HONG KONG MONETARY AUTHORITY
香港金融管理局

Resolution Regime – Code of Practice		
VIR-2	**Valuation in Resolution Capabilities**	24.07.2026

Purpose

Section 196 of the Financial Institutions (Resolution) Ordinance (Cap. 628) ("FIRO") empowers the Monetary Authority ("MA") as the resolution authority in relation to banking sector entities to issue a code of practice ("Code of Practice") about any matter relating to the functions given to the MA as a resolution authority by the FIRO.

This publication is a chapter of the Code of Practice. It sets out the MA's expectations in relation to the *ex-ante* capabilities and arrangements an authorized institution ("AI") should put in place to support timely and robust valuation in resolution ("VIR"). It also provides guidance on the MA's approach to the implementation of such VIR standards.

For avoidance of doubt, each chapter of the Code of Practice should be read in the context of, and in conjunction with, the other chapters, as appropriate. This chapter of the Code of Practice should therefore be read in the context of all other chapters, especially in conjunction with chapter RA-2, "The HKMA's Approach to Resolution Planning" ("RA-2")[1] and chapter VIR-1, "The HKMA's Approach to Valuation in Resolution" ("VIR-1")[2] of the Code of Practice.

The guidance in this chapter is of a general nature and does not take into account the particular circumstances of any individual AI. In case of any conflict between this chapter and the FIRO, the FIRO prevails.

Unless otherwise stated, terms used in this chapter have the same meanings as defined in the FIRO; and references to sections in this chapter are to those of the FIRO.

[1] https://brdr.hkma.gov.hk/eng/doc-ldg/docId/20170707-3-EN
[2] https://brdr.hkma.gov.hk/eng/doc-ldg/docId/20260713-2-EN

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Application

All AIs, and any other entities which may be subject to valuations under the FIRO, i.e. an AI's holding company(ies) and affiliated operational entity(ies).

Structure

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1. Introduction

1.1 As VIR will inform the MA's timely and appropriate actions in resolving an AI and thereby preserving financial stability, the inability of an AI to conduct timely and robust VIR is therefore an impediment to orderly resolution. To address this impediment, the MA expects an AI to put in place capabilities and arrangements for supporting timely and robust VIR ("VIR capabilities").

1.2 The Financial Stability Board ("FSB") has identified VIR capabilities as an important element to resolvability and has set out high-level guidance regarding valuation methodology and assumptions as part of the *Principles on Bail-in Execution*[3] in June 2018. Authorities in other jurisdictions (e.g. European Union[4] / Banking Union[5], and the United Kingdom[6]) have issued specific standards on VIR capabilities. This chapter of the Code of Practice sets out the MA's expectations for an AI's VIR capabilities that are broadly in line with the international practices.

1.3 The MA will consider an AI's VIR capabilities when developing resolution plans to support strategies for securing an orderly resolution of the AI (or of the AI's holding company)[7]. The MA will also consider an AI's VIR capabilities when conducting a resolvability assessment of the AI (or of the AI's holding company) to help determine whether there are, and if so, the extent of the effect of, any impediments to its orderly resolution[8].

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[3] https://www.fsb.org/uploads/P210618-1.pdf

[4] European Banking Authority ("EBA")'s Handbook on Valuation for Purposes of Resolution. https://www.eba.europa.eu/publications-and-media/press-releases/eba-publishes-handbook-valuation-purposes-resolution. EBA's Valuation Handbook for Purposes of Resolution Chapter 10. Management Information Systems. https://www.eba.europa.eu/publications-and-media/press-releases/eba-highlights-importance-data-and-information-preparedness

[5] Single Resolution Board ("SRB") 's Framework for Valuation. https://www.srb.europa.eu/en/content/valuation-framework. SRB's Expectations on Valuation Capabilities. https://www.srb.europa.eu/en/content/expectations-valuation-capabilities

[6] The Bank of England ("BoE")'s Statement of Policy on Valuation Capabilities to Support Resolvability. https://www.bankofengland.co.uk/-/media/boe/files/paper/2021/bank-of-englands-sop-valuation-capabilities-to-support-resolvability-may-2021.pdf. The BoE's Guidance on Valuation Capabilities to Support Resolvability. https://www.bankofengland.co.uk/letter/2018/guidance-on-valuation-capabilities-to-support-resolvability

[7] See section 13(1).

[8] See section 12(1).

1.4 An AI is expected to be able to demonstrate that it has in place the necessary VIR capabilities as part of the HKMA's bilateral resolution planning programme. If an AI does not meet the expectations set out in this chapter, the MA may form the opinion that a significant impediment exists to the orderly resolution of the AI. The MA may direct the AI, pursuant to section 14, to take any measures in relation to its structure (including group structure), operations (including intra-group dependencies), assets, rights or liabilities that are, in the opinion of the MA, reasonably required to remove or mitigate the effect of this impediment.

1.5 The rest of this chapter provides guidance on the matters that an AI should address when putting in place VIR capabilities, and the MA's approach to implementation. Section 2 of this chapter outlines the scope of VIR capabilities. Section 3 of this chapter sets out the expectations on an AI in relation to data and information, models, methodologies and assumptions, governance and access, documentation, as well as testing and validation for VIR. Lastly, Section 4 of this chapter sets out the MA's approach to implementing the expectations in this chapter.

1.6 VIR is relevant to entities subject to valuations under the FIRO, i.e. an AI, its holding company(ies) and its affiliated operational entity(ies). This chapter primarily focuses on the MA's expectations for an AI's VIR capabilities. An AI should make appropriate adjustments in developing its VIR capabilities to ensure effective coverage of its holding company(ies) and affiliated operational entity(ies), where applicable.

