



FINANCIAL  
SERVICES  
FACULTY



# Banking regulatory ratios: ICAEW assurance framework

Technical release: Exposure draft

## The Inspiring Confidence in Financial Services initiative

The Financial Services Faculty was established to become a world-class centre for thought leadership on issues faced by the financial services industry. Acting free from vested interest, it draws together professionals from across the financial services sector and from ICAEW members specialising in the sector and provides a range of information and services.

The Inspiring Confidence in Financial Services initiative aims to provoke new thinking and identify better ways of tackling long-term challenges in the financial services sector. Confidence is vital to financial services. A stable financial system is important to the economy and sustainable levels of confidence in financial services are needed for this stability.

Our work is based upon four themes, which are interdependent and cannot be considered in isolation. These themes are:

- responsible providers;
- responsible consumers;
- better information; and
- better regulation.

Our work involves developing reports and provocative issues papers, holding high-profile conferences and having discussions with stakeholders. We aim to bring together the financial services sector, industry professionals, consumers, regulators and policymakers. We believe that financial services will only inspire confidence if the sector engages with all of its stakeholders.

For more information about the Inspiring Confidence in Financial Services initiative, visit [icaew.com/inspiringconfidence](http://icaew.com/inspiringconfidence). For more information about the Financial Services Faculty visit [icaew.com/fsf](http://icaew.com/fsf).

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# Invitation to comment

ICAEW has produced this exposure draft of guidance as part of its *Inspiring Confidence in Financial Services* initiative. ICAEW was asked by the UK Prudential Regulation Authority (PRA) to consider how assurance on bank capital ratios and risk-weighted assets (RWAs) might support confidence in these important measures. We have observed increasing interest in this area and a developing market for considering regulatory ratios.

Following publication of a discussion paper in September 2015 – *Reporting on regulatory capital: choices for assurance*, ICAEW held a series of round table discussions with members of bank audit committees, executives and investors, considered comment letters received in response to the discussion paper and held a number of individual meetings with stakeholders.

We received a variety of feedback, which is summarised in a feedback statement issued alongside this exposure draft. It was generally supportive of developing guidance to provide a consistent framework and options for those wanting assurance. Other comments focussed on ensuring appropriate flexibility over the approach to assurance and its scope. This included making our guidance relevant for internal audit teams as well as external assurance providers and for it to be potentially applicable to a wider range of measures than just capital ratios, such as liquidity and leverage ratios.

This exposure draft sets out our proposed framework for reporting on regulatory ratios. The purpose of this guidance is not to create any new requirement for assurance. It simply proposes a framework that firms might choose to adopt when undertaking such assurance activity. It is intended to help both those commissioning and those providing assurance in scoping and performing an engagement, whether on a voluntary basis, or when required by regulation.

There will be a three-month comment period for you to respond to the questions posed below and share any other comments. We are particularly interested in the effectiveness of the guidance as a practical document. Comments about the balance of principles-based guidance and illustrative examples would also be helpful. If you can identify your position and the nature of the institution or firm that you work in, this will help us assess the feedback.

1. How would you use this guidance, and when would it be most useful to you?
2. Do you consider the guidance as drafted to be suitably proportionate for use in undertaking work for institutions applying advanced approaches and institutions applying standardised approaches to capital calculations?
3. Are references to particular elements of capital reporting sufficiently clear and helpful?
4. Is sufficient consideration given to performance of work versus design of work?
5. Are the types of reporting discussed useful?
6. Is the description of considerations for performance of work suitably balanced to benefit both internal and external assurance providers?

The comment period will conclude on 13 February 2017.

We welcome feedback in any form, and it does not have to be a formal written response. If you would like to discuss anything contained within, or you and your organisation would like to learn more about the exposure draft, please get in touch to arrange a meeting.

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# Section 1 Introduction and background

1. This guidance aims to promote consistency in the practices adopted for assurance work on banking regulatory ratios, including capital, liquidity and leverage ratios. It may also be of use to those commissioning relevant assurance work, including audit committees, executive management, banking regulators and other stakeholders. It is intended to provide flexibility for users and is neutral to the type of work being performed and who performs it. It has been developed for international use, and is not specific to a particular jurisdiction or regulatory regime.
2. Prudential regulatory ratios are key measures of the strength and resilience of banks and building societies for investors, creditors, regulators, and other stakeholders. The production of capital, leverage and liquidity ratios and risk-weighted assets (RWA) calculations is complex. Banks and building societies need to use data from a range of sources, including their risk management, credit and financial reporting systems and they need to apply a variety of judgements to these data. Designing a control system for this is similarly complex.
3. It is important for banks and their stakeholders to have confidence in the controls, processes and governance surrounding the production of regulatory ratios and related information. Developments since the financial crisis have heightened the importance of this. The regulatory focus on stress testing and public transparency of capital ratios has taken on an important role in the market. Investors in 'bail-inable' debt and contingent convertible instruments ('CoCos') may have a particular interest in understanding and having confidence in the regulatory ratios linked to those instruments.

## Development and approach

4. The guidance was developed by ICAEW with a working group of representatives from the accountancy profession, internal audit, regulatory reporting and risk departments at banks, and with observers from the UK Prudential Regulation Authority (the PRA) and the Financial Reporting Council (FRC).
5. Recognising the range of circumstances in which assurance work may be undertaken, the guidance proposes a modular framework. This also means that it can be applied proportionately to meet firm-specific and user requirements. It will be relevant to the majority of risk types, for example credit risk, operational risk or liquidity risk, on a stand-alone or combined basis and at varying levels of granularity.

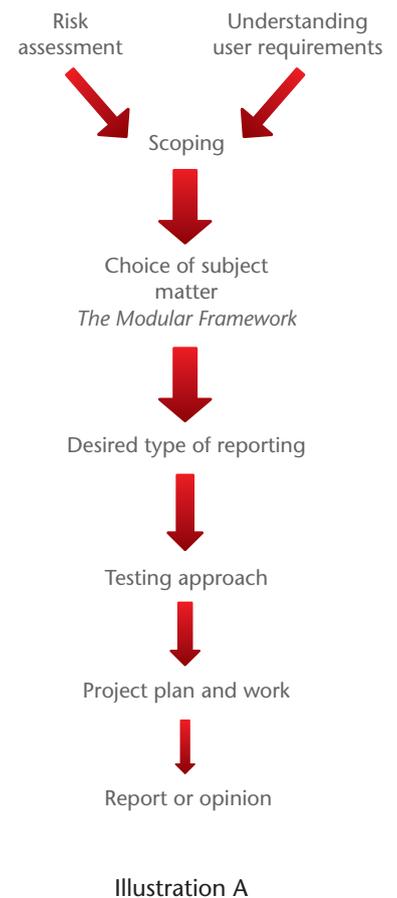
## Application

6. As it is a modular framework, this guidance does not have to be followed in its entirety, allowing the recipients of assurance to choose a piece of work that meets their needs. The original scope of ICAEW's investigation was specifically around the options for assurance over RWAs. As the guidance has developed, it has been increasingly apparent that this same framework, principles and approach can, in many cases, be applied to all areas of the capital calculation and reporting as well as other regulatory reporting such as liquidity and leverage ratios.

7. This guidance does not create a requirement for assurance. It simply proposes a framework that firms might choose to adopt when undertaking such assurance activity. It is intended to help both those commissioning and those providing assurance, in scoping and performing an engagement, whether on a voluntary basis or required by regulation.
8. Regulatory requirements for assurance of capital information differ by jurisdiction (for example, in the UK there are no requirements for regular external assurance of banks' regulatory ratios and RWA information). The development of this guidance has been informed by a variety of international approaches. However, it does not set out to fulfil any specific regulator's requirements. The assurance provider must decide on the most appropriate scope and level of work effort required to fulfil their obligations as part of a regulatory engagement.

## Section 2 Initial considerations and how to use this guidance

9. This guidance sets out a modular framework which can be used to plan and perform work on regulatory capital and RWAs or other related regulatory reporting. The breadth and depth of information which is used in the calculation of RWAs, capital and other regulatory ratios is vast, with different elements subject to different risks and cost benefits of assurance. However, different methods of calculation and different banks will have some processes and components in common, and there are requirements that are common to all banks. We have used these common areas to create a matrix of modules to help with scoping assurance work.
10. There will be instances when a reasonable or limited assurance opinion on a capital ratio may be required, but an alternative approach to assurance or other review work may be equally as useful or more beneficial. This guidance is neutral to the type of work to be performed, and aims to help all assurance providers, whether internal audit functions or external providers.
11. The guidance can help with:
  - scoping a piece of work;
  - identifying areas of potential complexity which should be taken into account;
  - considering materiality levels;
  - planning and performing the work; and
  - reporting upon work performed.
12. The final section contains illustrative examples. These outline more detailed considerations for particular areas of subject matter including practical examples to help you.
13. Reference to assurance describes a variety of reporting used to present evidence and/or conclusions to management, those charged with governance, regulators or others. Where a reasonable or limited assurance opinion is referred to, this will be explicitly stated. Use of the word assurance does not preclude anyone from using this guidance whether internal auditors, consultants or other non-audit assurance providers.
14. Whether assurance takes the form of a report from internal audit, a descriptive report or a reasonable or limited assurance opinion from an independent provider, the primary decisions must be what subject matter the work will cover, and a mutual understanding between the assurance provider and reporting receiver of the rationale for a particular area of focus, or where the piece of work fits within a wider programme.
15. Illustration A may help you in this process:



## Presenting meaningful reporting

16. The flexible nature of work covered by this guidance could result in a combination of subject matter being reported on or assured. Clear scoping and agreement between the assurance provider and the recipient of the work is vital. It will help to ensure that the recipient is aware of when the work will allow them to reach a conclusion on the entity's publicly-presented or widely-used metrics for regulatory capital, or where there are scope limitations which mean only distinct elements of these are covered, and recipients must draw their own conclusions.
17. The assurance provider will use an agreed clear and precise scope to communicate in a meaningful way when reporting. Good reporting will be fair, balanced and understandable. Where a formal conclusion on the subject matter is presented, this should not mislead the recipients of the report into drawing conclusions (either positively or negatively) about areas which have not been subject to assurance or other work.
18. To effectively communicate with the recipients of reporting, the assurance provider should consider:
  - the size of the entity;
  - the level of familiarity the recipient of the report or assurance opinion has with the subject matter and the level of detail required;
  - the proportion of the relevant subject area covered by the engagement and how to meaningfully express this to the recipients in the context of how they normally receive that data;
  - the assurance conclusion within the wider context of a work programme or future work, if it is a one-off piece of work;
  - the difference between substantive work and controls work; and
  - the nature of scoped out areas, such as model approval and design.
19. There is further guidance for scoping formal external assurance work in *International Standards on Assurance Engagements 3000 Assurance Engagements Other than Audits or Reviews of Historical Financial Information*. This includes guidance on the involvement of parties at the requisite level of seniority and experience, considering the rationale of the scope as well as the scope itself, and scoping the work of experts to be used.

## Acceptance of an engagement or piece of work

20. Before agreeing to perform a piece of work, the assurance provider should consider any factors which might affect their ability to provide a report or opinion. There may be ethical considerations which are relevant to undertaking the work, which any assurance provider should fully understand. Assurance providers should consider the ethical guidance of their profession or professional body, for example the IFAC Code of Ethics.<sup>1</sup> Ethical considerations may include: whether the scope of work is sufficient to provide the level of assurance required by the recipient of the work; whether the provider is likely to be able to report their findings clearly and without undue pressure being placed upon their report; and independence requirements. The assurance provider should also be satisfied that those persons who are performing the work have the appropriate collective competence and capability.

