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Cross-border crisis simulation exercise in South America

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Authorised by the Chair of the FSI, Fernando Restoy.

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Abstract

In March 2021, the Financial Stability Institute (FSI) of the BIS, with the support of a consultant, coordinated a cross-border crisis simulation exercise (CSE) involving 11 authorities with responsibilities for crisis response and bank failure management from six countries in South America: Argentina, Brazil, Chile, Colombia, Paraguay and Uruguay.

During the CSE, participants responded to an invented scenario that modelled the increasing financial stress and failure of a fictional regionally systemic cross-border banking group. The CSE's objective was to enable the authorities to assess the effectiveness of their crisis management frameworks and cross-border cooperative arrangements in a controlled environment, and identify areas for improvement.

This report was prepared by the FSI and consultants following the CSE and sets out general findings and recommendations on a range of topics, including crisis management tools; recovery and resolution planning; liquidity and resolution funding; domestic decision-making procedures; and cross-border cooperation and information-sharing.

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Cross-border crisis simulation exercise in South America

Section 1 – Introduction

Simulation exercises are an effective instrument for testing crisis management policies and capabilities in a controlled environment. Simulations recreate selected elements of a crisis and require participants to act, as far as possible, in the way they would if they were confronted with such a situation in reality. Accordingly, a simulation is designed to mirror the circumstances participants would face in a real crisis, although simplifications are inevitably required to keep the exercise targeted and manageable. Such simplifications allow the exercise to focus on the areas that participants have agreed to test in the exercise.

In the last decade many jurisdictions have invested significantly in strengthening their toolkit to manage failing banks, but experience shows that gaps may only be revealed when the toolkit is used. This applies to the legal toolkit, but even more so to operational capabilities. The reason is that managing a crisis requires authorities to respond to events as they unfold in ways they may not have anticipated, and decisions typically have to be taken under conditions of substantial uncertainty. The fact that measures need to be coordinated between several authorities within a country and across borders makes crisis management highly dependent on exogenous factors outside the control of a single authority and its decision-makers. Effective information flow and smooth cooperation within an authority are also critical.

In March 2021, central banks, supervisory authorities and deposit insurers of Argentina, Brazil, Chile, Colombia, Paraguay and Uruguay participated in a simulation of a systemic banking crisis.[1] The exercise aimed to test cross-border cooperation and participating authorities' ability to manage a systemic banking crisis, and to reveal any shortfalls in their policy frameworks. The exercise was held in a virtual format given Covid-related constraints, with all participants joining remotely. This, in fact, more closely resembled the likely conditions under which authorities would have to manage a real crisis.

The findings of the exercise covered the tools and procedures under national frameworks and the functioning of domestic and cross-border cooperation arrangements. Participants managed the simulated crisis well, performing the necessary analysis, developing strategies, preparing and implementing decisions while fostering a constructive exchange among participating authorities. Nevertheless, the exercise revealed certain challenges, in particular related to the development of solutions within existing funding restrictions that involve burden-sharing between domestic sources and across borders. While all authorities cooperated with each other and some even have the legal mandate to do so, the legal powers at their disposal and the conditions attached to them are often nationally focused.

This report is structured as follows. Section 2 provides information on the objectives, design and execution of the exercise. Section 3 describes the scenario and provides an overview of the outcomes of the simulation. Section 4 explains general findings and recommendations. Section 5 summarises the main conclusions. The annexes provide additional details on the exercise and the scenario design.[2]

[1] The exercise was developed and organised by staff of the Financial Stability Institute (FSI) of the Bank for International Settlements (BIS) with support from advisors from Oliver Wyman. The following authorities participated in the exercise: the Central Bank of Argentina, the Central Bank of Brazil, the Central Bank of Chile, the Central Bank of Colombia, the Central Bank of Paraguay, the Central Bank of Uruguay, the Corporation for the Protection of Bank Deposits of Uruguay (COPAB), the Deposit Guarantee Fund of Brazil (FGC), the Financial Institutions Guarantee Fund of Colombia (Fogafín), the Financial Market Commission Chile and the Financial Superintendency of Colombia (SFC).

The FSI thanks the staff of those authorities and of the Association of the Bank Supervisors of the Americas (ASBA) for their support for the exercise and the resources committed to its development and conduct.