2. Scope of VIR capabilities

2.1 As set out in VIR-1, to inform key decisions across the resolution process as required under the FIRO, three sets of valuations are expected to be made in the event of an AI's resolution:

(a) Valuation 1 (failing or likely to fail valuation) – assessment of latest financial position based on accounting values to inform a decision to be made by the MA as to whether the conditions for applying a stabilization option or making a capital reduction instrument in respect of the AI are satisfied.

(b) Valuation 2 (resolution transaction valuation) – primarily an economic valuation of assets, liabilities, and/or equity of the AI that takes into account how they would be treated under potential resolution actions, to inform the choice and use of stabilization option(s). In addition, an estimation of the "no creditor worse off than in liquidation" ("NCWOL") compensation risk for the MA in applying a stabilization option.

(c) Valuation 3 (NCWOL valuation) – assessment of whether a pre-resolution creditor or pre-resolution shareholder of the AI, or a class thereof, receives, as a result of the resolution of the AI, less favourable treatment than would have been the case had winding up of the AI commenced immediately before its resolution was initiated, to determine eligibility for and, if so eligible, the quantum of NCWOL compensation after resolution.

2.2 The type and scope of VIR required will depend on the resolution actions being considered or taken in a crisis. To preserve optionality for the MA, an AI is generally expected to establish capabilities in normal times to support the making of all three sets of valuations (i.e. Valuation 1, Valuation 2 and Valuation 3)[9]. The expected depth of these capabilities would be

[9] Depending on the specific circumstances, the MA may conduct Valuation 1 and Valuation 2 by himself or, pursuant to section 37(1), appoint a section 10 entity to assist in the making of such valuations, in relation to the AI. To apply the NCWOL safeguard, section 101 requires an independent valuer to conduct a valuation (i.e. Valuation 3) in relation to the AI and decide whether any pre-resolution creditor or pre-resolution shareholder is eligible for a payment of compensation.

proportionate to the size, nature and complexity of the AI involved, with prioritised implementation of elements likely to be utilised under the preferred resolution strategy developed for the AI, while maintaining baseline frameworks for alternative contingency approaches.

2.3 For example, in relation to an AI within a cross-border group whose ultimate parent is incorporated outside Hong Kong, if the preferred resolution strategy for the AI involves stabilising and recapitalising the AI as part of a group-wide resolution, losses at the AI may be transferred to the parent resolution entity via contractual write-down and/or conversion into equity of intra-group LAC debt instruments issued by the AI. In such scenario, the AI would be expected to prioritise the development of its VIR capabilities for Valuation 1 and Valuation 2 (mainly on assets and liabilities). However, the AI will also need to develop baseline VIR capabilities for other valuations, to cater for alternative resolution scenarios where contractual loss transfer is unfeasible, or if fulfilling the resolution objectives under the FIRO requires additional measures, and the MA exercises statutory bail-in power to achieve the equivalent economic outcome (in which case Valuation 1, Valuation 2 (on assets, liabilities and equity) and Valuation 3 would be needed).

2.4 An AI's VIR capabilities should cover its overseas branches and downstream subsidiaries, as well as other entities, e.g. its holding company(ies) and/or affiliated operational entity(ies), to the extent that they are part of the resolution group under the preferred resolution strategy for the AI. The capabilities should enable VIR to be made on both a consolidated basis and a solo (or solo-consolidated) basis for an AI, as applicable. The consolidated VIR is expected to be made based on the AI's accounting consolidation group as well as its capital consolidation group and, if different, its LAC consolidation group.

3. Expectations of VIR capabilities

3.1 The overarching expectation is that VIR capabilities should enable VIR to be carried out in a sufficiently timely and robust manner so as to support the effectiveness of resolution. Outlined below are expectations for VIR capabilities common to Valuation 1, Valuation 2, and Valuation 3. Detailed guidance on the specific capabilities and considerations for each of these Valuations is provided in **Annex 1**.

(1) Data and information

3.2 An AI is expected to identify and maintain all data and information necessary to support timely and robust VIR at a sufficient level of granularity. The AI should be able to explain and justify to the MA the basis for the identification of such scope of data and information, and keep the scope under regular review. **Annex 2** sets out an illustrative list of data and information that an AI should maintain[10].

3.3 In addition, an AI should ensure that the data and information for VIR are maintained and kept sufficiently up-to-date to reflect the potential rapid changes in market conditions and its underlying positions in a crisis, so as to enable the production of valuation snapshots that are sufficiently current. The AI should maintain records of the underlying data and information, to facilitate trend analysis and financial projections.

3.4 Robust controls should be implemented to ensure that the data and information are complete, accurate and reliable. This includes documentation of data lineage to trace sources, regular reviews and testing (such as data quality checks, reconciliations and consistency validations), access controls, as well as governance frameworks.

3.5 An AI should develop and maintain an effective management information

[10] The data and information needed to support VIR would vary depending on the AI's profile, business model, types of assets and liabilities and the expected resolution transactions, etc. The data and information should also be sufficient to cater for different possible scenarios leading to the likely failure of the AI. AIs are expected to consider the foregoing and any other relevant factors to identify the applicable data and information for VIR purposes.

system ("MIS") capable of timely and flexible retrieval of data and information necessary for VIR. The data and information maintained in the MIS should be presented in a user-friendly and easily understandable format. If the MIS draws data and information from multiple sources, they should be cross-referenced and reconciled to ensure consistency and clarity of their relationships.

3.6 An AI should have the capability to establish a virtual data room ("VDR") promptly when needed. The VDR should act as a secure, centralised repository for complete, accurate, and up-to-date information from the MIS and other relevant sources (e.g. credit information database and legal documentation repositories that are not connected to the MIS) needed for VIR purposes. To ensure effective use by a valuer, data and information within the VDR should be logically and intuitively structured, with a clear directory structure and consistent naming conventions. In business as usual ("BAU"), the AI is expected: (a) to identify necessary infrastructure, source systems, and data requirements, and put in place clear workflows and timelines, and appropriate governance and data ownership arrangements[11]; and (b) to demonstrate, through regular testing, that its capability and arrangements for establishing a VDR are fit for purpose.