<sup>1</sup> [www.icaew.com](http://www.icaew.com)

## Section 3 A modular framework for assurance

21. This guidance seeks to set out a high-level set of principles, examples of coverage areas, and alternative testing approaches to help assurance providers (both internal and external) tailor a scope of work which meets the needs of their end users (eg, management, those charged with governances or regulators).
22. The following matrix sets out a potential approach to scoping which is applicable to both modelled and standardised approaches to calculating RWAs and regulatory ratios.
23. Assurance can be provided on both organisation-wide framework principles and/or individual components of the end-to-end regulatory capital ratio production (A – E). It can be applied to the majority of risk types (credit risk, counterparty credit risk, market risk and operational risk) on a stand-alone or combined basis and at varying levels of granularity (eg, at asset type/region etc.).
24. The organisation-wide framework principles that underpin each of these areas can also be applied individually to each risk type. All entities will apply the process components A – E in calculation of their capital information, and proportionality will occur depending on the size and structure of the organisation and structure of the functions. The key focus or scope areas set out (1 – 4) provide the components of the approach to assurance.
25. Small and medium-sized banks or building societies may have less complex regulatory reporting processes with fewer reporting lines and data dependencies, so it may not be appropriate to separate a piece of work into individual component modules as set out below. The main framework principles are, however, equally applicable to all banks, regardless of size and complexity, so it would be expected that all of these key focus areas and process components would still be assessed overall. Assurance should be considered holistically, and discretion used to determine the focus.

**Table 1**

Key focus/scope area	Organisation-wide framework principles	Process component				
		A	B	C	D	E
		Source data	Selection of relevant data	Setting calculation parameters and judgements	Calculation	Regulatory ratio reporting
1	Governance					
2	Internal controls					
3	IT					
4	Substantive testing					

26. Each cell within the modular framework (eg, source data/governance) can then be further sub-divided according to risk type (eg, credit risk) and product specifics (eg, asset class or geography) if a narrower scope is desired.
27. These principles are capable of being extended to the numerator of the capital ratio (capital resources less deductions) and other regulatory ratios such as leverage and liquidity ratios.

## Section 4 Scoping assurance work

28. Scoping work on regulatory capital, whether an assurance opinion, internal audit report or other type of reporting such as agreed-upon procedures or long-form reporting, is of vital importance. Clear scoping will ensure that the party receiving the report gets what they are expecting and that it is suitable for their needs. If there are limitations to what can be provided, this should be set out and understood by both parties at the scoping stage.
29. Scoping enables both parties to understand the relative work effort and resources required to produce different types of reporting. The size and nature of the bank or building society will also drive the approach taken to assurance and the type of work which is of most value to the recipients of assurance. Where the assurance provider is working for, or with, a smaller and less complex entity, a relevant and appropriate piece of work must be designed with due regard to proportionality.

### The pre-conditions for performing reasonable and limited assurance work

30. For assurance to be provided there must be criteria, subject matter and a recipient of the assurance.

#### Suitable criteria

31. Criteria are the benchmarks used to evaluate or measure the subject matter, including, where relevant, benchmarks for presentation and disclosure. The assurance provider must consider the suitability of the criteria, even where established criteria are available, to ensure their relevance to the needs of the intended recipients of the assurance report. Suitable criteria as set out in the IAASB Assurance Framework exhibit the following characteristics.
  - **Relevance:** relevant criteria contribute to conclusions that help decision making by the intended recipients of the assurance report.
  - **Completeness:** criteria are sufficiently complete when relevant factors that could affect the conclusions in the context of the engagement circumstances are not omitted. Complete criteria include, where relevant, benchmarks for presentation and disclosure.
  - **Reliability:** reliable criteria allow reasonably consistent evaluation or measurement of the subject matter including, where relevant, presentation and disclosure, when used in similar circumstances by similarly qualified providers.
  - **Neutrality:** neutral criteria contribute to conclusions that are free from bias.
  - **Understandability:** understandable criteria contribute to conclusions that are clear, comprehensive and not subject to significantly different interpretations.
32. Established criteria tend to be formal in nature, but the degree of formality depends on the subject matter. Criteria in areas such as compliance with legal or regulatory requirements may be widely recognised. For the purposes of an engagement on regulatory ratios, the assurance provider should consider the most appropriate criteria from the several potential sets of criteria. Further detailed examples of criteria are shown within the illustrative examples section of this document.

33. Table 2 sets out potential sources of suitable criteria. It may be necessary to refer to more than one source of criteria. Reporting should make it clear to recipients which criteria have been used. It may be helpful if these criteria are properly documented in a single place.

**Table 2**

Example sources of potential criteria
<p><b>Capital requirements regulation (CRR) text</b></p> <p>CRR introduced a supervisory framework in the EU which reflects the Basel III rules on capital measurement and capital standards. It covers capital, liquidity, leverage, counterparty credit risk, large exposures and disclosure requirements. The single rulebook aims to provide a single set of harmonised prudential rules throughout the EU to optimise the consistent application of Basel III in member states.</p>
<p><b>European Banking Authority (EBA) technical standards</b></p> <p>The EBA develops regulatory technical standards which provide additional detailed requirements as mandated by the CRR (and CRD) text. They are submitted to the European Commission for endorsement. The EBA also publishes answers to firms' questions on interpretations, but these are persuasive rather than binding.</p>
<p><b>Regulatory permissions and waivers</b></p> <p>In certain circumstances a national regulator may grant a waiver which gives an institution permission to change the application of a regulatory rule, subject to conditions, in order to more effectively achieve the intent of the rule.</p>
<p><b>Internal methodology</b></p> <p>Banks and building societies may have documented methodologies setting out their processes and controls which can form suitable criteria.</p>

34. Management and those charged with governance are responsible for developing relevant, complete, and bias-free criteria. The criteria to be used, and their suitability, should be agreed between those preparing the information, the assurance provider and potentially the recipient of the report.
35. Management and those charged with governance should have a clear understanding of the context of the different rules and pronouncements. For example, assurance providers would expect that management has a process for considering the EBA Q&As and establishing relevance for their institution. Supervisory statements and pronouncements from national regulators must also be taken into account. Where different courses of action are possible, there should be a clear rationale explaining why the particular choice has been made. Due regard should be given to the relative authority of guidance, for example clear guidance from regulators, versus illustrative examples of good practice.

### Subject matter

36. Assurance can be provided over different subject matter. This may be a regulatory ratio, or some other more specific item, such as RWAs for a specific risk type or the controls over certain processes. It can be provided on an end-to-end basis or on a component or module. Whatever the subject matter, this should be made clear to the recipient of the report. Table 3 sets out examples of subject matter and Table 4 sets out potential sources of these.

**Table 3**

Examples of subject matter
<p><b>The capital ratio</b></p> <p>The ratio, expressed as a percentage, of eligible capital to its RWAs. Different jurisdictions will prescribe different ways of calculating both the capital and RWAs parts of the calculation.</p>
<p><b>Risk-weighted assets (RWAs)</b></p> <p>Assets weighted according to the risk that they represent.</p>
<p><b>Other regulatory ratios including the leverage ratio</b></p> <p>In addition to assessing risk-based measures of capital adequacy, regulators may also prescribe other ratios to provide another perspective on the ability of the institution to cope with shocks.</p>
<p><b>Controls over a component of a ratio, such as credit risk</b></p> <p>Assurance providers may be asked to look at a specific area within a ratio or business unit.</p>

**Table 4**

Examples of where subject matter may be located
<p><b>Management information</b></p> <p>Capital and RWA metrics may be used for internal decision-making purposes and strategically at board level. Typically, different cuts of information are used for different parties within an institution depending on the level of granularity required for decision making.</p>
<p><b>Pillar 3 disclosures of regulatory information (applicable to G-SIIs and O-SIIs)</b></p> <p>Pillar 3 from year end 2016 requires clear, meaningful, consistent and comparable disclosure of risk information. This takes the form of templates and tables, some of which are fixed formats. The disclosure is broken down into nine categories described in EBA CP 2016/7<sup>2</sup> – <i>Guidelines on disclosure requirements under Part eight of CRR</i>, which contains the EBA's guidelines to ensure the harmonised and timely implementation of the BCBS 309 revised Pillar 3 guidelines in the EU. The BCBS guidelines recommend that the information provided under Pillar 3 must be subject to the same level of assurance as the information provided within the management discussion and analysis part of the financial report. Furthermore, one or more senior officers, ideally at board level or equivalent, must attest in writing that Pillar 3 disclosures have been prepared in accordance with the board-agreed internal control processes.</p>
<p><b>Prudential returns (eg, COREP or national regulator reports)</b></p> <p>Common Reporting (COREP) is the standardised reporting framework issued by the EBA for the Capital Requirements Regulation reporting. It covers credit risk, market risk, operational risk, own fund and capital adequacy ratios.</p>
<p><b>Unaudited disclosure in the annual report</b></p> <p>The importance of capital ratios to banks and their stakeholders means that the numbers and related metrics can feature heavily in performance reporting and presentations. In the annual report the numerator will be subject to some audit procedures under International Auditing Standards, but the RWAs are not. ISA 720 (revised) <i>The auditor's responsibilities relating to other information</i> increases the involvement of the external auditor with regard to information contained within the annual report. Its requirements should be carefully considered by statutory auditors performing work on regulatory capital.</p>
<p><b>Firms' internal policies and procedures</b></p> <p>Firms will create detailed policies and procedures which should be followed to adhere to the externally-required criteria, which may provide suitable subject matter for certain types of engagement.</p>

## Reporting recipient

37. The scope of work should be understood by, and agreed with, the receiving party. If the work is being performed by internal audit, this is likely to be the audit committee in the first instance, but may be shared more widely. Where work is being performed by an external assurance provider, the recipients could include a third party such as a regulator or shareholders.
38. This guidance does not recommend a particular form of reporting, or what would be the most appropriate form of reporting, as this is a matter for agreement between the different parties to the work.

## Determining the scope

39. Scoping a piece of work as an internal auditor or external provider of reporting or assurance is a vitally important part of the overall engagement to which sufficient time should be given.
40. A clearly defined and agreed scope ensures that the work meets the needs of its recipients whether they are management, those charged with governance, regulators or other stakeholders.<sup>2</sup> The intended recipients of reporting, and their particular needs, should be considered as they may use any reports for different purposes. It will also help contextualise the value of the work being done, particularly where a modular or rotational approach is adopted, or if the subject matter of the work is not necessarily linked to a particular disclosure, ratio or other measure at a certain point in time, such as governance or work on controls and processes.
41. Independent to the wider approach being taken, there are some initial scoping considerations which are likely to be useful to all parties to the work. These include:
  - when considering a banking group, which of the entities should be focussed on. For a single entity, business lines may be more relevant to consider;
  - whether to consider internal modelled versus standardised RWAs where applicable;
  - the starting point of the engagement (ie, will there be reliance on source data, or will this be part of any testing performed);
  - the extent to which there is existing audited data and whether this can be relied upon;
  - the maturity of the infrastructure and processes;
  - the history of error; and
  - the areas subject to new regulation or change in technology.
42. The type of report being delivered must be considered when designing an engagement scope. The following reporting considerations may influence the engagement scope.
  - Whether the work will result in a long-form report or assessment versus an assurance opinion.
  - If a descriptive assurance report which explains key areas of risk and focus akin to ISA 701 audit reporting is to be provided (see the reporting section for further guidance in this area).
  - If an assurance opinion is to be provided, the level of assurance requested and whether a technical standard (such as *International Standard on Assurance Engagements 3000*) is to be used.

<sup>2</sup> Where the work is being performed by an external assurance provider, they will need to identify and agree the intended scope of the assurance engagement with the engaging party (or parties).

- The intended recipients of the report and whether the review or assurance report is to be made public, or is only for private use.
- The period to be covered by the assurance engagement or work, whether a particular point in time, or over a period of time, for example processes in place over a particular quarter or year.

**Table 5**

#### Risk-based scoping – sources of existing guidance

It is likely that a risk-based approach to scoping work will be needed to ensure effectiveness and efficiency. In developing such an approach, providers of assurance, or other reporting, can consider a variety of existing guidance including the following.

**Risk-based internal audit planning in financial services**<sup>3</sup> (Chartered Institute of Internal Auditors members only, but may be informative for, though not required of, external assurance providers).

**Supplemental policy statement on the internal audit function and its outsourcing**<sup>4</sup> (from the Board of Governors of the Federal Reserve System and illustrative of considerations used by internal auditors in the US).

**ISAE 3000 (revised), Assurance Engagements Other than Audits or Reviews of Historical Financial Information**<sup>5</sup> highlights that ‘planning is not a discrete phase, but rather a continual and iterative process throughout the engagement’ and that assurance providers need to be aware of the effects of unexpected events, changes in conditions, or evidence obtained and revise the work to be performed as needed.

