.

Admissible changes to the buffer under a business-as-usual management action must be fully supported by appropriate policies and procedures and evidence of how these are invoked eg with regard to monetisation of the buffer or investment changes due to stop-loss triggers. Actions meeting the definition of a Strategic Management Action, as set out in Section 11 of this document, must not be included. Unstructured information concerning the business-as-usual management action must also be provided in the unstructured data submission, as detailed in the Basis of Preparation.

Note the following points of clarification regarding the treatment of the default risk of OFVI positions:

- The 'Counterparty Credit Risk Losses' template only covers derivative and Security Financing Transaction (SFT) counterparty defaults, and excludes both unsecured lending and issuer defaults on bond and equity holdings. Positions where the loan is designated at fair value under FVO are also excluded. No default losses should therefore be reported in

the Counterparty Credit Risk Losses template for OFVI assets. These should instead be reported in the 'Issuer Default Loss' tab of the 'Other Fair Valued Items';

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

For private equity investments in OFVI, banks should as a starting point consider the methodologies used in their current valuation approach, for example their pre-existing choices of comparable assets (eg listed securities), and any adjustments already taken into account for the difference between the position held and a comparable listed asset. Application of the stress scenario may require approximations such as the use of betas to simplify one or more of the steps in the valuation approach, when applied under the stress scenario. Where these approximations are employed, they should be calibrated to the stressed historical reference periods identified in Section T3.3, and clearly identified in the unstructured data submission. Banks' methodology should also consider any impairments under the stress scenario.

## T7.2 Additional note for underwriting commitments

Banks should use the 'non-trading book positions mandatorily at fair value through profit or loss' template category to capture any other in scope fair valued items that have not been otherwise captured.

Underwriting commitments in the firm's pipeline, including those in the process of syndication, should be included in scope. This includes equity, bond, loan and securitisation pipelines that are FVTPL, as well as all FVTPL hedges against these commitments. An example of equity commitment risk would be the underwriting of rights issues. The securitisation 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.

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.

The loan underwriting syndication timeline in particular is often complex and proceeds through various documentary stages that are often completed before the recognition of a

credit agreement and the resulting recognition of credit RWA. Banks should rely on their internal risk management definitions to determine the moment when they consider themselves to be 'on risk', which may be synonymous with the recognition of an accounting fair value for the commitment or the existence of a signed legal agreement (at least signed by the bank), and is also likely to be before the recognition of any RWA. Banks do not have to include unsigned or soft commitments unless they believe there is a necessary franchise reason to honour these commitments.

When projecting the loss for underwriting positions, banks should follow the same principles outlined in T7.1 to construct shocks to valuation inputs such as credit spreads and equity prices, taking account of any contractual mitigants such as flex and fees. Each commitment should be assessed individually to take into account its size and idiosyncratic risk particularly where the commitment amount is large. The balance sheet for the positions should be held constant. For banks that have fair value hedges to their commitment positions, these positions should be stressed separately in accordance with the traded risk scenario and should not a priori be assumed to be fully effective unless the scenario allows for this.

## T8 Revenue and cost projections

Banks should provide baseline and stress scenario revenue and cost projections for IFRS 8 operating segments that include investment banking activities such as trading and capital markets activity, and also for non-core segments if relevant. This is in the form of FINREP compliant income statements for each year of the scenario. Investment banking activity is defined as one or more of the following items:

- **Markets** cash and derivatives trading activity including for example products such as FX, Rates, Credit, Equities, Commodities and Prime Finance;
- **Capital Markets** activity such as Advisory, Debt Capital Markets, Equity Capital Markets, and Syndicate desks; and
- **Banking book** activity that is readily identifiable inside the bank as supporting Markets and Capital Markets activity, and which is internally managed alongside it with this exclusive aim eg a dedicated relationship lending book for large corporate or institutional clients. If there is no such clear segregation then this activity can be omitted.

Reconciliations are required between the income in the segments reported in the traded risk templates and income information supplied in other non-traded risk templates eg at group level. Where material fair-valued income is captured in segments not in traded risk templates, the balancing items need to be reported in the reconciliation section of the

revenue and costs template so that the fair value percentage coverage of the revenue and costs template is evident.