[2] Following the exercise, each participating authority was provided with a version of this report that included a country-specific table indicating how recommendations applied to that authority's jurisdiction.

Section 2 – The exercise

The purpose of the crisis simulation exercise (CSE) was to enable participating authorities to practice and test existing crisis management and cooperation frameworks. The simulation was based on a fictional scenario, designed to trigger discussion and decision-making within each country and across borders. To increase the realism, the scenario design introduced a significant degree of complexity and uncertainty, including gaps in information. The setup also aimed to foster a collaborative environment in which participants could share experiences and lessons learned.

Grading national frameworks was not an objective of this exercise. The aim was for participants to gain insights about the effectiveness and potential shortcomings of their current crisis management framework, with a view to motivating discussions, domestically and across borders, about how to address any identified gaps. For this reason, the exercise did not provide the basis for benchmarking or grading against relevant international standards.

The participating authorities comprised central banks, supervisory authorities and deposit insurers. This composition was based on the roles of those authorities under their national frameworks in preventing and managing a banking crisis. Finance ministries did not participate in the exercise, to limit complexity. It was also hoped that this would induce the participating authorities to develop solutions that would not require the use of public solvency backstops. The private sector was not represented. Where needed within the exercise, role players acted the parts of the management of the failing bank, ministers and other relevant stakeholders.

Each participating authority was represented by a team of officials up to senior decision-makers. The teams were assembled from the units that would be involved in a real crisis, such as line supervisors, crisis management specialists and market operations experts. Participants also used their established crisis management arrangements, such as coordination committees. Each authority team was assigned a neutral observer who was present at all the team's internal interactions and meetings with other authorities, and provided input for the feedback to authorities following the exercise.

The simulation was conducted in a virtual format in March 2021. Originally, it was planned as a "physical" exercise in which all participants would have been located in the same place. However, the Covid-19 pandemic made that impossible. While some authority teams were physically gathered in the same place, virtual means of communication were used for all interactions between authorities, domestically and across borders.

Section 3 – The scenario

The scenario centred on the failure of a regionally systemic bank – the fictional "Banco Sao Francisco" (BSF). The scenario was designed to be relevant and realistic for all participating authorities, and to achieve a similar level of engagement for all countries. The scenario included a background story that framed the events in the simulation, including macroeconomic and geopolitical circumstances. The fictional banking group had several material cross-border funding relations and entities were linked through shared services, in particular those related to operations and payments.

The crisis was rooted in a simulated deterioration of regional macroeconomic conditions that affected all countries represented in the exercise. A macroeconomic scenario that led to a broad recession and corresponding losses in the bank's loan book was chosen, as all participating countries could credibly be exposed to it. The BSF balance sheet weakened and equity was consumed, due mostly to a growing share of non-performing loans and increasing provisions. As would be likely in similar circumstances in reality, participants faced a significant degree of uncertainty about asset quality deterioration. The profitability of the group also diminished, undermining the bank's ability to compensate loan losses through internal capital generation.

Idiosyncratic crisis events added further challenges to the exercise. Banking crises often come with exogenous shocks and unforeseen events (which may be unrelated to the root cause of the crisis) that increase urgency, limit room for manoeuvre or invalidate planned strategies. For this reason, the simulation also included events such as depositor runs, negative media and scandals.

The simulation was divided into three rounds, each of which represented a phase in a stylised crisis continuum.[3] Round 1 focused on recovery attempts against a background of increasing capital and liquidity stress. Round 2 centred on the development of a resolution strategy and assessment of whether applicable triggers for intervention were met. Round 3 focused on the analysis of two resolution options: one, an offer to acquire the entire BSF Group, which required supplementary public funding; and the other, an offer to purchase the operations in the home jurisdiction only, which did not require additional funding but would break up the group and entail closures and job losses.[4]

To increase the challenges of decision-making, the scenario did not have an ideal outcome. That said, the scenario was designed to make cross-border cooperative solutions less costly from a broader perspective and better able to deal with intra-group operational dependencies. The objective was to encourage cross-border discussions and decision-making, whilst acknowledging trade-offs with unilateral solutions that met individual country objectives such as protecting national depositors, preserving jobs or containing spillovers to other banks in the system. A cross-border, cooperative solution was not necessarily expected or targeted by the exercise since countries and authorities naturally have different incentives and this will always entail compromises. Instead, the focus was on highlighting the trade-offs that come with such decisions, to stimulate cross-border debate and decision-making.