43. Once the overall subject matter has been determined, further consideration will be needed. The size and scale of the organisation will also influence the scope of the work and the potential for segmentation of different reports or engagements as part of a rotation or work plan. These considerations may include, but are not limited to, the following areas.

#### Books and records

44. A clear and precise definition of ‘books and records’ will be needed to establish the starting point for the scope of the work and any assurance to be provided. The extent and nature of any existing audit, assurance, or other work which an assurance provider may have performed, for example work performed on trade capture systems and where this may influence the scope.

#### Exclusions

45. Exclusions to the scope should be made explicit, for example if solely focussing on RWAs calculated using the standardised approach, with RWAs calculated using internal models being explicitly out of scope.

#### Key focus and process components

46. The breadth and depth of information and processes which are part of RWA and regulatory reporting production will naturally vary by institution and by risk type.
47. All parties to the work must be clear on the key areas of focus and process components for each item or type of subject matter in scope, including the drivers for decision making. If a modular approach to work is adopted, the scoping assessment will need to clarify how scoping decisions have been applied to each element of the subject matter.

<sup>3</sup> [www.iaa.org.uk](http://www.iaa.org.uk)

<sup>4</sup> [www.federalreserve.gov](http://www.federalreserve.gov)

<sup>5</sup> [www.ifac.org](http://www.ifac.org)

## Attestations made to support reporting of regulatory ratios

48. Pillar 3, which sets the disclosure requirements for capital and risk information requires that 'One or more senior officers of a bank, ideally at board level or equivalent, must attest that Pillar 3 disclosures have been prepared in accordance with the board-agreed internal control processes.'<sup>6</sup> In making this attestation it is likely that the senior officer(s) may seek specific evidence about the design and effectiveness of the board-agreed internal control processes. This guidance may be useful in understanding and prioritising what type and level of evidence will help them to make this attestation and internal audit teams or other assurance providers to provide it.

## Risk of misstatement and materiality

49. Work should be planned so it can be performed in an effective and efficient manner including scope, timing and direction of the work and nature, timing and extent of the planned procedures required to achieve its objectives.
50. In framing scoping decisions, the risk assessment should consider the risk of misstatement (inaccuracies) within the subject matter. The granularity of this risk assessment should be proportionate to the nature of the subject matter, especially where a modular approach to work is to be adopted. Considerations include:
- the institution's overall approach to making estimates, judgements and interpretations which feed into regulatory ratios and reporting, as well as an understanding of any management bias in this process;
  - the extent of existing work done by first, second and (if not performing the engagement) third lines of defence or other existing assurance work; and
  - the overall complexity of the institution's business model and exposures, as well as its internal control environment, IT landscape and risk assessment processes.
51. The assurance provider may also want to take into account any initial understanding of the relative conservatism or aggressiveness of the institution with regard to estimates, assumptions and interpretations.

## Establishing what may be of significance for reporting purposes

52. Misstatements, including omissions, are considered to be significant to the recipient if they, individually or in aggregate, could reasonably be expected to influence relevant decisions of intended recipients taken on the basis of the regulatory ratio calculation or a subcomponent (for example credit risk RWAs). The assurance provider's consideration of what is significant here is a matter of professional judgement, and is affected by a range of quantitative and qualitative factors, as well as the common information needs of intended recipients as a group.
53. We would expect assurance providers to apply a combination of quantitative thresholds and other qualitative factors in determining an appropriate level of materiality for an assurance engagement. The relative importance of each of these will be a matter of professional judgement.
54. When planning and performing the engagement, the assurance provider considers materiality in the context of the scope of the engagement, such as the fair presentation of the subject matter (in this case the regulatory capital ratio, and/or its disclosure in COREP, Pillar 3, financial statements reporting), the suitability of the design of controls, the operating effectiveness of controls and the nature of work undertaken of input data, whether sourced directly from the general ledger, or indirectly from other transaction, reporting or aggregation systems. When considering the materiality of control deficiencies or failures, their impact is of greatest importance.

<sup>6</sup> The Basel requirements as set out take effect in 2016, however they are not yet endorsed by the EU so the timing of their application remains uncertain.

## Processes and controls

55. Matters of significance for the processes and controls underlying regulatory capital calculations include primarily the consideration of qualitative factors. Qualitative factors may include such issues as:
- whether management's description of controls includes the significant aspects of processing significant transactions, and whether the description omits or distorts relevant information;
  - the ability of controls, as designed, to provide evidence to support an assurance opinion that control objectives would be achieved;
  - the nature of a control misstatement (for example, the nature of observed deviations from a control, to the extent that an assurance report contains a statement that the control is effective);
  - in the case of periodic reporting of regulatory ratios, the effect of a misstatement that affects the past or current calculation or is likely to affect the future calculation; and
  - whether the misstatement is the result of an intentional act or not.
56. Matters of significance for the assurance provider's opinion on the operating effectiveness of controls include the consideration of both quantitative and qualitative matters, such as the tolerable rate and observed rate of deviation versus the nature and cause of any observed deviation.
57. The assurance provider should consider their responsibility to report deficiencies which may not be significant, but may be of interest to the recipient of the report, depending upon the way in which the original engagement was scoped.

## Regulatory ratios

58. What is considered significant for the regulatory ratio is a matter of professional judgement depending, again, on taking into account both qualitative and quantitative considerations.
59. Quantitative materiality thresholds should be determined for the subject matter as a whole based on the assurance provider's standard methodology. The quantitative level of materiality may be determined at both an aggregate level, and at the sub-component level (for example relative to the size of RWAs attributable to different risk classes, product types, and legal entities or business lines).
60. Materiality thresholds would differ according to the relevant subject matter (for example, capital resources, or RWAs) on which assurance is being provided. Where assurance is to be provided on the capital ratio, materiality could also be set with reference to minimum Pillar 1 (or Pillar 2) requirements, measured over a representative reference period.
61. Quantitative materiality thresholds will take into account numerous factors, not simply total balances or exposures. These may include:
- the impact of a misstatement on capital resources;
  - the potential need for a lower threshold where the impact on the capital ratio of a misstatement is a multiple of the misstatement (ie, where there is a capital intensive RWA treatment); and
  - proximity to a regulatory threshold or trigger point which may lead to a lower materiality level.

62. Other considerations may include:

- the business model of the institution, as reflected externally and in the way management information is presented and assessed;
- areas of particular judgement (for example complex or subjective regulatory interpretations);
- external conditions (macroeconomic environment and changing regulation);
- movements in the capital ratio as a result of RWA optimisation/efficiency and balance sheet management;
- the presence of convertible debt or other capital sensitive instruments;
- the capital planning policy;
- the history of previous errors or misstatements in the regulatory capital calculation or disclosures;
- the number and nature of stakeholders impacted (whether capital ratios are publically disclosed to the market);
- the extent to which a misstatement affects compliance with law or regulation; and
- the effect of an adjustment that affects past or current regulatory capital calculations or is likely to affect the future regulatory capital ratio.

The impact of proximity to minimum capital requirements or other triggers would be assessed as part of the qualitative materiality considerations; we would expect the assurance provider to apply a lower materiality threshold (resulting in increased level of assurance procedures) where, for example, the capital ratio is close to a significant trigger level. This would also be a significant factor in the determination of engagement risk, increasing the level of detailed risk-based testing performed.

63. The quantitative materiality thresholds applied and the basis for overall determination of materiality, including relevant qualitative considerations, should be agreed as part of the scoping phase. If an engagement is being performed explicitly for, or commissioned by, a regulator, their requirements should be taken into account in scoping.
64. For further general guidance on materiality, please refer to ISAE 3000.<sup>7</sup>

### Standardised approach

65. Performing work on ratios produced using the standardised approach will require specific considerations. The risks may be reduced in certain respects, but there will still be challenges associated with reporting and assurance. The size and complexity of a banking institution relying on the standardised approach may be such that they do not have a regulatory policy team, for example, and rely on one individual or outsourcing to ensure their calculations comply with the latest policy decisions. The assurance provider should consider not just the technical aspects, but also the structural and environmental characteristics of the entity and how this affects the assurance approach.
66. Clarity will be needed on the scope of the standardised approach which may include credit risk, counterparty credit risk, CVA and market risk.
67. For each of these potential standardised risk types, the assurance provider will need to assess the scope of products and exposure types and the implications for the scope and type of work required.
68. A specific example of key considerations in scoping an assurance engagement around the standardised capital calculation approaches is set out on page 40.

<sup>7</sup> ISAE 3000 (revised) – Assurance engagements other than audits or reviews of historical financial information  
[www.iaasb.org](http://www.iaasb.org)

## Additional considerations for regulator-approved internal models

69. Where the subject matter of work or reporting is compiled in full or in part using an internal model, the assurance provider will need to assess the implications for the scope and type of work required, particularly if they are an external assurance provider.
70. Clarity will be needed on the regulatory permissions to use internal models, and the extent to which data included in the subject matter of the work to be performed depends on these models.
71. While approval of the model methodology and its use for specified products and portfolios lies with the regulator, an engagement may include procedures to provide assurance that the model used by the engaging party is consistent with the latest version for which regulatory approval has been granted.
72. If assurance work is being performed by an external provider, inclusion of models within the scope of the engagement will be a matter for discussion with the engaging party and, where appropriate, the regulator. It is likely to depend on factors such as existing assurance over the operation of the model, or the length of time since approval was granted.
73. Subsequent validation work may consider the extent of existing back testing, the data and portfolios being used in the model, the coverage, other inputs and whether the risk-weights are being applied in line with the methodology, rather than the methodology itself.

## Section 5 Planning and performing work

74. There is a lot of existing guidance for both internal auditors and external assurance providers which consider planning and performing different types of work. This document does not seek to replicate existing resources, but provides guidance on performing work on the suggested potential modules and how the assurance provider should plan and perform work on areas which may be of particular risk within, or idiosyncratic to, the calculation of regulatory ratios. The other sources of guidance cover areas common to all assurance work such as risk assessment and materiality.
75. Comprehensive and robust planning is essential in order to achieve the maximum value from any work performed. In addition to the considerations referenced within the previous section (such as defining books and records, and agreeing a risk-based materiality threshold), it may be important to consider:
- the appropriate mix of controls versus substantive testing;
  - the design and operating effectiveness of key controls (including reconciliations);
  - the amount of end-to-end walk through testing required;
  - sample sizes for reviewing source documentation (terms sheets/contracts);
  - completeness testing (especially around off balance sheet items);
  - completeness reviews of relevant disclosures or reporting; and
  - the governance structure, oversight and review processes and adequacy and appropriateness of senior management challenge.
76. Illustrative examples relating to particular modules are set out in section 8. This section of the document sets out other considerations which will inform the planning and performance of work.

### Interpretation of rules and the application of management judgement

77. The calculation of RWAs will involve complex judgements and estimates, particularly around interpretation of regulatory rules. In order to understand whether management is appropriately and reasonably exercising its judgement and applying the rules, there are some general principles which may be helpful for anyone undertaking a piece of work, whether providing an assurance opinion or another form of reporting.
78. In order to accurately reflect different types of business models and assets, the rules are subject to interpretation and application which may be subject to legitimate variances between areas of a business and different businesses. This affects the level of work required to gain enough evidence to report. Both at the planning and execution stages it will be important to understand the relative uncertainty of the subject matter. For example, using the standardised approach to risk-weighting reduces the level of uncertainty, but judgement is still required.
79. The assurance provider should assess if the interpretations for performing the calculations are appropriate and have been applied consistently, and whether changes, if any, in interpretations or in the method for applying them from the prior period are appropriate in the circumstances.