The traded risk templates capture separate income statement information at a deeper level of granularity than these segments, narrowing in on the investment banking activities in isolation and requesting product and geographical level splits of the FINREP income statement for these on a standalone basis to the extent they can be built. This is consistent with the need to challenge the underlying, bottom-up assumptions that have been used to build the baseline and stressed projections. Banks are expected to present the top level segment and these more granular views and to assign direct and indirect costs at a level that is consistent with their business as usual processes.

The income and expense projections should reflect the plausible execution of a bank's business plan under both the baseline and stress scenarios. The projections should also be consistent with the assumptions made for RWAs in baseline and stress.

Banks should assess and model the impact of the scenario on trading and capital markets activity separately, which may for example lead to specific regional assumptions about decreasing market volumes, and constraints on the amount of revenue that can realistically be earned from the high volatility trading environment during the early onset of the stress. Simplistic forecasts that are not motivated in line with the scenario or are built without detailed supporting evidence should not be used. This includes cases where the projections return to the pre-stress base case rapidly after the initial stress has passed.

In particular, banks should not assume a year one increase in revenues, above the year zero starting point, as was observed in some business lines in the years following the Lehman default, and the bid/offer widening assumptions used to calculate the bid/offer stress in Section T6.2 do not apply. Banks should also justify the use of any caps or floors in their approach eg in maintaining certain revenues flat at year zero levels with no modelled decreases below this level. Banks should not assume reduced competition in the investment banking sector as a consequence of the stress scenario.

## T9 Risk-weighted assets (RWA) projections

Banks should submit more granular information on their starting traded risk<sup>(25)</sup> RWAs (ie as at the effective date defined in Section T2.3) and projected traded risk RWAs under the baseline and stress scenarios for each year-end date over

(25) Traded risk RWAs are taken to be: Market Risk, CVA Risk and Counterparty Credit Risk RWAs.

the time horizon via the following two structured data templates:

- 'Market Risk and CVA RWA'; and
- 'Counterparty Credit Risk RWAs'.

This information is used to supplement the projected traded risk RWAs provided in the capital projections template.

The 'Market Risk and CVA RWA' template captures starting and projected components of capital requirements for both market risk and CVA risk, while the 'Counterparty Credit Risk RWAs' template captures a breakdown of starting and projected capital requirements for counterparty default risk by counterparty group and exposure type. Other traded risk related components of RWA (such as settlement risk and large exposures) are not captured in the traded risk templates, but are captured in the capital projections template.

### T9.1 General guidance

The starting values as at the effective date should reflect reported year-end values corresponding to the prescribed time period of the stress test. Traded risk RWA projections should:

- For both the baseline and stress scenario, be consistent with the scenario as at the year-end calculation dates;
- For the stress scenario, reflect a plausible execution of a bank's business plan under the stress scenario (including the bank's ability to execute its business plans). Otherwise, the projections should reflect a plausible variation to the bank's business plan, where these variations are clearly identified and where they have been appropriately assessed for inclusion against the management action criteria in Section 11;

- For both the baseline and stress scenario, be consistent with balance sheet, income and expense growth assumptions. Specifically, an increase in projected balance sheet size as a result of increased trading business is expected to result in an increase in projected traded risk RWAs. Similarly, a bank's plans to increase traded risk appetite should be reflected in an increase in projected traded risk RWAs;
- It is expected that traded risk RWAs submitted in the 'Market Risk and CVA RWA' and 'Counterparty Credit Risk RWA' templates are projected using a continuation of hedging practices documented and in place in year zero. Additional hedging in response to scenario shocks should be assessed against the management action criteria and only included in projections where it is a business-as-usual action supported by appropriate policies and procedures that existed at year zero;
- Notwithstanding Section 10.1, banks are expected to include the impact of regulatory changes (eg the Fundamental Review of the Trading Book) where the terms are largely known and the effects are included in their corporate plan, but are not allowed to include benefits from models that have not been approved before 16 March 2018 except by prior agreement with the Bank; and
- Changes in market variables such as foreign exchange rates that have a material impact on market risk, CVA risk or counterparty credit risk RWAs must be taken into account when calculating projected traded risk RWAs.