3.7 Where a third-party service provider manages an AI's data and information, the AI should implement procedures to monitor the performance of the provider and ensure that accurate, up-to-date data and information are accessible on a timely basis, in line with the Supervisory Policy Manual module SA-2 "Outsourcing"[12].

(2) Models, methodologies and assumptions

3.8 An AI should develop, in BAU as part of its VIR capabilities, valuation models for all material entities and material asset and liability classes, with materiality being assessed by whether their misvaluation would impact the robustness of the overall VIR outcomes. The AI is expected to document

[11] Data ownership arrangements include clearly defined responsibilities for uploading and updating the relevant data and information in the VDR.

[12] https://brdr.hkma.gov.hk/eng/doc-ldg/docId/20011228-3-EN

and justify to the MA the basis for the materiality assessment, considering (a) in the case of material entities, the size of the relevant entities, their contribution to the group in terms of assets, liabilities, revenue and profitability, as well as their operations and functions, and (b) in the case of material asset and liability classes, their contribution to the group total, valuation uncertainty drivers (e.g. exposure to illiquid markets and underlying credit risks), and the role of the identified asset or liability class in maintaining critical financial functions in resolution. The scope of valuation models should be reviewed at least annually or following significant changes to the AI's risk profile, business model and operations, data and systems, etc. which may undermine the accuracy and reliability of the existing valuation models.

3.9 Valuation models should be accurate, reliable and aligned with the objectives of VIR. They should reflect the key features of the material asset and liability classes identified by the AI, dynamically incorporate the current market conditions and the AI's financial position, and be adaptable to assess the impact of different resolution actions. In addition, the models should be supported by forecasting capabilities to generate timely and robust forecasts of financial information and regulatory metrics for VIR where applicable. Personnel responsible for developing, maintaining and using these models should understand their functionality and inherent limitations.

3.10 Valuation model capabilities are expected to be proportionate to the size, nature and complexity of the AI. For smaller AIs with simpler business models and limited business lines, rather than developing models ex-ante, it may suffice to demonstrate to the MA that robust models for resolution can be developed, validated and used by a valuer promptly during a crisis, provided that such contingency arrangement is tested.

3.11 Valuation models should employ methodologies that deliver robust valuations of assets, liabilities, financial instruments, business lines, or entities at an appropriate level of granularity. These methodologies should reflect the specific characteristics of the relevant assets, liabilities, financial instruments, business lines and entities, and their estimated treatment in the stabilisation and post-stabilisation restructuring phases of resolution based on the resolution strategy developed by the MA for the AI. For this purpose, the AI should develop a baseline scenario of post-stabilisation restructuring to be reflected in such methodologies. The application of consistent methodologies (e.g. valuation approach, assumptions and valuation adjustments) across a resolution group is expected to maintain the coherence and reliability of valuation outcomes in respect of different entities within the resolution group.

3.12 An AI is expected to implement structured processes to validate that the assumptions used in its valuation models are fair, prudent and realistic. These processes should include both periodic and ad-hoc reviews of material assumptions, underpinned by governance arrangements for approval, documentation and timely updates of those material assumptions.

3.13 Valuation models should be designed with sufficient flexibility to enable swift evaluation of alternative resolution actions, restructuring options or evolving crisis conditions. An AI should ensure that capabilities are in place to dynamically adjust key input assumptions as required by the valuer in order to generate updated valuations within a short timeframe. To achieve this, the AI may apply measures such as pre-configured modules for diverse economic scenarios, integration of real-time data feeds, and functionality to estimate results based on valuer-adjusted assumptions without requiring a full re-run of core models.

3.14 As part of its BAU model validation procedures, an AI should integrate rigorous sensitivity analyses to quantify and evaluate the impact of changing assumptions on valuation results, thereby providing an understanding of the extent of valuation uncertainty under both BAU and stressed conditions.

(3) Governance and access

3.15 An AI is expected to maintain effective oversight arrangements and an internal review mechanism to support the design, maintenance and operation of VIR capabilities in BAU, to ensure their reliability and integrity. The AI should also put in place governance arrangements to ensure robust

VIR and to enable its senior management and the board of directors to make informed decisions and take timely actions in a resolution scenario.

3.16 The above governance arrangements and processes should be embedded into an AI's broader governance and organisational framework for data and modelling capabilities, and be aligned with those supporting resolution planning[13] and execution.

3.17 As part of its governance framework, an AI is expected to assign an officer of appropriate seniority accountable for overseeing the effectiveness of its VIR capabilities and ensuring adherence to the expectations outlined in this chapter. The board of directors should be kept adequately informed of the development and application of the AI's VIR capabilities.

3.18 Operational procedures and governance processes should be established to facilitate the conduct of VIR. Such procedures and processes should enable a valuer to be "onboarded", i.e. have access to and use of (a) relevant underlying data and information in the AI's MIS and/or VDR (if available); (b) valuation models, methodologies, assumptions and outcomes; as well as (c) documentation in relation to the aforesaid items. Arrangements should be put in place to facilitate discussion in relation to the aforesaid items between the valuer and the responsible personnel within the AI, taking into account the confidential nature of the discussions. An AI should ensure these arrangements are clearly documented and understood by the relevant personnel. Additionally, the AI should designate an officer for liaising with the valuer for resolution valuation purposes.

(4) Documentation

3.19 An AI should establish appropriate procedures, playbooks or other documentation outlining the steps required to conduct timely and robust VIR. The documentation should include:

[13] See RA-2.