80. When reviewing estimates and judgements the assurance provider may include the following activities within their work.
- Testing the methodology for arriving at the judgement or interpretation.
  - Testing the operating effectiveness of controls over how the judgement or interpretation is made with substantive procedures.
  - Developing an independent judgement estimate or range for evaluating management's judgement against.
81. The size of the institution will affect the choice of approach. For example, for a large institution, developing an independent judgement may be cumbersome, and reporting timelines may not allow enough time for a review of any factors which may provide corroborative evidence or support the basis of judgements taken at the time of calculation or preparation of reporting. However, if it is determined that management's approach is inadequate it may be necessary to develop an independent judgement or range of outcomes to see if management's view lies within this range. If it does and there are no indications of bias, then it might be possible to conclude on this basis. If it does not, there may be a misstatement, the impact of which would need to be evaluated.
82. When planning work, it is useful to consider the results of previously made judgements and prior experience (such as loan repayments ceasing). Subsequent experience provides some indication of the reasonableness of the judgements taken, and potentially the process used by management, although this is limited by the time periods involved and the impact of specific events, such as whether a form had to be resubmitted because of an effect on the ratio or measure or on a memorandum item of disclosure.
83. When additional regulation or policy announcements are made available, it should be considered whether any new information clarifies a previously articulated regulation or piece of guidance, or whether it provides a concept or criteria which must be followed.

## Management bias

84. When assessing judgements and estimates the potential for, and evidence of, management bias must be considered. Management bias is a lack of neutrality in presenting information. Professional scepticism is required as there may be incentives to understate the level of risk within portfolios, so an assessment will need to be made as to whether all relevant risks have been taken into account.
85. When making estimates to group assets together, these estimates must be sophisticated enough to group assets only when they have genuinely similar risk criteria.
86. Any indications of bias should be considered and the implications assessed as they may lead to a material misstatement or lead to a resubmission of a regulatory form or other data being required, in conjunction with any regulatory requirement that there may be for prudence in particular decision making or preparation of information.

## Experts

87. Use of a subject matter expert may augment the work being performed or enable the assurance provider to more easily draw conclusions about complex or specialist areas.
88. Regulatory reporting of capital and other metrics can rapidly change and evolve, which adds to the existing complexity created by a diverse array of assets and activities covered by the requirements. This makes it more likely that experts may be needed, for example in:

- law and regulation
- valuations
- IT
- financial modelling.

These experts may be needed to help provide and understand evidence, or be consulted depending upon the extent to which judgemental interpretation of regulatory standards is needed, complex assets are present and complex models are used. Experts are more likely to be needed, or needed to a greater extent, when the entity uses an advanced modelled approach, rather than when part or all of the RWA calculation uses a standardised solution.

89. The individuals or firm providing reporting or an opinion which incorporates the work of such experts should consider their responsibility for the work of the expert and applying existing standards and guidance.<sup>8</sup>
90. Internal model specialists may be needed, depending upon the scope of the work and they should consider the impact of the following matters to define the scope of work required.
- The extent and timing of ongoing independent model validation activities, including matters and findings raised.
  - Regulatory approvals which have been granted and any subsequent correspondence.
  - The frequency and significance of updates to the model since the last approval.
  - The engaging party's approach to testing and validating model updates and changes, including the overall governance and control framework implemented over this process.

### Judgements around data and information used

91. The data and information used to derive RWA valuations and other calculations will vary from business to business due to the business's capacity and ability to generate information internally, the extent of available external data relating to the risks they face, and the sophistication of their systems and reporting.
92. An assessment of data will need to consider the appropriateness, adequacy and sufficiency of what is being used.

### Example considerations when assessing judgements on internal (ie, source system) information

93. When considering the use of internally-generated information (ie, trading or other static data) to derive RWA values, the internal auditor or assurance provider will need to understand the extent to which internal information from other departments is used, how it is controlled and the breadth and depth of reach it covers.
94. Some relevant questions in assessing this may include:
- how frequently do models used interface with the source system to provide inputs?
  - how is the underlying system tested, and can it be relied upon? ie, general ledger to risk system to formula within the model;
  - is the level of both specific and general provisions appropriate, and how frequently are they reviewed?
  - has an exposure to a third country institution been treated correctly?

<sup>8</sup> This may include, but is not limited to, ISA 620 *Using the work of an auditor's expert*, for example.

95. When considering internally-generated information to provide evidence to validate a judgement or assessment, timing constraints between generation and reporting may mean that valuation adjustments need to be assessed for likeliness of making a material difference to the model outcome. The closure of the ledger and running of calculations may not work with reporting timelines.

#### Example considerations when assessing judgements on external information

96. Even if the entity has a direct data interface with a respected system in the market, there should be a system for validating this data on a sample basis to ensure it is relevant and fresh ie, stale ratings could be identified, which would result in a deficiency or failure being reported.
97. Where there is more than one external credit rating for one exposure, they will need to be applied in the correct order to determine the appropriate credit quality step.
98. Information may differ by jurisdiction, and some jurisdictions may present inherent limitations. For example, assets relating to certain countries may be subject to less available counterparty and credit data than others. Assurance providers should be aware of conflicting or disconfirming evidence as well as confirming evidence and the need to consider alternative scenarios. All sources of information, which can be considered without undue cost or effort, may be relevant.
99. Isolated events can cause model outputs to be misleading in certain circumstances. For example, a corporate failure which is not indicative of the wider economy or sector may skew results for similar assets depending on the level of granularity that the entity uses. Consultation with experts or others may be required to understand how events have impacted the models and form a view on whether they are properly taken into account.
100. RWA models use credit quality scores which may be derived from credit agencies, but may be internally generated. When they are internally generated, the assurance provider will need to obtain assurance over this model as well and may use an expert for this purpose. When they are derived from a credit agency, this should be done on a systematic and consistent basis and the assurance provider could agree a sample of credit quality scores back to the source. They may also wish to consider the reputation of the credit agency and the appropriateness of using their data for this purpose. This could include the controls over using the external data and evidence of the entity's understanding of the credit rating agency's methodology.

#### Interpretations

101. In order to calculate regulatory ratios, the firm must interpret legislation (eg, CRR), the firm's choice (where applicable) of implementing regulators' clarifications of legislation (eg, EBA Q&As), and firm-specific waivers granted by national and international regulators (together the 'regulatory reporting framework').
102. For many assurance engagements, the assurance provider should understand the way in which the different elements of regulatory capital are calculated, the firm's interpretations of those requirements, and whether uncertainty is associated with any interpretations.
103. Based on the scope of their engagement the assurance provider may determine whether:
- management has appropriately applied the requirements of the applicable regulatory regime (eg, CRD IV); or
  - the proxies applied in the firm's calculations are appropriately conservative when the firm lacks the data to apply the regulatory reporting framework and its interpretations.

104. When considering the validity of interpretations, the assurance provider shall undertake one or more of the following, taking into account the nature of the interpretation.
- Determine whether events occurring before and up to the date of the assurance provider’s report give assurance evidence regarding the interpretation.
  - Test the design and operating effectiveness of the controls over how management made the interpretation, together with appropriate substantive procedures.
105. When considering interpretations, the assurance provider shall evaluate the following.
- How management has considered alternative interpretations or outcomes and why a particular one has been chosen.
  - Where relevant to the reasonableness of the interpretation, management’s intent to carry out specific courses of action and its ability to do so based on the outcome of applying that interpretation.
  - How management’s interpretation compares to current publicly-available rules and guidance within the CRR, relevant technical standards, EBA Q&A and other publicly-available guidance.

### Manual adjustments made during the RWA production process

106. The RWA production process typically involves a combination of both structural and ad hoc solutions, with manual adjustments and overrides occurring at one or more stages of the end-to-end process. Manual adjustments can include both recurring and ad hoc adjustments relating to data completeness and accuracy and the regulatory calculations themselves.
107. The assurance provider will need to understand where manual adjustments occur in the overall process, the function or individuals performing the adjustments, and the overall controls environment. Appropriate substantive and other procedures will then need to be designed to test the rationale and application of these adjustments.

**Table 6**

Examples of typical manual adjustments which may be made
To correct for inaccurate or incomplete transactional or counterparty-level data that is extracted from the underlying books and records into the regulatory reporting systems.
To upload transactional and counterparty information that is not captured through an automated feed.
To correct for trades missing from the population of feeds from books and records into the regulatory reporting systems.
To deal with non-standard transactions for which automated calculation logic is not available or is incomplete.
To address changes in interpretation of regulatory rules and guidance.
To remove duplicate transactional data from the feeds from books and records into the regulatory reporting systems.
To allow data extracted from source systems to mirror processing logic in the regulatory reporting systems.
To enrich transactional or counterparty information data sourced from underlying books and records.

108. The assurance provider will need to obtain details of the recurring manual adjustments.

**Table 7**

Illustrative work procedures relating to manual adjustments
Through enquiry, understand the rationale for the adjustments being posted, the controls and management oversight of those adjustments.
Through enquiry, determine at what stage in the end-to-end process the manual adjustments are being made (for example adjustments may be made within a data warehouse, the regulatory reporting systems and/or the face of the actual regulatory reporting returns).
Perform substantive tests to agree the manual adjustments back to supporting documentation and data.
Through enquiry and documentation review, determine the adequacy of the review and formal approval processes around manual adjustments.
Assess whether embedded prudence or management bias has built into the regulatory computations. If so, consider whether this is understood, has been subject to appropriate governance and approval, is adequately documented, and is in compliance with the relevant rules, guidance and reporting instructions.
Test controls around manual adjustment processes.

109. Non-recurring manual adjustments may also arise on a particular RWA generation date. These typically arise due to unexpected issues with systems and data feeds that have been identified from key reconciliations of the data flows and reviews such as analytical and variance analysis and management sign-offs. For some types of reporting, when considering the recurring manual adjustments, the assurance provider will need to understand the population of manual adjustments made on a certain date and their rationale, and perform appropriate substantive and review procedures.
110. The assurance provider should consider whether such non-recurring manual adjustments are adequately documented and approved (in accordance with the firm's materiality framework where appropriate). Proposed review procedures may need to be extended where the potential impacts of errors and omissions is increased (for example where the firm is operating within close proximity to its regulatory limits).
111. All adjustments should be reviewed and signed off at the appropriate level for the organisation.

## Section 6 Reporting

112. When performing work on subject matter that is often voluminous and highly complex, precise scoping is required, as discussed earlier in this document. This combination of what may often be a bespoke scope and highly technical subject matter emphasises the need for fit-for-purpose reporting, designed with stakeholder needs in mind. This guidance does not recommend a particular form of reporting, or consider what reporting may be most appropriate, as this is a matter for agreement between the parties.
113. High quality reporting makes transparent the work that the assurance provider has performed and provides valuable information about the subject matter that is tailored to the needs of the party or parties who will be receiving, and may be expected to act upon, the report. It will also contextualise the scope of the work relative to the wider subject matter (eg, the capital or other ratios and measures which are widely disclosed and understood). The location of the subject matter (ie, public or private, within the annual report or within a presentation) may influence the nature of reporting desired.
114. An engagement covering governance over regulatory ratios would not normally result in a reasonable or limited assurance opinion. Testing is likely to be undertaken via interview of key employees and senior management and review of policies, procedures and meeting minutes relating to governance challenge and decision making.
115. The assurance provider should consider events that have taken place between the preparation of calculations and reporting, their submission, and the date at which assurance is being provided, to assess if any such events should be reported under the scope and terms of the work being performed, or if they affect reporting which has already been submitted.

### Types of reporting

116. As with audit reports, the assurance provider can assume an understanding of the subject matter and a willingness to apply diligence in reading the report. Where reports are being made internally, assurance providers should consider that different stakeholders will have varying abilities to process the report, so fair, balanced and understandable executive summaries, key issues tables and other devices may be useful to enable recipients to benefit from genuinely helpful reporting.
117. It may be helpful to illustrate the impact of findings, both financial and in terms of control deficiencies and the consequences they have, to help recipients of the reporting prioritise where actions need to be taken.
118. During the scoping process, other areas of reporting can also be considered. For internal auditors in particular, including root cause analysis of matters identified may be extremely useful. This may include identifying the nature, magnitude, timing and location of errors, misstatements or deficiencies and analysing the behaviours, actions, inactions and conditions which need to change to prevent these from happening again. Examples might include systems-based or process-based root cause analysis.

119. Internal auditors will be able to work closely with audit committees and others to whom they report to ensure that relevant and understandable information about the work that they have done is being conveyed. This may often take the form of a traffic light type report which prioritises issues by their probability and impact, enabling decisions to be made about what action must follow.
120. For external assurance providers, it will be important to agree the level of detail which is expected to be reported, and to whom the report is addressed, as well as whether it will be issued privately to the company or made public.
121. Some examples of different types of, and uses for, reporting are listed below.