### T9.2 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 the following table:

Risk type	Capital component	Expectations regarding RWA projections
Market risk	Standardised approach	RWAs calculated under standard rules approaches are expected to increase in line with projected growth in business. The projections should take the impact of FX rate changes under the scenario into account.
	Value-at-Risk (VaR) and Stressed VaR (SVaR)	<p>Projected combined (VaR and SVaR) capital components should increase to reflect increases in scenario volatility plus the scenario impact of FX rate changes.</p> <p>Where projected VaR calculations are not based on a recalculation under scenarios, the Bank's expectation is that combined VaR- plus SVaR-based capital requirements increase to at least twice current SVaR when the scenario is characterised by an increase in market volatility. Banks using this approach should also make an adjustment to account for the scenario impact of FX rate changes on the VaR and SVaR measures.</p>
	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. 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. The projections of RNIVs should also take the impact of FX rate changes under the scenario into account.
	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 RWAs due to credit rating movements applied to comparable wholesale credit assets under the scenario. The projections should also take the impact of FX rate changes under the scenario into account.
	Comprehensive risk measure (CRM)	<p>There is no expectation that modelled CRM-derived RWAs should increase as a result of the stress scenario if the standardised credit risk floor is binding.</p> <p>The projections should also take the impact of FX rate changes under the scenario into account.</p>
	Trading Book securitisations	RWAs related to securitisations held in the trading book are considered as part of the structured finance stress test, not the traded risk RWA stress test. If the market risk RWA submission includes trading book securitisations, this should be made clear and quantified in order to avoid double counting.
CVA risk	Overall	<p>In respect of defaulted counterparties, there should be no corresponding reduction in CVA RWAs submitted in the 'Market Risk and CVA RWA' templates, as it should be assumed that the defaulted positions are replaced on a like-for-like basis. In respect of a highly material counterparty default (for example, the assumed default of a large uncollateralised counterparty), the potential decrease in CVA should be captured as a strategic management action, but not reflected on the 'Market Risk and CVA RWA' template.</p> <p>The high-level expectation is that the firm maintains its current hedging policies when projecting CVA risk capital requirements. Changes to the way CVA risk is managed under stressed conditions may be considered under strategic management actions, but should not be reflected as part of the 'Market Risk and CVA RWA' template submission.</p> <p>Exposures used to calculate CVA risk are expected to be consistent with those used to calculate counterparty credit risk RWAs. The projections should also take the impact of FX rate changes under the scenario into account.</p>
	Standardised method	<p>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.</p> <p>Increases in RWAs due to downward credit migration are expected to be reflected in the weights used to calculate CVA RWAs using the standardised method. The projections should also take the impact of FX rate changes under the scenario into account.</p>
	Advanced method	<p>Stressed measures of other relevant quantities, namely the stressed VaR and stressed exposure calculations, should inform the stressed CVA RWA.</p> <p>It is expected that the VaR component of the advanced CVA approach is consistent with the market risk approach.</p> <p>It is expected that banks maintain the consistency between projected exposures used for advanced CVA RWAs and counterparty credit risk RWAs as specified in the CRR.</p> <p>Where the scenario has an impact on credit spreads, this impact should be reflected in a change in the level of CVA RWAs. The projections should also take the impact of FX rate changes under the scenario into account.</p>
Counterparty credit risk	Overall	<p>Where the firm has assumed a counterparty defaults, no corresponding reduction in CCR RWAs submitted in the 'Counterparty Credit Risk RWAs' template is expected as it is assumed that the defaulted positions are replaced on a like-for-like basis for the purposes of projections. Where the impact is significant and counterparty specific (eg the assumed default of a large uncollateralised counterparty), the potential decrease in RWAs may be addressed as a strategic management action.</p> <p>For the avoidance of doubt, securities financing transactions are considered to be: repurchase transactions, securities or commodities lending or borrowing transactions; margin lending transactions.</p> <p>The projections should also take the impact of FX rate changes under the scenario into account.</p>
	Collateralised counterparties	<p>For exposures calculated using the counterparty credit risk mark-to-market (MtM) method, there is no expectation that exposure will change since the add-ons used to calculate exposure do not change with the scenario and the MtM is offset by collateral for the purposes of RWA calculation. It is assumed that margin agreements with non-defaulting counterparties will perform and collateral is received accordingly.</p> <p>For modelled methods (CCR IMM, Repo VaR and FCCM own estimates of volatility), exposures are expected to increase if sustained market volatilities in the scenario are larger than those used to calibrate the risk measures used for regulatory purposes. For the purpose of RWA calculation, it is assumed that margin agreements with non-defaulting counterparties will perform and collateral is received accordingly. It is also assumed that extended margin period of risk criteria, beyond those already identified, are not triggered.</p> <p>Risk weights are expected to be adjusted in line with the credit risk RWA calculation for all scenarios. The projections should also take the impact of FX rate changes under the scenario into account.</p>