The outcome of the exercise was ultimately nationally focused. The group offer required burden-sharing across countries, which was not achieved. The authorities made serious efforts to achieve a cooperative solution, but the complexity of negotiations on the required burden-sharing and funding contributions prevented them from reaching an agreement within the time available.

Section 4 – General findings and recommendations

Observations collected during the exercise were used to provide findings about possible areas for further development and specific recommendations. Findings are organised into the four categories summarised below.

3 Given the complexity of the scenario, some effort by the participants was needed to understand the corporate structure, financial situation and cross-border links of the bank. For this reason, participants were provided with pre-CSE material to familiarise them with the background and the circumstances at the starting point and enable swift decision-making once the exercise started.

4 See Annex B for a more detailed account of the contents of each round.

Organisation of findings and recommendations

Table 1

Resolution framework & Tools	Domestic inter-agency cooperation	Cross-border cooperation	Operational capabilities
Early intervention tools	Cooperation between central bank and supervisory authority	Cooperation frameworks, bodies and agreements	
Recovery measures and planning	Cooperation with resolution authorities and deposit insurers	Cross-border information exchange, consultation and coordination on planned measures	
Resolution and liquidation tools	Cooperation with the fiscal authority	Operational issues in implementing resolution	
Public liquidity support tools, including ELA			
Privately sourced resolution funding			
Public solvency support tools			

4.1 Resolution framework and tools

Early intervention tools

Findings

During the first round of the exercise, the narrative prompted authorities to consider early intervention tools. It was expected that they would engage in supervisor-driven measures to gain a better understanding of the failing bank and implement measures to limit deterioration. Expectations about cross-border cooperation and inter-agency coordination are discussed later in this report.

Most authorities focused on obtaining a reliable picture of the situation at their local subsidiaries and taking mitigation action. Supervision teams were quick to assimilate the information provided and gained a good understanding of the bank's vulnerabilities. Most authorities requested meetings with bank management, and some host authorities requested meetings with the home authority to discuss the situation at the group level. No authority decided to conduct a stress test or an asset quality review (possibly due to limitations of the exercise). In some cases, authorities restricted dividend payments and transfers to other entities of the group to limit capital depletion.

In general, actions were taken based on judgment. No authorities referred explicitly to quantitative thresholds or specific conditions that would trigger early intervention measures, although most mentioned thresholds that would lead to resolution action. Tools were generally selected based on supervisory judgment rather than in accordance with a defined menu.

Recommendations

A crisis management protocol with detailed guidance on early intervention tools can facilitate decision-making. A playbook of possible actions organised in accordance with crisis severity would provide authorities with guidance about use of the crisis toolkit. Most authorities had procedures to follow once resolution was imminent. However, identifying actions for a given crisis severity in advance, combined with supervisory judgment, may allow authorities to place ailing institutions on a spectrum of increasing stress and to respond appropriately at each stage. Such a protocol should be designed to be consistent with the overall supervisory strategy including any applicable prompt corrective action (PCA) frameworks, and could include the following types of action by the supervisor.

- *Interaction with supervised entities*. During business as usual, supervisors typically interact with banks in accordance with a risk-based and procedurally oriented protocol that defines the scope and frequency of meetings, data deliveries and on- and off-site examinations following a schedule set on a yearly basis. As stress increases, such a schedule may no longer be adequate since the intensity of interactions may need to be stepped up significantly. A protocol can be helpful to structure such interaction for authorities and banks. Based on qualitative triggers, this could guide an increase in the scope and frequency of information and data requirements, increased interactions with senior management, and the use of "moral suasion" to encourage corrective action by a bank. Where deemed meaningful, quantitative triggers can also help guide action tailored to the appropriate crisis severity point (for example, if certain capital buffers are breached while core capital remains above regulatory minima). However, a purely mechanical approach based on quantitative triggers is not advisable.
- *Response to activation of a bank's recovery plan*. Typical recovery options include strengthening the bank's capital base through equity injections by existing or new shareholders, disposal of business lines or assets, and mobilisation of collateral. As most of these actions may have side effects, supervisors' protocols should also consider whether specific recovery options may have implications for the preferred resolution strategy for the bank(s). Furthermore, supervisors need to be clear about the timing of a bank's recovery measures. For example, action to raise additional capital might fail if taken too late as the crisis intensifies.
- *Assessment of bank's situation*. This could include, for example, measures such as asset quality reviews, stress tests or on- and off-site inspections, which might be used to challenge a bank's assessment of its recovery measures, remove uncertainties in the balance sheet, and/or protect or restore market confidence.