### Assurance reports

122. Where possible, a reasonable or limited assurance opinion could be provided. For further information on assurance opinions, please refer to ISAE 3000 (revised).

### Agreed-upon procedures reporting

123. For agreed-upon procedures, the assurance provider will perform an agreed set of procedures based on the recipient's requirements, covering a particular aspect of information. Results of the procedures are reported on a factual basis with no opinion or conclusion. It is for the recipient to draw their own conclusion.

### Mixed scope engagements

124. Where the recipient of a report is seeking reasonable assurance, but one or more preconditions for assurance is absent, or it will be inefficient to conduct reasonable assurance work, it may be possible to combine types of reporting to produce something which meets their needs. For example, there may only be suitable criteria in elements of a particular process or calculation, which means that any assurance opinion is inherently limited. It may be more appropriate to provide other reporting which does not convey an opinion on these areas, as it will be of more practical use for the recipient.

### Long-form reporting

125. In some jurisdictions long-form reporting is required by the regulator, either from internal or external audit, or both. This type of report does not convey a reasonable or limited assurance opinion but describes findings made during the performance of procedures and review work. The recipient of the report will usually need reasonable knowledge to be able to draw their own opinion and conclusion on the basis of the analysis provided. It may not be suitable for a public assurance opinion.

### Internal reports

126. Internal reports which are shared solely with those charged with governance and/or management can be more flexible in style and approach. The assurance provider should agree (as early as possible) with the recipients what sort of information is required, and how this is most effectively communicated. This could include:
- presentation of an executive summary to help recipients walk through longer and more complex reporting;
  - root cause analysis and information where an organisation has an ongoing process of improvement and/or remediation; or
  - improvements and traffic lights similar to a more traditional internal audit report or audit management letter.

## Helping recipients of reporting understand particular challenges

127. In 2015 International Standard on Auditing (ISA) 701 (NEW), *Communicating Key Audit Matters in the Independent Auditor's Report* introduced a requirement that key matters are disclosed as part of the statutory audit report. While ISA 701 does not apply to voluntary assurance engagements, it may provide lessons and examples for other assurance providers.
128. The key matters reflect where the assurance provider spent significant time and effort when performing the work. Disclosure of these areas can make more transparent the basis of the work and enable a greater understanding of its conclusions by the parties receiving the report.
129. Key matters disclosed in reporting may also form the basis for greater engagement between management, internal auditors and those charged with governance in order to resolve issues and make improvements.
130. Some example considerations when disclosing key matters are given in the table below.

**Table 8**

Making key matters meaningful
<b>Context</b>
Unlike financial statements where significance is defined in relation to the financial statements as a whole, this may not be the case for regulatory ratios. The assurance provider should ensure that the scope of the work done is clearly articulated, both in terms of what it covers but also how that relates to the rest of the information. This might include the context and magnitude of any findings or significant matters and ensuring they are understandable to the reader of the report.
<b>Description</b>
Use relevant subheadings which refer to the related subject matter in the same way that it is disclosed, or if it is not disclosed separately (ie, a process component or specific type of risk which is not individually disclosed) ensure it is precisely described. Describe why the matter was determined to be of such significance that it became a key matter. This will take into account qualitative and quantitative factors about the subject matter, assessing their relative importance within the context for the intended recipient of the report.
<b>Involvement of experts</b>
In determining whether an area of work is a key matter, the assurance provider should consider the seniority of individuals involved in delivering the work and the need to consult with experts and specialists. This may be an indicator of the work effort required to deliver the report's conclusions on certain matters and therefore its significance.
<b>The nature of the criteria</b>
The regulation and legislation which relates to the calculation of regulatory capital can change frequently and can be subject to official and unofficial interpretations which must be taken into consideration by the entity. Where these changing policies and regulations have a significant effect on the subject matter, the assurance provider should consider whether significant external developments affect the overall approach to their work and give rise to matters of significance.
<b>Matters of difficulty</b>
Assurance providers should disclose where they have difficulty applying procedures and where there are severe control deficiencies. The attestation requirement for internal controls in Pillar 3 and the principles of BCBS 239 mean that difficulties in this area should be of interest to management and those charged with governance.
<b>Materiality</b>
The assurance provider may wish to disclose the level of materiality used in the performance of the work. ISA 700 (revised) <i>Forming an opinion and reporting on financial statements</i> sets out that, for more informative and useful reporting, the auditor should provide a definition or description of materiality in accordance with the applicable [financial reporting] framework. This concept can equally be applied to reporting on regulatory ratios to further contextualise the report and its subject matter.

131. Once matters have been determined, the report should present in a succinct and balanced way the matter and the work done in order to gain the relevant evidence in that area. Where possible, technical language should be avoided so the report can be meaningful to the widest possible audience.
132. This disclosure might include a description of aspects of the approach to the work, whether an expert or specialist was needed to respond to the risks in that area and a high level description of the work that was done to gain evidence.
133. Challenges unique to this type of work may include relating key matters to areas of subject matter that are considered most useful (ie, RWA flow disclosures) but may not have been the subject matter of the engagement itself.

## Considerations when providing an external assurance opinion

### Example content of a reasonable assurance opinion

134. ISAE 3000 (revised) contains guidance on the content which would typically be covered within a reasonable assurance opinion. The nature of the opinion provided on regulatory reporting will vary according to the requirements of recipients and the underlying subject matter, but may include, for example, an opinion on the completeness of data extraction from underlying source books and records, and the proper preparation of regulatory reporting in accordance with relevant rules and guidance.
135. An external assurance provider should consider the following points when determining the form and content of a reasonable assurance opinion.
- Overall framing information, such as an appropriate title that helps to identify the nature, addressee and assurance provider.
  - Subject matter and underlying subject matter information, such as the point in time or period being reported on, the characteristics of the subject matter and how the characteristics may influence precision of measurement or available evidence (ie, the impact of interpretations or judgements).
  - The applicable criteria against which the underlying subject matter was assessed, and whether these are sufficient to communicate the basis for the assurance provider's conclusion – ie, the rules as prescribed by the Articles of the EU CRR, taking into account any clarification around key interpretations provided by the PRA or EBA Implementing Technical Standards and/or Q&A responses.
  - Inherent limitations – ie, the modular framework will mean that reasonable assurance will, of necessity, be limited to only those modules included within scope, and assumptions will be made around the completeness and accuracy of source books and records as defined.
  - Specific purpose – the assurance provider may consider it appropriate to indicate that the assurance report is intended solely for specific recipients. The absence of a restriction does not in itself indicate that a legal responsibility is owed by the assurance provider to a recipient.
  - Respective responsibilities – the party responsible for the underlying subject matter should be identified as distinct from the assurance provider who is responsible for evaluation of the subject matter against the criteria and independently expressing an opinion.
  - Applicable quality control requirements and compliance with independence and other ethical requirements – applicable requirements or standards should be identified, including ISQC1.
  - Summary of work performed – ie, the nature and extent of procedures forming the basis for the assurance provider's conclusion. Identification of

the particular regulatory returns or other regulatory reporting information/ disclosures tested, description of the work carried out on individual modules or procedures carried out around interpretations or other areas of judgement may help the reader understand the basis for the conclusion reached.

- Conclusion – examples of conclusions expressed in a form appropriate for a reasonable assurance opinion are set out in ISAE 3000 (revised) and will depend on the nature of the subject matter, identified criteria and/or reporting included within scope.
- Unmodified and modified conclusions – the nature of any matters identified and the practitioner’s judgement about either the pervasiveness of, or the effects or possible effects on the subject matter information, affects the type of conclusion to be expressed. Conclusions can be qualified or adverse depending on the materiality of identified matters. Where matters identified are sufficiently significant the conclusion may be disclaimed.

### Basis of preparation

136. A basis of preparation from the firm about the subject matter and explaining the key judgements used in preparation of the subject matter may be required alongside reporting. This will enable more narrative disclosure and may help ensure expectations for reporting are managed and met.

### Representations

137. As contained within International Standard on Assurance Engagements, assurance providers will obtain representations to accompany their opinion from the directors or senior management, as those responsible for regulatory ratios.
138. Example representations include the following.
- Their acknowledgement of responsibility for the subject matter (there may be interaction with the UK Senior Managers Regime and any relevant attestation requirement which will inform this representation).
  - Confirmation that all the supporting documentation and information relating to the subject matter has been made available.
  - Disclosure of additional information, which may include:
    - the appropriateness of assumptions used in judgements/estimates and interpretations;
    - instances of non-compliance with laws and regulations or uncorrected errors;
    - design deficiencies in controls and instances when controls have not operated as described; and
    - any subsequent events to the period covered up to the date of the report that could have a significant effect.

### Communication with regulators

139. There may be instances when findings or reporting have to be shared with regulators. In this situation, assurance providers should be mindful of their relevant ethical and professional requirements, including the different requirements for auditors and reporting accountants.

# Section 7 Quality assurance

## Expertise

140. Assurance providers should consider their professional requirements for training and competence. For example, ICAEW Chartered Accountants performing work on regulatory capital should be aware of, and follow, the ICAEW Code of Ethics A part 130 *Professional competence and due care*. Regulatory capital is a complex and rapidly evolving area. Assurance providers must only perform work which they have the competence and expertise to perform.
141. Assurance providers should have procedures and systems in place, appropriate to their market, size and operation, to ensure that:
- work is organised and controlled to ensure firm and industry standards are met;
  - appropriate supervision and review arrangements are applied;
  - all work undertaken is adequately recorded and monitored; and
  - all staff are made aware of, and comply with, the relevant systems and procedures.

## Use of an expert to obtain sufficient and appropriate evidence in order to report

142. A variety of experts could be used when reporting on regulatory capital ratios ie, modelling, IT, regulatory or legal. When using the work of an expert to draw conclusions for reporting, the assurance provider has responsibilities for that expert's work. ISA 620 *Using the work of an auditor's expert* provides existing guidance for statutory auditors in this area, and may be helpful to other assurance providers.

## Practical aspects

143. Each phase of work should be conducted within an environment where quality standards are maintained and quality of work is monitored. Those performing engagements will follow the ICAEW Code of Ethics where relevant, or their own trade or professional body's code of ethics and professional standards, as well as referring to other relevant practice, including any related regulatory requirements, to ensure quality assurance best practice.
144. Engagements performed in accordance with IAASB assurance standards (ie, ISAE 3000) must also comply with International Standard on Quality Control 1, *Quality Control for firms that Perform Audits and Reviews of Financial Statements, and other Assurance and Related Services Engagements* (ISQC 1) or other professional requirements that are at least as demanding. Providers who are not professional accountants should comply with ISAE 3000 paragraphs 3, 4 and 12(r).

## Supervision and review

145. All aspects of the work, from proposal, planning, execution, to meetings and report writing, should be subject to review. The extent of supervision and review is likely to depend on the degree of risk associated with the work and the composition of the

team. Such reviews are part of an external engagement process and if review papers are not kept, a note should be made on file that a review has taken place. Appropriate procedures should be determined to minimise the risk of errors and misjudgements.

### Independent quality review function

146. In order to maintain quality and an appropriate degree of challenge throughout the engagement, assurance providers should consider appointing an independent individual to act in a quality review capacity.

### Recording work

147. All those involved in the work must make adequate file notes and keep them on the relevant engagement files to show the relevant source and/or reference material in support of any opinion given and any research undertaken.

148. Procedures should be in place to ensure that quality assurance standards are maintained for documentation and recording work. These include:

- files which are well organised and kept up to date;
- file notes are maintained, to ensure work continuity in the absence of key members of staff;
- relevant file notes are kept of telephone calls and meetings;
- final copies of reports on file are issued in accordance with the agreed engagement;
- a file note is made of any other relevant discussions and enquiries;
- appropriate work programmes are retained on file; and
- all files and documentation relating to the report, whether in hard copy or electronic form, are held securely and confidentially.

### Review of procedures

149. Assurance providers will consider issues such as whether staff receive adequate training and whether access to technical material is sufficient. The review should ensure that the work carried out conforms to the terms of the engagement letter.