(a) an overview of the AI, including its corporate structure, group companies, business lines, and valuation groupings of assets, liabilities, financial instruments, business lines, or entities, to which similar valuation methodologies could be applied;

(b) an overview of the resolution valuation process, including timeframes and key components;

(c) an overview of the MA's statutory roles and responsibilities;

(d) the roles and responsibilities of the valuer and the AI's internal teams involved in the valuation process;

(e) the sources of the underlying data and information required for each of Valuations 1, 2 and 3;

(f) the procedures for retrieving and validating data and information;

(g) the models for valuing specific assets and liabilities, as well as for generating business forecasts;

(h) the methodologies applied in the above models;

(i) the input assumptions to be used (as determined by the AI), along with the basis and supporting data and information for these assumptions;

(j) the key personnel responsible for developing, maintaining and operating the models mentioned in point (g);

(k) the procedures for generating and approving VIR;

(l) the procedures for re-running valuation models using alternative assumptions and inputs provided by the valuer;

(m) a process flow diagram or similar illustration showing how the valuation models, data sources and VIR processes interact; and

(n) the procedures for providing the above information to a valuer.

3.20 An AI is also expected to document the governance arrangements and control procedures that ensure the robustness of VIR. The documentation should set out:

(a) a description of the AI's governance arrangements, including the clearly allocated roles and responsibilities of the board of directors, senior management and responsible departments/units/staff in establishing and maintaining the AI's VIR capabilities;

(b) the processes for and allocation of responsibilities in relation to data verification and error remediation;

(c) the processes for and allocation of responsibilities in relation to the development, maintenance, and operation of the relevant valuation models and methodologies;

(d) a description of any known or potential constraints and limitations of the relevant valuation models and methodologies;

(e) the procedures for and allocation of responsibilities in relation to approving and updating the AI's internal policies, valuation methodologies and model design and the key valuation assumptions; and

(f) the measures for testing and validating the valuation models and methodologies adopted by the AI.

3.21 The documentation mentioned in paragraphs 3.19 and 3.20 above should be structured to maximise operational usability in resolution. They should be clear, concise, and structured to enable a valuer to quickly understand and assess the reliability of the AI's data, valuation models, and the relevant assumptions used therein when preparing for VIR.

(5) Testing and validation

3.22 An AI should maintain and demonstrate that its VIR capabilities are robust and fit for purpose through regular testing and validation. The scope of testing and validation should cover: (a) data quality; (b) valuation models and methodologies; (c) governance arrangements and decision-making processes; and (d) supporting documentation such as playbooks.

3.23 VIR testing and validation activities should at a minimum include one of the following: (a) internal review by experts independent of the personnel responsible for the capability being reviewed (e.g. an independent risk management function); (b) internal audit review; and (c) validation performed by an independent third-party with valuation expertise. In addition, integrated testing of overall resolution readiness that involves the application of VIR outputs should be considered as resolution capabilities mature. In general, testing should be conducted at least annually, with the frequency and scope of testing for each AI tailored according to its operational complexity.

3.24 An AI is expected to justify to the MA its approach to testing and validating VIR capabilities, including detailed plans and timelines in relation thereto. The AI is expected to engage with the MA to discuss testing outcomes, summarise lessons learned, and implement actions to address identified areas for enhancing resolvability.

3.25 The appropriateness of an AI's testing and validation activities, including their scope, form and frequency, should be regularly reviewed by the AI to ensure they remain aligned with the AI's operations and the regulatory expectations applicable to it.

4. The MA's approach to implementation

4.1 In line with the MA's proportionate and risk-based approach to resolution planning, the MA expects to prioritise all Domestic Systemically Important Authorized Institutions and other locally incorporated AIs with total consolidated assets of more than HKD 150 billion for resolution planning. The MA expects each of these prioritised AIs to demonstrate that its VIR capabilities meet the expectations outlined in this chapter as part of the MA's bilateral resolution planning programme[14] with the AI.

4.2 The MA will communicate the expected timeline on work towards satisfying the expectations outlined in this chapter through the resolution planning priorities letters to individual AIs. The development and implementation of adequate VIR capabilities by an AI should be an iterative process between the MA and the AI, taking into account different factors such as the nature, scale and complexity of the AI, the status of its existing capabilities and arrangements, the preferred resolution strategy determined by the MA and the resolution objectives.

4.3 As a starting point, an AI is expected to self-assess its existing capabilities and arrangements against the expectations set out in this chapter. An AI is then expected to submit to the MA, at a minimum, the following:

(a) a summary of its VIR capabilities including governance arrangements and the assessment against each of the expectations set out in this chapter; and

(b) its proposed work plan, including the approach, timeline and key milestones, towards meeting the expectations set out in this chapter.

4.4 The MA will review the above submission and engage with the AI regarding the effectiveness of its VIR capabilities in the context of the AI's preferred resolution strategy. The MA may request additional information, records or documents[15] and require testing or demonstration of these capabilities.

[14] See Part 8 of RA-2.
[15] The MA may impose such a requirement pursuant to section 158.

4.5 Where an AI is part of a cross-border group, the MA intends to work closely with the relevant non-Hong Kong resolution authorities on resolution planning bilaterally and/or through cross-border resolution planning fora. The MA may take into account information obtained from its interactions with a non-Hong Kong resolution authority when assessing the effectiveness of an AI's VIR capabilities and in considering whether any significant impediment to the orderly resolution of the AI exists, in accordance with the relevant non-Hong Kong resolution plan (to the extent that the non-Hong Kong resolution plan has been adopted by the MA). Nevertheless, the expectations in this chapter will apply to the AI regardless of whether the group is subject to, and meets, similar standards in other jurisdictions.

4.6 It is acknowledged that due to the interrelationships between some of the expectations in this chapter and certain regulatory requirements or supervisory expectations, an AI may already have in place capabilities and arrangements which could be suitably leveraged or adapted for the purposes of meeting expectations outlined in this chapter. In such instances, the MA expects an AI to demonstrate that the relevant existing capabilities or arrangements adequately address resolution-specific requirements outlined in this chapter.