Risk type	Capital component	Expectations regarding RWA projections
	Uncollateralised counterparties	<p>For exposures calculated using the counterparty credit risk MtM method, projected increases in position MtM should be incorporated into the exposure.</p> <p>For exposures calculated using the IMM method, projected increases in position MtM should be incorporated into the exposure.</p> <p>Since IMM exposure is a function of market volatility, exposures are expected to increase if sustained market volatilities in the scenario are larger under the scenario than those used to calibrate the risk measures used for regulatory purposes.</p> <p>Risk weights are expected to be adjusted in line with the credit risk RWA calculation for all scenarios. The projections should also take the impact of FX rate changes under the scenario into account.</p>
	Treatment of unilateral accounting CVA under CRR Article 273(6)	<p>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.</p> <p>The Bank permits firms that calculate counterparty level projected accounting unilateral CVAs to reduce EAD for the calculation of projected RWAs under the scenarios.</p> <p>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, the RWA-mitigating impact of increased projected accounting CVA would not be expected to be reflected in the projected RWAs.</p>

## Glossary

**ACS** – annual cyclical scenario.  
**AT1** – additional Tier 1.  
**AVA** – additional valuation adjustment.  
**CCR** – counterparty credit risk.  
**CCyB** – countercyclical capital buffer.  
**CDS** – credit default swap.  
**CET1** – common equity Tier 1.  
**CLO** – collateralised loan obligation.  
**CRD IV** – Capital Requirements Directive IV.  
**CRM** – comprehensive risk measure.  
**CRR** – Capital Requirements Regulation.  
**CVA** – credit valuation adjustment.  
**DVA** – debit valuation adjustment.  
**ECL** – expected credit loss.  
**EAD** – exposure at default.  
**FCCM** – Financial Collateral Comprehensive Method.  
**FINREP** – financial reporting.  
**FPC** – Financial Policy Committee.  
**FVA** – funding valuation adjustment.  
**FVO** – fair value option.  
**FVOCI** – fair value through other comprehensive income.  
**FVTPL** – fair value through profit and loss.  
**FX** – foreign exchange.  
**GDP** – gross domestic product.  
**IAS** – International Accounting Standards.  
**IFRS** – International Financial Reporting Standard.  
**IMM** – internal model method.  
**IRB** – internal ratings based.  
**IRC** – incremental risk charge.  
**LAB** – liquid asset buffer.  
**LGD** – loss given default.  
**MDA** – Maximum Distributable Amount.  
**MREL** – minimum requirement for own funds and eligible liabilities.  
**MtM** – mark-to-market.  
**NII** – net interest income.  
**OCI** – other comprehensive income.  
**OFVI** – other fair valued items.  
**P&L** – profit and loss.  
**PD** – probability of default.  
**PRA** – Prudential Regulation Authority.  
**PRC** – Prudential Regulation Committee.  
**PVA** – prudent valuation adjustment.

**RCV** – regulatory carry value.  
**RNIV** – risks not in VaR.  
**RWA** – risk-weighted asset.  
**SFT** – securities financing transaction.  
**STDF** – stress-testing data framework.  
**SVaR** – stressed Value-at-Risk.  
**VaR** – Value-at-Risk.  
**XVA** – X-valuation adjustment.