### Complaints

150. Any complaints should be investigated immediately. If, following the investigation, the complaint is justified, the assurance provider should do whatever is appropriate to resolve the matter.

# Section 8 Illustrations of the modular framework

## How to use this section

151. This section provides illustrative examples related to each column and row of the modular framework. It aims to give assurance providers a starting point to consider work in each of the relevant sections. It is not intended to be considered in its entirety, but readers should reference the particular section related to the scope of their engagement. Examples are provided for governance, internal control, IT and output. Within each of these categories the illustration walks through the organisation-wide framework, source data, selection relevant data, calculation parameters and judgements, calculation and reporting and outputs.

## Example 1 – Governance

### Organisation-wide framework

152. An effective governance framework is vital to the proper functioning of a regulatory capital production and reporting process. It makes the regulatory capital production and reporting process robust and reliable for internal and external stakeholders.
153. There is no overarching *Capital Requirements Regulation (CRR)* framework mandating a particular governance process and internal control framework which should be applied for the production of RWAs. Generic benchmarks on effective governance, which may be relevant to a review of this element, include the OECD's Principles on Corporate Governance and the Basel Committee's Guidelines on Corporate Governance Principles for Banks.
154. BCBS 239 *Principles for effective risk data aggregation and risk reporting* which is explicitly for internationally active banks, specifically G-SIBs, may also provide guidance. Principle 1 is governance, promoting strong governance arrangements.

**Table 9**

Example relevant components relating to governance
<p><b>The entity's overall formal governance framework (structure, form and terms of reference)</b></p> <ul style="list-style-type: none"> <li>• Documentation of roles and responsibilities.</li> <li>• Clarity of reporting lines including committee structures and relevance and comprehensiveness of supporting management information (MI).</li> <li>• Policies and procedures.</li> <li>• Minutes of meetings evidencing discussions held, challenges, decisions made and actions taken and followed through, including aged actions lists.</li> </ul>
<p><b>Frequency of meetings and reviews</b></p> <ul style="list-style-type: none"> <li>• Frequency of board and committee meetings.</li> <li>• Adequacy of MI and reports developed by management to provide effective oversight of the RWA and regulatory reporting process.</li> <li>• How frequently policies, guidelines, processes and controls for RWA and regulatory reporting are reviewed.</li> </ul>
<p><b>Effectiveness of committees and the senior management team</b></p> <ul style="list-style-type: none"> <li>• The process by which management regularly reviews the effectiveness of its committees and its senior management team.</li> <li>• How reporting lines and any changes in senior management are kept up to date.</li> <li>• Quality of documentation provided to committees and senior management to allow effective review/challenge and decision-making process around ongoing suitability of model use and key regulatory interpretations and assumptions adopted within both standardised and modelled regulatory capital calculations.</li> </ul>
<p><b>How conflicts of interest are dealt with</b></p> <ul style="list-style-type: none"> <li>• The mechanism by which potential conflicts are identified and mitigating actions determined and followed through, including: <ul style="list-style-type: none"> <li>– the existence of a conflict of interest policy which enables conflicts to be identified and mitigated; and</li> <li>– the maintenance of a conflict register.</li> </ul> </li> </ul>
<p><b>Skills, experience and expertise</b></p> <p>The recruitment, induction and training process should make directors and senior managers aware of their specific responsibilities in the firm. It should consider:</p> <ul style="list-style-type: none"> <li>• how they are assessed to ensure they have adequate skills for their role;</li> <li>• how board skills are assessed and a skills matrix established and updated; and</li> <li>• how training and continuing professional development (CPD) is undertaken by board and senior management to keep them up to date with regulatory changes and market developments.</li> </ul> <p>Organisational features:</p> <ul style="list-style-type: none"> <li>• diversity</li> <li>• linking competence to performance assessment and reward.</li> </ul>
<p><b>Culture</b></p> <ul style="list-style-type: none"> <li>• The extent to which cultural values are articulated, maintained and embedded in the organisation, including assessment in employee surveys, appropriate incentives and performance conversations.</li> <li>• Active oversight of how culture is effectively embedded within the organisation including the role of non-executive directors.</li> </ul>
<p><b>Speaking up and speaking out</b></p> <ul style="list-style-type: none"> <li>• Establishment of a formal, effective and timely escalation process for issues and errors in the RWA and regulatory reporting process.</li> <li>• Assignment of personal responsibilities within each contributing department, including internal reporting lines and accountability (eg, finance, operations, risk, legal, IT).</li> </ul>

155. Some examples of how an assurance review could be scoped around the governance elements of the end-to-end RWA production and reporting process, row 1 of the RWA assurance module (refer to table 1), are given below.

## A. Source data

156. Strong governance in relation to data sourcing is a critical component within the control framework for RWA and regulatory reporting.
157. In assessing the governance around data sources, consider the following relevant areas.
- Overall ownership and accountability for RWA-related data, assignment of responsibility for data capture, transmission and quality control.
  - End-to-end documentation of IT architecture and data flow from source to regulatory reporting.
  - Identification and documentation of key risks in relation to secure data storage and data transmission, together with documented policies and plans to mitigate those risks.
  - Service Level Agreement (SLA) documentation (both internal and external, depending on data providers) relating to the delivery of source data for the RWA and regulatory capital production process.
  - Documentation of lines of escalation and procedures in place to resume normal service and improve future service if SLAs are breached.

## B. Selecting relevant data

158. Using a robust governance framework when selecting relevant data may help to maintain and enhance data quality and contribute to the completeness and accuracy of regulatory capital reporting.
159. In assessing the governance around selecting relevant data, it will be important to consider documentation of ownership, policies, processes and controls in areas such as:
- data mappings through system interfaces;
  - functional specifications for data aggregation or disaggregation;
  - data linkages between different sources including unique linking identifiers; and
  - identification of key risks in relation to data manipulation, together with policies to address these.

## C. Setting calculation parameters and judgements

160. In assessing the governance on determining calculation engine or model parameters, including assumptions and inputs underlying standardised regulatory capital models, consider the following relevant areas.
- Model review processes demonstrating ongoing technical and non-technical assessments of model and characteristic suitability.
  - Review of key regulatory assumptions and interpretations, data classification and mapping within the standardised regulatory capital models.
  - Ownership of key data parameters, individuals with accountability and responsibility for data integrity.
  - Policies – review and maintenance of static tables.
  - Policies – scope and frequency of validation, testing and back testing of parameters/key standardised model assumptions.
  - Policies – manual adjustments to parameters, key standardised model assumptions and data inputs, including thresholds, approvals, manual adjustment logs and remediation timelines.
  - Identification and documentation of key risks in relation to model parameters, together with documented policies and plans to mitigate those risks.

- Policies for ensuring initial and ongoing compliance with regulatory requirements.
- Change management policies and procedures.

#### D. Calculation

161. Effective governance is important for a robust calculation engine or model which remains compliant with the relevant regulatory rules. Consider the following relevant areas.

- Data retention, including capabilities for data analysis, compliance with regulation and audit trail.
- New product approval policies ie, approval of transactions in new products including volume limits, data and IT architecture requirements, RWA calculation impact and other specifications before approval.
- Documented requirements for periodic review of calculation specification compliance with relevant regulations and direction and scope for remediation projects.
- Policies for periodic calculation validation, including system integration testing (SIT) and user acceptance testing (UAT) of changes to calculation requirements.

#### E. Reporting and outputs

162. Effective governance for reports and outputs should be designed to ensure internal and external stakeholders will receive timely, useful RWA and regulatory capital information which they can rely on. Relevant areas to consider are likely to include the following.

- Documentation of review and challenge of data used, including variance analysis in view of the broader business strategies, expectations and management actions and investigation or escalation of large or unusual items.
- Independent review and challenge of data and model outputs.
- Guidelines on thresholds for late adjustments, tracking of adjustments below the threshold and monitoring the impact of such adjustments in aggregate.
- Approval process for internal and external reports and submissions.
- Identification of key milestones and deadlines for the component stages of the end-to-end regulatory capital process, to ensure timely submission of reports.
- Process and control framework to ensure accurate and timely submission of reports while ensuring all relevant policies and controls can be adhered to.
- Submission error reporting procedures, including escalation and review.
- Defined materiality framework for reporting management adjustments.

### Example 2 – Internal control

#### Organisation-wide framework

163. It is important that the entity has an appropriate formal, documented control framework in place. There are a variety of external benchmarks which can help those in charge of governance to do this.

**Table 10****Examples include:**

- Sarbanes-Oxley and COSO requirements for financial reporting.
- BCBS 239 – *Principles for effective risk data aggregation and risk reporting*<sup>9</sup> Quality data is vital in order to produce complete and accurate regulatory reporting. The assurance provider will assess the appropriateness of the data source for its purpose; the controls over the data input and the completeness, accuracy and timeliness of the data sources.
- EBA published assessment methodologies for various risk-weighted asset modelled approaches (eg, IRB credit, market risk and advanced measurement approach (AMA) models).

164. The assurance provider should consider the process of risk identification undertaken by the bank and how the control framework has been designed to mitigate those risks. For instance, the risks and required controls would differ between a manual process and a fully automated process.

165. In making an independent assessment of the internal control framework around regulatory reporting, the assurance provider will need to identify specific control objectives which address the risks identified, and then test the design and implementation of controls which have been designed to mitigate these risks. The results of this testing will impact the overall risk assessment for the engagement, and determine the approach to obtaining assurance, including the extent of testing of operating effectiveness of controls over the reporting period under review, and the balance between controls-based testing, and detailed substantive testing procedures.

166. The types of procedures typically undertaken to review the design and implementation and/or operating effectiveness of controls will include some combination of end-to-end process walkthroughs (including observing the operation of controls in practice), inspection of evidence and documentation, independent re-performance, and corroborative enquiry with management.

167. When assessing the adequacy of the control framework, the assurance provider should consider the following points.

- Extent of documentation pertaining to the assessment of compliance with relevant regulatory rules and capital requirements, including:
  - CRR 575/2013 *prudential requirements for credit institutions and investment firms*;
  - identification of firm-specific requirements, permissions, waivers; and
  - identification of supporting guidance from regulatory bodies eg, EBA implementing technical standards (ITS), regulatory technical standards (RTS) and FAQs.
- Evaluation of policy decisions, covering:
  - key judgemental areas (see also interpretations section on page 20); and
  - embedding in the production process.
- Documentation, review and approval of the above assessments and policy decisions.
- Update of procedures driven by regulatory or business change.
- Documentation of data sources/logical data models with reference to the data demands of regulatory requirements.
- Documentation of data lineage, dependencies and transfers.
- Documentation of front office or source system booking processes and business management (eg, credit workflow: origination, structuring, approval, monitoring, remedial management).

<sup>9</sup> [www.bis.org](http://www.bis.org)

- Documentation of reporting process flows based on above and identification of process weaknesses, level of automation.
- Assignment of responsibilities among business teams, individuals and/or bank functions (risk, finance, treasury), and central production teams.
- Performance of system and process walkthroughs.
- Evaluation of risks or errors (operational, judgemental) and control documentation.
- Controls over interactions and data transfers between different functions (eg, risk and finance) and/or individuals accountable for separate components of the regulatory reporting process.
- Ownership, accountability and escalation procedures.
- Overall review, challenge and sign off.
- Significant Influence Function (SIF) responsibilities.

## A. Source data

168. In assessing the source data, the assurance provider may consider:

- the process by which the company has identified the appropriate data elements to be used at the required level of granularity;
- the extent of dummy data and proxies, and associated data remediation projects to reduce the use of dummy data and proxies;
- the data owner's understanding of the activities to make and amend original bookings accurately;
- Service Level Agreements (both internal and external) in place for timely and accurate capture of source data;
- data profiling and quality controls;
- the IT controls over secure data storage and transmission;
- data ownership and stewardship; and
- data history.

Note: Data sources is an area where substantive testing of detail may be an appropriate procedure to assess the effectiveness of the controls over data. Please refer to table 11 for further guidance.

## B. Selecting relevant data

169. Source data may go through a process of enrichment and aggregation/disaggregation to achieve the required attributes and level of granularity required for use in the production of regulatory capital. The assurance provider will assess the controls over completeness and validity of data linkages and appropriateness of methodology of data aggregation or disaggregation.