4.7 While resolution planning is currently prioritised for locally incorporated AIs with total consolidated assets exceeding HKD 150 billion, the MA may undertake resolution planning for any AIs if need be, taking into account factors such as the viability and the likely impact upon failure of an AI. All AIs are encouraged to familiarise themselves with the expectations outlined in this chapter in general so that they will be prepared for engagement on the adequacy of their VIR capabilities.

Annex 1: Specific capabilities for Valuations 1, 2, and 3

Specific capabilities for Valuation 1

1. For Valuation 1, an AI should maintain capabilities to generate an up-to-date balance sheet and key regulatory metrics on a T+7 basis, meaning that the AI should be able to produce, within 7 calendar days of the MA's request, the initial Valuation 1 outputs. Where the velocity of the crisis allows, Valuation 1 is expected to be iteratively developed during contingency planning, with outputs updated, refreshed and reviewed. Following the initial outputs, subsequent valuation updates are expected to be streamlined to ensure shorter turnaround times.

2. For assets and liabilities with potentially more volatile values in a crisis, such as cash, deposits, and financial market instruments, an AI should ensure that the underlying data and relevant analysis are as current as possible (e.g. intraday) to support valuations that reflect the most up-to-date values. For less volatile positions, such as short-dated high quality debt instruments, recently available financial accounting information might be considered sufficiently reliable for valuation purposes.

3. To inform whether an AI has ceased, or is likely to cease, to be viable, the valuation of assets and liabilities should reflect the dynamic, forward-looking nature of such assessment, necessitating forecasting capabilities – for example, to project credit impairments, liquidity outflows, market risk-driven losses, and funding cost under stress. Existing models for financial instruments reporting or impairment analysis may be adapted as appropriate.

4. For assets or liabilities that may be impaired or that contain significant accounting estimates, an AI should provide the valuer with timely access to data and information that supports the revision of provisions for impairment as needed. This may include historical performance data, impairment analysis, stress-testing analysis, the basis for deriving valuation assumptions, such as probability of default and loss given default, as well as third-party valuations (where available). In addition, where models are

used for impairment analysis and accounting estimates, an AI is expected to re-run the models as needed in a timely manner to incorporate the views of the valuer around the relevant key input assumptions.

Specific capabilities for Valuation 2

5. For Valuation 2, an AI should maintain capabilities to value assets and liabilities on an economic basis, using either hold or disposal value in line with the resolution actions under consideration. This economic valuation will support the assessment of losses that need to be addressed in resolution.

6. Additionally, an AI should maintain capabilities to estimate the market value of equity using appropriate methodologies, including the income, market, and asset approaches. Depending on the resolution actions, this equity valuation can inform debt-to-equity conversion ratios, transfer consideration and/or post-stabilisation restructuring disposal.

7. These valuations should be supported by financial forecasts aligned with the estimated restructuring measures. Depending on the selected valuation approach, these forecasts should project financial positions, profitability, cash flows and regulatory ratios. These forecasting capabilities would be relevant for the economic valuation of certain asset and liability items, the market value of specific entities or business lines, as well as the estimation of the potential operational costs and losses that might be incurred throughout resolution, as discussed in this section. The relevant forecasting models should allow for the timely incorporation of changing assumptions, reflecting the potential impacts of resolution and restructuring actions.

8. For the purpose of estimating NCWOL compensation risk to support the secondary resolution objective in section 8(1)(d), an AI should maintain capabilities for estimating the treatment of pre-resolution creditors and pre-resolution shareholders in resolution and in a counterfactual winding up scenario. For the treatment in resolution, these capabilities should enable the AI to assess estimated outcomes under potential resolution actions, such as estimating the value of any shares that may be issued to a pre-resolution creditor under the bail-in stabilization option, or in the case of a partial transfer of the assets, rights or liabilities of the AI and where the liabilities owed to a pre-resolution creditor are not transferred or otherwise written off or converted into equity prior to the transfer, whether the failed AI

(i.e. the residual entity) might receive any payment by reason of the transfer and whether such pre-resolution creditor would receive any recoveries according to the creditor hierarchy in the event where the residual entity is subsequently wound up. For the treatment in a counterfactual winding up scenario, an AI may leverage Valuation 3 capabilities for the relevant estimation. However, given the dynamic nature of a crisis and potential speed of events, a detailed quantification of the estimated counterfactual treatment may not be needed.

9. An AI should maintain capabilities to produce initial Valuation 2 outputs on a T+12 basis, meaning that the AI should be able to produce the outputs within 12 calendar days of the MA's request. Extended timelines for equity valuation may be afforded where the velocity of the crisis allows. Similar to Valuation 1, Valuation 2 is expected to be iteratively developed during contingency planning, with outputs updated, refreshed and reviewed. Following the initial outputs, subsequent valuation updates are expected to be streamlined to ensure shorter turnaround times.

10. The rest of this section focusses on the specific capabilities for the valuation of the economic value of key assets and liabilities, and the market value of equity, under Valuation 2.

Cash, balances with banks, customer/bank deposits

11. For cash and balances with banks, an AI is expected to provide information on the amounts, tenors and any encumbrances thereon, where applicable. For deposits from customers and banks, an AI should maintain detailed information to support analysis of depositor behaviour in a resolution scenario.

Loans and advances

12. In general, the estimation of the economic value of loans and advances is expected to involve projecting expected future cash flows at the loan or loan-segment level, and applying an appropriate discount rate.