170. When assessing the selection of relevant data, the assurance provider may consider:

- the process by which the company completely and accurately extracts data;
- the mapping of data between system interfaces to maintain its integrity;
- reconciliation of processed data to source data;
- the review and maintenance of static data such as classification of counterparties, issuers or products by type;
- controls to accurately aggregate relevant exposures in a timely manner; and
- solo and consolidated reporting, and elimination of intra-group transactions.

## C. Setting calculation parameters and judgements

171. Once the source data has been enriched and is at the appropriate level of granularity, risk parameters relevant to the specific regulatory calculation must be derived or modelled eg, PDs, EADs, LGDs, and risk-weights. For standardised approaches where PD and LGD may not be relevant, some considerations may include the assumptions around exposure, classification of credit risk mitigation and credit conversion factors.
172. In assessing calculation parameters, assurance providers may consider:
- validation checks in place over completeness and accuracy of model inputs or standardised calculations;
  - model risk management processes and controls eg, policy and standards, model register and monitoring, independent model validation, back testing and sensitivity testing.
  - model approval use and change management; and
  - model specification, development, use and calibration eg, application of downturn estimates, floors, long-run averages.
173. As noted previously, considerations for model parameters are broadly applicable to standardised regulatory capital models, for which similar overarching control principles apply.

## D. Calculation

174. Specifically for advanced approach models, the processed and enriched data is then input into the calculation engine or model to calculate the RWA or other regulatory metric. The assurance provider will assess controls over the specification of the calculation or model and its validity in the context of the relevant regulatory rules.
175. In assessing the validity of the calculation, the assurance provider should consider:
- management reviews of the compliance of business rules/functional specification of calculations with regulatory rules (eg, CRR text, EBA ITS/RTS);
  - model development decisions and limitations reviewed for ongoing suitability;
  - compliance with internally and externally defined model restrictions and limitations;
  - the process by which overlays and post-model adjustments are applied and approved;
  - sequential roll-out and permanent partial use considerations;
  - implementation tests to ensure the models have been implemented correctly;
  - model monitoring and validation processes against internal and external requirements;
  - data granularity, data validation and ownership and processes for data input;
  - the process of user acceptance testing that the company has performed to validate calculation or model outputs in reference to business rules/functional specification; and
  - whether model performance is monitored at appropriate time intervals.

## E. Reporting and outputs

176. Calculated RWA outputs are aggregated or consolidated into prescribed reports for submission to regulatory bodies as well as other external and internal stakeholders. The assurance provider will assess reports for completeness, accuracy and timeliness of submission.

177. In assessing completeness, accuracy, and timeliness of reports, the assurance provider should consider:

- the process by which the company ensures RWA data is aggregated/ consolidated completely accurately into prescribed reports, and the extent of automation;
- data validation and reconciliation to calculated outputs including reconciliation of reported numbers to other regulatory and financial reporting returns and internal management information;
- the extent to which model/calculation engine outputs are supplemented by end-user-computing (EUCs). Assess controls over EUC inventories and risk assessment, security and change control and independent review;
- the process by which manual adjustments and judgements are applied, reviewed and approved;
- analytical review and plausibility analysis in the context of business strategies, market conditions etc; and
- management review and challenge including the review of assumptions, judgements and overrides.

**ILLUSTRATIVE EXAMPLE**

Figure 1 below illustrates typical controls over the end-to-end RWA Process Component of Row 2 of the RWA Assurance Module, Controls, for IRB Credit Risk

		<b>Illustrative process</b>	<b>Examples</b>
<b>Source data</b>	<b>Loan origination Collateral Static data External data</b>	<ul style="list-style-type: none"> <li>• Identity of key data elements pertinent to RWA production</li> <li>• Timely and accurate capture of loan/facility level data (eg, borrower classification, geography, maturity etc)</li> <li>• Data profiling and quality</li> <li>• Data storage and transmission</li> <li>• Data ownership/stewardship</li> <li>• Data history</li> </ul>	<ul style="list-style-type: none"> <li>• Exposure classification data</li> <li>• Geography</li> <li>• Maturity</li> <li>• Collateral type and value</li> <li>• Borrower standing data</li> <li>• Facility data</li> <li>• Guarantor data</li> <li>• Default, loss, recovery history</li> </ul>
<b>Selection of relevant data</b>	<b>Centralised retail credit risk data</b>	<ul style="list-style-type: none"> <li>• Data extraction and systems interfaces reconciliation</li> <li>• Classification of borrowers and exposure by type</li> <li>• Assignment of borrowers to scoring models</li> <li>• Amortisation calculations</li> <li>• Pooling of exposures</li> <li>• Timely and accurate aggregation of relevant exposures</li> </ul>	<ul style="list-style-type: none"> <li>• Exposure type (eg, QRRE, mortgages, other retail)</li> <li>• Assignment of exposures to retail pools – pooling logic and consistency</li> <li>• Retail v SME thresholds</li> </ul>
<b>Setting calculation parameters and judgements</b>	<b>PD/LGD/EAD models</b>	<ul style="list-style-type: none"> <li>• Complete and accurate model inputs</li> <li>• Model risk management processes and controls eg, policy and standards, model register and monitoring, independent model validation, back-testing</li> <li>• Model approval, use and change management</li> <li>• Model specification, development, use and calibration eg, application of downturn estimates, floors, long-run averages</li> <li>• Overlays and post-model adjustments</li> </ul>	<ul style="list-style-type: none"> <li>• Application/behavioural score cards</li> <li>• LGD models/segmentation</li> <li>• Use at default and CCF estimation</li> <li>• Model monitoring: stability, discrimination and accuracy</li> <li>• Override tracking</li> </ul>
<b>Calculation</b>	<b>RWA calculation engine</b>	<ul style="list-style-type: none"> <li>• Business rules driven by regulatory rules (eg, CRR text, EBA ITS/RTS – function/business specs, technical specs)</li> <li>• Sequential roll out and permanent partial considerations</li> <li>• Data granularity, data validation and input</li> <li>• Validation of outputs</li> </ul>	<ul style="list-style-type: none"> <li>• Missing PD/LGD/EAD</li> <li>• EL v impairment assessment</li> <li>• Default v non default treatment</li> <li>• Guaranteed exposures</li> </ul>
<b>Reporting</b>	<b>Reporting system  Public reporting Regulatory reporting Internal reporting</b>	<ul style="list-style-type: none"> <li>• Aggregation/consolidation of RWA into prescribed reports</li> <li>• Manual adjustments process and judgements</li> <li>• Analytical review/plausibility analysis</li> <li>• Management review and challenge</li> <li>• Data validation and reconciliation</li> </ul>	<ul style="list-style-type: none"> <li>• COREP credit risk templates</li> <li>• FDSF actuals templates</li> <li>• Pillar 3 reporting</li> <li>• Pooling of exposures and weighted PDs</li> </ul>

**ILLUSTRATIVE EXAMPLE**

Figure 2 below illustrates typical considerations for standardised credit risk.

		<b>Illustrative process – standardised approach</b>	<b>Examples</b>
<b>Source data</b>	<b>Loan origination Collateral Static data External data</b>	<ul style="list-style-type: none"> <li>• Identity of key data elements pertinent to RWA production</li> <li>• Timely and accurate capture of loan/facility level data (eg, borrower classification, geography, maturity etc)</li> <li>• Data profiling and quality</li> <li>• Data storage and transmission</li> <li>• Data ownership/stewardship</li> </ul>	<ul style="list-style-type: none"> <li>• Exposure classification data</li> <li>• Geography</li> <li>• Counter party credit ratings</li> <li>• Maturity</li> <li>• Collateral type and value</li> <li>• Facility data</li> <li>• Guarantor data</li> </ul>
<b>Selection of relevant data</b>	<b>Centralised retail credit risk data aggregation</b>	<ul style="list-style-type: none"> <li>• Data extraction and systems interfaces reconciliation</li> <li>• Input data validation</li> <li>• Classification of borrowers by type and rating</li> <li>• Classification of exposures by type</li> <li>• Classification of collateral by type and maturity</li> <li>• Transactions data aggregation with static data</li> </ul>	<ul style="list-style-type: none"> <li>• Input data reconciliation with accounting records</li> <li>• Exposure classification (eg, institution, corporate, retail, mortgages etc)</li> <li>• Collateral types (eg, cash on deposit, debt securities etc)</li> <li>• Retail thresholds</li> </ul>
<b>Setting calculation parameters and judgements</b>	<b>Risk – weight and conversation factor mapping</b>	<ul style="list-style-type: none"> <li>• Credit Quality Step determination</li> <li>• Conversion factor identification</li> <li>• Determination of risk-weights</li> <li>• Treatment of exposures to unrated borrowers</li> </ul>	<ul style="list-style-type: none"> <li>• Credit Quality Step mapping to long-term/short-term credit ratings</li> <li>• Missing/old external credit ratings data</li> <li>• RW for third country institutions</li> </ul>
<b>Calculation</b>	<b>RWA calculation engine</b>	<ul style="list-style-type: none"> <li>• Business rules driven by regulatory rules (eg, CRR text, EBA ITS/RTS – function/business specs, technical specs)</li> <li>• Eligibility of collateral and adjustments for volatility and maturity mismatch</li> <li>• Netting agreement application</li> <li>• Validation of outputs</li> </ul>	<ul style="list-style-type: none"> <li>• Legal opinion on enforceability of netting agreements</li> <li>• Missing risk-weight/exposure at default</li> <li>• Guaranteed/collateralised exposures</li> <li>• Default v non-default treatment</li> </ul>
<b>Reporting</b>	<b>Reporting system  Public reporting Regulatory reporting Internal reporting</b>	<ul style="list-style-type: none"> <li>• Aggregation/consolidation of RWA into prescribed reports</li> <li>• Manual adjustments process and judgements</li> <li>• Analytical review/plausibility analysis</li> <li>• Management review and challenge</li> <li>• Data validation and reconciliation</li> </ul>	<ul style="list-style-type: none"> <li>• Override tracking</li> <li>• Credit risk reporting templates</li> <li>• Pillar 3 reporting</li> </ul>

### Example 3 – IT

#### Organisation-wide framework and risk management

178. Financial institutions should have an appropriate, formal, and documented IT control environment in place.
179. There are external, publically-available benchmarks for this including:
- International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) 38500;<sup>10</sup>
  - Committee of Sponsoring Organizations of the Treadway Commission (COSO);<sup>11</sup> and
  - Control Objectives for Information and Related Technologies (COBIT).<sup>12</sup>
180. In order to deliver complete, accurate and consistently available regulatory capital information, the organisation should have in place leadership, organisational structure and processes to deliver risk management technology services at an acceptable level of risk.
181. The assurance provider should understand the process of IT risk identification undertaken by the entity and how controls have been designed to mitigate the identified risks.
182. Risk management systems, data sources and feeds present particular challenges for banks. Important data is often distributed across multiple systems, which can be maintained by multiple departments such as finance, risk and compliance.
183. Determination of the ownership and control of all participating systems in the end-to-end process should be documented and understood. The governance of this process and responsibility should include the systems, transaction and data flows showing data entry, calculations, updates, and reporting.

#### Adequacy of IT governance framework

184. Main areas for consideration by the assurance provider may include the alignment of the IT and business strategy with risk management systems. This should also include alignment of strategic IT decision making to the bank's regulatory, business and stakeholder requirements. All areas should be supported by assurance processes and documentation.
185. This documentation should include:
- mapping of the IT drivers to risk management, regulatory and business drivers;
  - mapping of IT infrastructure and processes;
  - processes to deliver the captured risk management, regulatory and business drivers;
  - how policy decisions regarding core IT risk management, generation systems and infrastructure are evaluated;
  - the involvement of senior management in documentation, review and approval of the above assessments and IT decisions;
  - how the entity establishes the technology strategy and integrates regulatory and business changes;
  - documentation of the front-to-back technology for delivery of risk management systems;
  - documentation of data flow, automated system and manual interaction points and associated controls and handoffs from data entry to reporting; and
  - assigned ownership and accountability of responsibilities for delivery, change management, support and escalation of systems.