13. An AI should develop and maintain appropriate valuation models tailored to loan product types in BAU. Such models should accurately project net expected cash flows for each loan or loan segment, including (a) contractual cash flows, such as projected interest payments and principal repayments; and (b) non-contractual cash flows, such as overpayments, early repayments, and non-contractual drawdowns, which should be forecasted based on expected customer behaviour. The cash flows should incorporate adjustment(s) for defaults based on the AI's estimation of the likelihood of default and subsequent net recoveries.

14. An AI should conduct its own analysis of the appropriate discount rate to be applied and be able to provide the analysis to the valuer to support its assessment. In addition, the model should reflect the impact of operational costs for servicing the loans, either through the expected cash flows or the discount rate.

15. An AI should maintain up-to-date key assumptions to be used in its valuation models at both the individual loan and loan segment levels, taking into account historical data and information in relation to the loans or loan segments, macroeconomic indicators, potential resolution and restructuring actions, etc. Such key assumptions may include expected non-contractual advances/drawdown rates, early repayment rates, probability of default, net recovery following default and marginal operational costs for servicing the loans.

16. An AI should maintain capabilities to support the review of loan data by a valuer by providing the valuer with access to data sources and/or a detailed summary of loan portfolios, including access to the VDR where available, and a data dictionary containing definitions of the data fields used by the AI. Reconciliations between the loan-level data sources and the relevant balances for financial reporting purposes should be properly maintained and provided to the valuer as needed. In addition, the AI should be able to provide the valuer with data and information in appropriate formats to facilitate the valuer in applying the relevant models.

17. An AI should be able to categorise its loans and advances by segments based on their features and characteristics, such as product type, nature and industry of borrowers, contractual terms, historical performance and type of collateral. An AI should also identify exposures that may be valued collectively, for instance direct exposures to a group of related entities, or exposures with cross-collateralisation and cross-guarantees. Such categorisation and grouping would help provide a high-level view of the loan portfolios and identify specific segments where common valuation assumptions or adjustments may be applied. The categorisation capability should allow for timely and flexible updates and modifications of data and input assumptions, taking into account the views of the valuer.

18. An AI is expected to run valuation models and produce outputs as directed by the valuer, which may include sensitivity analyses at a required level of granularity based on different assumptions.

<u>Financial instruments measured at a fair value</u>

19. An AI should be able to assess the fair value of its financial instruments, including equity and debt investments, derivatives and other instruments designated at fair value. Arrangements should be put in place to address the challenge that observable prices in liquid markets, which are typically used for determining fair value, may not be available in a resolution scenario.

20. Valuation adjustments may be applied to financial instruments to reflect their economic value based on the views of the valuer. The valuation adjustments may include:

    (a) mid-market to bid/offer price adjustments;

    (b) adjustments to reflect the illiquidity of concentrated positions;

(c) adjustments to reflect the operational costs[16] associated with holding the portfolio;

(d) adjustments to reflect losses arising from expected counterparty behaviour following entry into resolution[17]; and

(e) for derivatives, portfolio-level adjustments such as credit valuation adjustments ("CVA") and debit valuation adjustments ("DVA").

21. An AI should ensure that appropriate data, information and models are in place to produce the valuation adjustments. There should be cross-references to identify how data from various sources relates to a single counterparty.

Repurchase transactions and other similar secured lending / borrowing

22. Repo transactions and secured lending or borrowing are typically valued using a mark-to-market approach based on market prices. An AI should maintain data and information on the contractual terms and encumbrance details of these positions for valuation where market prices are not available.

Provisions

23. An AI should maintain the underlying data and information related to provisions and facilitate their review and adjustments by the valuer as needed.

[16] These operational cost components include servicing costs, administrative expenses, professional fees, and infrastructure costs, which vary depending on the nature and complexity of the portfolio and the resolution strategy. Such costs may be estimated using historical data, bottom-up analysis of specific cost drivers, and benchmarking against comparable portfolios.

[17] These adjustments should capture potential losses arising from adverse counterparty actions upon resolution, taking into account contractual provisions that may be invoked, counterparties' dependencies, requirements for additional collaterals, and increasing funding costs. The amounts may be quantified through scenario modelling and the application of revised credit risk assumptions in a resolution context.

Investments in subsidiaries, associates, joint ventures and separable businesses

24. An AI should maintain the relevant data and information and financial forecasting capabilities to support the valuation of its equity investments in subsidiaries, associates, joint ventures, separable business (including those that may be divested under the AI's recovery plan or as part of post-stabilisation restructuring) and special purpose vehicles ("SPVs"). For SPVs, the valuation may be based on observable market prices for transactions involving comparable securities, or projections of cash flows using models maintained by the AI.

Other assets

25. For fixed assets and intangibles on the balance sheet, such as property, plant and equipment and purchased goodwill, the assessment of economic value could be based on third-party appraisals and transaction prices in secondary markets.

Off-balance sheet items

26. For off-balance sheet assets, such as internally generated goodwill and franchise value, which may be realised in sale or retention of businesses or portfolios, an AI should have the capability to forecast potential net income streams and their probabilities to support economic valuation.

27. An AI should also identify liabilities not recognised on balance sheets, such as contingent liabilities, restructuring costs[18] and pension liabilities, and assess their economic values as well as probabilities of these costs materialising. The AI should also be able to provide the valuer with the relevant supporting information, such as third-party appraisals and management analysis, as required.

[18] Including severance payments, IT, legal and advisory fees, contract termination penalties and potential write-downs to deferred tax assets.

Market value of equity or businesses

28. The market value of an AI's equity or businesses can be estimated using generally accepted valuation methodologies, including the income, market and asset approaches. To support the valuation, an AI is generally expected to produce timely and robust forecasts of financial and management information (including statements of financial position, statements of profit or loss and other comprehensive income, statements of changes in equity, and statements of cash flow) as well as key regulatory ratios (including capital adequacy ratios, leverage ratios, liquidity coverage ratios or liquidity maintenance ratios, and net stable funding ratios or core funding ratios). The forecasts should:

    (a) be available at the level of individual entities and/or business lines that may be divested during resolution or require separate valuation due to distinct financial characteristics;

    (b) cover an adequate timeframe to facilitate terminal value[19] estimation and assess the medium-term viability[20] of the AI;

    (c) be conducted at an appropriate level of detail to ensure robustness, allowing for disaggregated data to be provided upon request, while also being aggregated for valuation purposes;

    (d) be adjustable to reflect assumptions related to projected cash-flows at position or portfolio levels;

    (e) be capable of integrating adjustments to key assumptions in a timely manner and supporting sensitivity analyses, which may include assumptions regarding growth rates, revenue streams, funding structures, cost of risk, and operational costs; and

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[19] Terminal value refers to the estimated value of equity or a business beyond the projection period in a valuation.

[20] Assessing the medium-term viability is relevant to determining whether an AI or a business can achieve, restore or maintain a stable and sustainable operation. This in turn supports, where applicable, the preparation of cash flow forecasts and the use of any terminal value in the valuation.

(f) reflect market conditions, potential resolution actions (e.g. bail-in) and any ongoing development of a restructuring plan prior, to and during resolution.

Specific capabilities for Valuation 3

29. For Valuation 3, an AI should have capabilities to assess the actual treatment that its pre-resolution creditors or pre-resolution shareholders, or a class thereof, receive as a result of its resolution. In addition, an AI is expected to maintain capabilities to assess the counterfactual treatment that its pre-resolution creditors or pre-resolution shareholders, or a class thereof, would have received if, instead of resolution, its winding up had commenced immediately before resolution was initiated in a counterfactual winding up scenario.

30. For the actual treatment in resolution, the assessment should be based on the actual resolution transaction, for instance the estimated value of any shares that may be issued under the bail-in stabilization option to the pre-resolution creditors concerned, or in the case of a partial transfer of the assets, rights or liabilities of the AI and where the liabilities owed to the pre-resolution creditors concerned are not transferred or otherwise written off or converted into equity prior to the transfer, whether the failed AI (i.e. the residual entity) might receive any payment by reason of the transfer and whether such pre-resolution creditors would receive any recoveries according to the creditor hierarchy in the event where the residual entity is subsequently wound up.

31. For the treatment in a counterfactual winding up scenario, an AI may leverage its Valuation 2 (specifically, the economic valuation of assets and liabilities) capabilities for the assessment, provided that adjustments are made to reflect the gone-concern nature of the AI in a counterfactual winding up scenario, taking into account factors such as the absence of future business prospects, the costs associated with winding down operations, the prolonged realisation timelines and any other adjustments that an independent valuer may require. Specific forecasting capabilities are needed to estimate ultimate recovery values from credit exposures, to value the AI's trading book under forced sales conditions, to account for contagion and netting effects across group entities, as well as to reconstruct asset-level cash flows and project cash positions throughout the winding up period. Furthermore, an AI should also maintain analytical capabilities to

support the independent valuer in evaluating the estimated realisation strategy and assessing the appropriate valuation approach for each asset class in such scenario.

32. The steps for the counterfactual winding up valuation generally include:

(a) preparing adjusted legal-entity balance sheets;

(b) accounting for intra-group balances.

(c) estimating net recoveries in legal entities; and

(d) estimating distributions to creditors in each legal entity.

Preparing adjusted legal-entity balance sheets

33. An AI is expected to produce essential information to support netting and set-off arrangements for legal entity-level balances. This includes:

(a) unconsolidated balance sheets for each entity within the AI's group;

(b) details on netting arrangements for derivative financial instruments, along with collateral balances related to netting sets by legal entity;

(c) details on contractual and statutory set-off arrangements applicable to the assets and liabilities of each entity; and

(d) details on pledged and received assets in relation to repurchase agreements, reverse repurchase agreements, and other encumbrances.

Accounting for intra-group balances

34. An AI is expected to provide details on intra-group balances, including balances relating to liabilities, equity holdings, and guarantees. The details can be presented as a series of intra-group matrices that illustrate the gross

balances between affiliates for each relevant position in the creditor hierarchy in a winding up. For complex cases, the AI is expected to maintain models to analyse the flow of recoveries throughout the group, considering these intra-group balances.

Estimating net recoveries in legal entities

35. Gross realisations may be estimated using the Valuation 2 process, with assumptions adjusted to reflect counterfactual winding up factors.

36. For net recoveries, an AI is expected to provide information regarding known contractual costs associated with winding up, including staff expenses, lease costs, and contractual break costs.

37. When estimating recoveries from interests in SPVs, an AI is expected to provide any legal analyses or opinions that may have been obtained regarding the expected treatment of the SPV in a winding up. In addition, the AI should maintain models for valuing any material interest in SPVs, particularly if the complexity and quantity of SPVs necessitate it. These models should project cash flows generated by an SPV's assets and allocate these cash flows among interest holders to estimate the AI’s realisations in a winding up, considering that the SPV may or may not be insolvency-remote.

Estimating distributions to creditors in each legal entity

38. An AI should provide information on the creditor hierarchy in a winding up for each legal entity within the group. This includes a breakdown of creditor balances across each class within the applicable creditor hierarchy based on the law of the entity’s jurisdiction of incorporation. For complex cases, the AI is expected to maintain models that can analyse the distribution of recoveries to creditors and shareholders across the group.