10 ISO/IEC 38500:2015 applies to the governance of the organisation's current and future use of IT including management processes and decisions related to the current and future use of IT. These processes can be controlled by IT specialists within the organisation, external service providers, or business units within the organisation.

11 [www.coso.org](http://www.coso.org)

12 [www.isaca.org](http://www.isaca.org)

## Assess organisation and governance structures

186. The assurance provider should consider the documentation and ownership of the technology environment supporting risk management systems, data stores and infrastructure.

## Executive management and support

187. It is important that there is support from executive management and ultimate board-level ownership for the production of regulatory capital information. There should be processes to refresh and secure board-level buy-in for the target technology strategy and related systems architecture. The relevant IT architecture and operating model for end-to-end risk reporting systems should be supported by clear mapping to regulatory requirements and support the bank's strategic objectives.

## Strategic and operational planning

188. Planning processes should consider whether risk management and associated finance or compliance systems are fit for purpose and flexible. This enables them to process complex credit exposures and adapt to new regulations and products.

189. This is particularly important for data entry and reporting systems. Organisational and strategic planning processes should capture integration, interdependencies and application programming interfaces (APIs). These should be considered to prevent downstream incompatibilities between key systems.

## Service delivery and measurement/monitoring

190. The assurance provider should consider IT controls to deliver, measure and support the technology systems which underpin the production and reporting of regulatory capital information. This may include adequate oversight of the project management of changes and milestone tracking to make strategic implementations robust.

### A. Source data

191. High quality regulatory capital reporting depends upon fit-for-purpose, timely, complete and accurate data sources. This requires IT systems, people and processes to be considered. The assurance provider should assess IT controls to establish data sources are fit for purpose and remain complete, accurate and timely. For example, CRD IV rules require banks to demonstrate traceability. This means that clear documentation of sources, format, fields and transformations will need to be maintained.

192. When assessing the IT systems and processes providing the source data, the assurance provider may specifically consider:

- the existence of application system and data flows from data entry through to reporting and storage;
- management approvals and assigned responsibilities for ownership and stewardship of data sources and systems;
- documentation of locations and controls over data (folder shares and databases) and touch points across the processing cycle;
- documentation of system input controls such as fat finger controls, input authorisation and batch controls;
- documentation and testing of automated system processing controls and output controls;
- data reconciliations over trade capture systems, trade warehousing or repository applications;

- validation of data source systems controls such as edit tests, hash totals and reconciliations;
- system capability for logging of errors, timely corrections, upstream resubmission, approval of corrections, suspense file and error files;
- defined service levels, responsibilities and escalations of uptime of systems and delivery of data from front to back;
- the adequacy of data sources and processing systems to accommodate and manage outlier values and characters;
- the existence and adequacy of resilience/failover controls for systems and infrastructure employed;
- the integrity and completeness controls for sending and receiving systems in the chain;
- whether controls over data source systems and databases have defined and approved retention standards;
- whether controls over backup and archiving systems maintain integrity of data;
- change control and testing of data transformation and enrichment processes; and
- user entitlements to update or amend data repositories.

## B. Selecting relevant data

193. Source data may go through enrichment to achieve the attributes and level of granularity required to produce regulatory capital information. The assurance provider will assess the controls over completeness and validity of data, interrelationships, linkages and appropriateness. Specifically this will include the systems and processes for sorting, merging or breaking down sets of data.

194. Specific considerations may include:

- documentation of the computational, transformation and processing tasks completed by each system;
- documentation of locations of data and touch points;
- controls, processes and user testing to validate that the system processing accomplishes the defined expected results;
- existence of application data completeness and integrity controls for transfer of data between applications;
- data validation controls for risk modelling applications;
- change control over data aggregation processes including user acceptance testing;
- the existence of reconciliations through various stages of processing to verify the completeness of the records;
- systems to generate statistics and reporting on data fail rates due to incomplete trade attributes or trades without suitable models; and
- system capabilities to generate exception reports to identify outliers, transactions or data that fall outside a predetermined range or do not match other specified criteria.

## C. Setting calculation parameters and judgements

195. Once the source data has been enriched and is at the appropriate level of granularity, risk parameters relevant to the specific regulatory calculation must be derived or modelled eg, PDs, LGDs, and risk-weights.

196. In assessing calculation parameters, the assurance provider should consider:

- the granularity of system application controls to support detailed model parameter maintenance;
- the existence of parameter change control and authorisation mechanisms;
- change control over model configuration files;

- user acceptance testing of model parameter changes;
- user entitlements to update or amend model parameters via application functionality;
- preventive parameter input controls such as range and reasonableness checks; and
- user access restrictions and reviews for system parameters governing behaviour of calculation engine/model parameters.

## D. Calculation

197. The IT systems undertaking the calculations should be capable of performing simulations and evaluating different scenarios. This is particularly important for institutions with approvals for internal models to calculate regulatory capital.
198. The assurance provider will assess controls over the systems used for the calculation or model and its validity in the context of the relevant regulatory rules.
199. In assessing the validity of the calculation, the assurance provider should consider:
- whether model systems development processes are documented and include relevant approvals for unit, integration or user testing;
  - model specification, development, use and calibration eg, application of downturn estimates, floors, long-run averages;
  - whether change management for the risk systems includes clear documentation of the data flows and system interactions and interdependencies;
  - adequacy of change management controls to prevent and detect application and model changes;
  - parallel testing of calculation implementation or enhancement;
  - back testing of model results; comparison of historical and simulation data;
  - stress and capacity testing of systems and models for calculation and transaction thresholds; and
  - whether the processes for updating for the calculation engines and model systems includes detailed, documented and approved back-testing and stress testing over a series of varied scenarios and timelines before the updates are released into live production. These should include testing to identify wrong way risks.

## E. Reporting and outputs

200. Regulatory capital values are aggregated/consolidated into prescribed reports by reporting systems for submission to regulatory bodies as well as other external and internal stakeholders. The assurance provider should consider completeness, accuracy, and timeliness of submission of reporting.
201. Specific considerations may include:
- statistics and reporting on model failure rate (trade could not be modelled), exposure spiking (simulated exposure is out of bounds);
  - data completeness and integrity controls for transfer of data between applications;
  - change control over report generation source code including user acceptance testing;
  - the process by which the company ensures RWA data is aggregated/consolidated completely accurately into prescribed reports, and the extent of automation;
  - analytical review and plausibility analysis in the context of business strategies, market conditions etc. Management review and challenge; and
  - data validation and reconciliation to calculated outputs.

**ILLUSTRATIVE EXAMPLE**

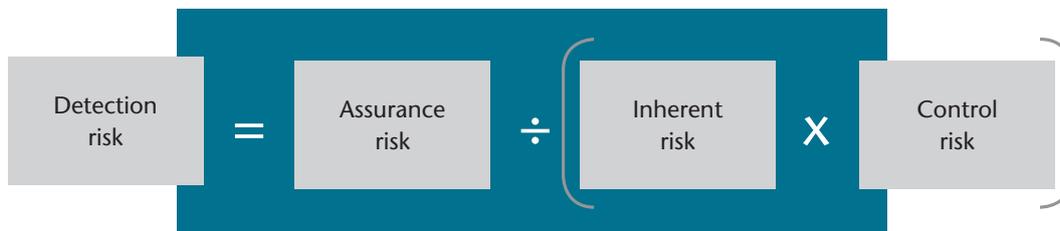
Figure 3 shows example considerations for work on IT.

		Illustrative process	Examples
Regulatory policy	Rules Standards Guidance	<ul style="list-style-type: none"> <li>• Identification of relevant regulatory rules pertaining to capital requirements</li> <li>• Identification of firm-specific requirements, permissions, waivers</li> <li>• Identification of supporting guidance from regulatory bodies</li> </ul>	<ul style="list-style-type: none"> <li>• Classification of exposures</li> <li>• Measurement of exposures</li> <li>• Credit risk mitigation</li> <li>• Dev. and use of IRB models</li> <li>• Limitations on modelled outputs (eg, LGD floors)</li> <li>• Risk weight calculations</li> </ul>
	Analysis and interpretation	<ul style="list-style-type: none"> <li>• Evaluation of policy decisions, covering:                             <ul style="list-style-type: none"> <li>– key judgemental areas</li> <li>– embedding in the production process</li> </ul> </li> </ul>	
	Policies	<ul style="list-style-type: none"> <li>• Documentation, review and approval</li> <li>• Update procedures driven by regulatory or business change</li> </ul>	<ul style="list-style-type: none"> <li>• Exposure classification</li> <li>• Default definition, cure, write-off</li> <li>• Pooling policy</li> </ul>
Policies	Data architecture and ownership	<ul style="list-style-type: none"> <li>• Documentation of data sources/ logical data model with reference to data demands of regulatory requirements</li> <li>• Standing and external data</li> <li>• Documentation of data lineage, dependencies, transfers</li> <li>• Documentation of credit workflow (origination, structuring, approval, monitoring, remedial management)</li> </ul>	<ul style="list-style-type: none"> <li>• Lending and collateral management systems</li> <li>• Cut-off strategies</li> <li>• Account management</li> </ul>
	Operating model including roles and responsibilities	<ul style="list-style-type: none"> <li>• Controls and handoffs among functions (eg, risk and finance)</li> </ul>	<ul style="list-style-type: none"> <li>• Upstream reliance and controls</li> <li>• Post model adjustments</li> </ul>
	Risk assessment and control design	<ul style="list-style-type: none"> <li>• Documentation of reporting process flows based on above and identification of process weaknesses, level of automation</li> <li>• Evaluation of risks of error (operational, judgemental) and control documentation</li> </ul>	
	Governance and oversight	<ul style="list-style-type: none"> <li>• Assignment of responsibilities among business teams</li> <li>• oa line credit risk/model val.</li> <li>• Functions (risk, finance, treasury), and central production teams</li> <li>• Overall review and challenge and sign-off</li> </ul>	<ul style="list-style-type: none"> <li>• Functional and business review</li> </ul>

## Example 4 – Output

### Test of details

202. In order to form an independent assurance conclusion, a combination of tests of controls and substantive tests may need to be performed to provide sufficient appropriate assurance evidence to reduce assurance risk to a suitably low level. Where this is the case, the graphic below illustrates how substantive testing increases if controls are not appropriately designed or are not operating effectively.
203. Management override of controls must be considered as part of substantive work.
204. Where assurance is being provided by an independent external assurance provider they may be able to leverage the work of the firm’s internal audit function.
205. For further general guidance and detail on the use of substantive procedures please refer to ISAE 3000.
206. If applicable based on professional judgement, assurance providers will perform substantive analytical procedures (trend analysis) to give consideration to information which may be at higher risk of misstatement.
207. Assurance providers should use their judgement to decide sample sizes to be used for substantive work over data.



**Table 11**

Example tests of detail based on element of the end-to-end regulatory capital calculation process	
<b>Data sources</b>	
1	Testing the accuracy of key data elements pertinent to the capital measure contained in upstream systems (eg, exposure classification, applicability of netting agreements etc) to third-party evidence.
2	Where key data pertinent to the capital measure are based on firm estimates (eg, expected future correlations), test: <ul style="list-style-type: none"><li>• how management has considered alternative interpretations or outcomes and why it has rejected them;</li><li>• whether the assumptions used by management are reasonable; and</li><li>• where relevant to the reasonableness of the interpretation, management's intent to carry out specific courses of action and its ability to do so.</li></ul>
3	Testing the resolution of data breaks between the firm's upstream systems through the data aggregation systems into the firm's calculation systems and into the reporting.
<b>Selecting relevant data</b>	
1	Test automated and manual adjustments to process and aggregate data before upload into the calculation engines, for compliance with regulatory rules (eg, PD/LGD substitution).
<b>Determining calculation parameters</b>	
1	Testing on a sample basis that where a regulatory waiver has been granted to use a particular model, the conditions required (eg, around portfolios, backtesting etc) continue to be met.
<b>Calculation engine</b>	
1	Test risk-weighted asset calculations for adherence to regulatory rules.
2	Test default rules (eg, rules applied when insufficient data has been obtained to allow the firm to apply advanced rules).
3	Test automated or manual top-side adjustments.
<b>Reporting and outputs</b>	
1	Test validity of reporting to underlying source systems.

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