Annex 2: Data and information for VIR

For illustration, the tables below set out a non-exhaustive list of data and information of balance sheet items, as well as corporate and other information that may be requested by a valuer, for the purpose of VIR:

Table 1: Balance sheet related information

Items	Data and information
Cash and balances with banks	• Encumbrance details, including amounts and time periods
Customer and bank deposits	• Breakdown of deposits by type • Weighted average maturities • Contractual interest rates of time deposits • Deposit durations • Depositor demographics • Information to support analysis of depositor behavior in a resolution scenario

Loans and advances[21]	• Portfolio segment's background information
	• Segment repayment data, including
	  ○ outstanding balance
	  ○ contractual payments due in the period which the relevant repayment data is tracked and maintained;
	  ○ actual payments received in the period;
	  ○ non-contractual drawdowns or advances in the period;
	  ○ for non-performing loans, outstanding balance and number of months in arrears, categorised based on the AI's internal loan classification

[21] Where applicable, the data and information related to loans and advances should be categorised either at individual loan level, segment level for loans with common characteristics, or connection-level for exposures to the same or affiliated counterparties. For exposures to the same counterparty, linkages between the available collateral against these exposures and any applicable netting or set-off arrangements should be clearly illustrated.

Items	Data and information
	approach, with reconciliation to regulatory reporting categorisation; and o recoveries and losses realised in the period • Segment performance metrics, including: o default rates (or roll-rate analysis); o re-performing rates (i.e. of loans that were non-performing but become performing again); o arrear rates (e.g. one month, two months, and three months past due); o prepayment rates (overpayment rate and early repayment rate); and o loss given default rates • Marginal operating costs information • Analysis of appropriate discount rates for economic valuation • Approach to forbearance and management of non-performing loans • For corporate loans, in particular any significant exposures to a single counterparty or a group of linked counterparties: o borrower's information, including group structure, sector and key jurisdictions in which it operates o financial condition, including key line items from audited statements and key financial ratios o facility details, including legal entities involved and their relationship, structure of lending, facility purpose and limit, tenor, interest, revolving credit facilities, undrawn credit lines, term loans and other financing arrangements o outstanding balances, including exposure at obligor level and related obligor group level o credit quality metrics

Items	**Data and information**
	◦ past performance against debt covenants ◦ collateral and guarantees information, including latest valuation ◦ netting and set-off arrangements • For syndicated and other traded loans, observable prices in secondary market and price information from recent transactions
Financial instruments measured at fair value (e.g. equity and debt investments, derivatives and other instruments designated at fair value)	• Fair values of financial instruments at portfolio-level and position-level • Information to support the calculation of bid/offer adjustments • External market data to support the estimation of valuation adjustments • Netting and set-off arrangements applicable to these exposures • Estimation of operational costs for holding the portfolios • For derivatives, information for determining valuation adjustments, such as CVA and DVA • For funding liabilities, analysis of counterparty behaviour
Repurchase transactions and other similar secured lending/borrowing	• Contractual terms, such as maturity, coupon rate and collateral/encumbrance details • Encumbrance positions, such as collateral surplus or shortfall
Debt securities and subordinated liabilities issued	• Contractual terms, including coupon rate, maturity, optional call/early repayment date, amortisation schedules and collateral/encumbrance details • For instruments included as capital and/or loss-absorbing capacity, data and information required for regulatory reporting and disclosure
Provisions	• Information supporting book value of impaired assets and liabilities, or that contain significant accounting estimates, including:

Items	Data and information
	○ impairment analysis ○ provisioning analysis ○ historical performance of portfolios or assets ○ stress testing analysis ○ basis for determining probability of default, loss given default and valuation assumptions ○ third-party appraisals (where available) • Estimation of expenditures related to onerous contracts, restructuring costs, and regulatory charges
Investments in subsidiaries, associates, joint ventures and separable business	• Financial statements • Management financial information • Management forecasts of expected future financial performance • Financial and legal information for interests in SPVs, as well as observable market prices where available
Other assets and liabilities (e.g. property, plant and equipment and purchased goodwill)	• Information on characteristics and conditions • Information on market data such as observable prices in secondary markets • Expert assessments and third-party appraisals
Tax-related items	• Details of tax calculation, and deferred tax assets and liabilities
Off-balance sheet items (e.g. internally generated goodwill, franchise value, contingent assets/liabilities, restructuring costs and pension liabilities)	• Forecast of potential net income streams or costs, and analysis of the associated probabilities • Management information, expert assessments, and third-party appraisals

Items	Data and information
Market value of equity or businesses	• Management budgets and forecasts • Forecast assumptions and underlying information and analysis, such as those used in the development of its strategic plan and in estimating the impact of potential post-stabilisation restructuring measures

Table 2: Corporate and other information

Category	Data and information
Corporate information	• Group structure, including ownership of subsidiaries, identification of regulated entities and respective regulators • Constitutional documents including Articles of Association • Overview of activities and products offered by each company within the group • Details of authorisations and licences, including any associated conditions, limitations, waivers or exemptions • Credit rating reports
Financial information	• Annual and interim financial statements for each entity within the group and consolidation schedules • Independent auditors' reports • Management accounts and related reconciliations to financial statements • Corporate strategy and business plan • External or internal valuation reports for corporate transactions or financial reporting purposes • Details of LAC composition

Category	Data and information
	• Details of intra-group funding arrangements, including parental guarantees and cross-default clauses • Detailed budgets, including comparisons of actual versus budget comparisons and commentary on material variances • Details of operating costs, including costs relating to employees and pensions, and information systems
VIR documentation	• Operational procedures and governance processes for the onboarding of valuers mentioned in paragraph 3.18 • VIR related documentation on models, methodologies and assumptions, procedures, playbooks, governance arrangements and control procedures mentioned in paragraphs 3.19 and 3.20 • Reports on VIR testing and validation activities mentioned in paragraph 3.23
Risk and control	• Risk management reports that cover, including but not limited to, credit risk, market risk, liquidity risk, interest rate risk, and operational risk
Litigation	• Details of any ongoing, pending or threatened litigation, dispute, arbitration or administrative proceedings, including a description of claims made, counsel's opinions on settlement prospects and estimated legal costs