Recovery tools and planning

Findings

It was expected that authorities would discuss recovery actions with the bank and request input from bank management to design a contingency plan. The CSE materials included a group recovery plan that was provided to the home authority and outlined options such as selling subsidiaries. Although the fictional plan was materially less detailed than a real recovery plan for a bank of the size and complexity of BSF, it provided a credible menu of options that the bank could implement.

Participants needed to evaluate the likelihood of successful implementation of available recovery options. Most jurisdictions discussed alternatives to keep the ailing bank afloat, including selling subsidiaries or raising capital. Some authorities requested local management to submit a stabilisation plan, which outlined a course of action and served as basis for contingency planning. A few authorities actively monitored the implementation of the plan, such as following up on the status of the measures to be taken.

However, the impacts of early intervention and recovery measures on future resolution options was not considered. For example, the majority of authorities did not ask the local bank for information about possible impacts of recovery actions on resolvability, and did not consider whether there was a need to update their resolution strategies or adapt their contingency planning for the bank's possible failure in the light of those actions. While authorities monitored execution of recovery actions by the bank, most took it as an input to react to, rather than assessing the impact of the recovery measures in a forward-looking manner.

Recommendation

Authorities should consider the impact of individual recovery actions in different resolution options. This is because some recovery actions may have implications for the resolvability of the ailing bank and compromise the feasibility of specific resolution options. Accordingly, when assessing the adequacy of banks' recovery plans, authorities should take into account how individual recovery measures may affect the overall resolution strategy.

Resolution and liquidation tools

Findings

Midway through the exercise, failure of various subsidiaries was imminent, and authorities were expected to take action to resolve or liquidate. For this, authorities were expected to use existing (or discuss potential) resolution powers available under their national legal framework, and to rely on current capacity to implement the chosen strategy.

The majority of participants were aware of the available tools and comfortable with selecting the most suitable strategy. Participants showed a clear understanding of the instruments at their disposal, the conditions for their use and the implications of their application. In some countries, the legal framework on bank intervention and liquidation is very detailed and provides principles to guide or govern the adoption of measures, often with quantitative triggers defining when such measures may or must be taken.

The legal frameworks in most of the participating jurisdictions lacked some tools and provisions relevant for the resolution of a systemically important bank. Some authorities seemed to lack tools such as bridge banks, or powers to mandate the extension of loan terms or to restructure the balance sheet. In addition, while most authorities were able to estimate asset values to the extent necessary to choose between strategy options, no reference was made to valuation guidelines. No authority referred explicitly to the "no creditor worse off" (NCWO) principle.

Within the simulation, some authorities solicited bids from investors, and a subset were presented with offers. This included expressions of interest by current owners and debt holders and by new investors to recapitalise or purchase the entire bank or parts of it, which the authorities followed up on proactively. When conducting negotiations with potential investors or purchasers (represented by role players), authorities were challenged on acceptable terms. In reality, such negotiations are complex, entail difficult questions of valuation and often result in a complicated transaction. Within the constraints of the exercise, such negotiations could only be simulated at a high level. While one country ultimately accepted a proposal by one of the potential investors, it was not entirely clear why that particular offer was accepted rather than one of the alternatives. The most likely reasons are time pressure and the fact that the offers were structured in a way that did not provide much room for negotiations.

There was limited consideration of operational aspects. The majority of authorities did not discuss how to deal with the bank's systems and whether supporting action by other jurisdictions was required to keep those systems functioning where necessary following resolution. Most participants assumed that shared services would not be interrupted by resolution of the parent company, and did not question how those services would be maintained. Similarly, there was no direct consideration of the capacity of the bank's systems to support implementation of the resolution strategy. Additionally (partly due to time constraints), participants did not discuss practical consequences of the resolution measures selected, such as considerations about competition and whether jobs with the resolved entity would be put at risk. Litigation risk was marginally discussed, but not as an active concern in relation to the implementation of a chosen resolution approach.

Box 1

General findings on bank resolution and liquidation frameworks

International policy development on bank resolution has significantly advanced since the Great Financial Crisis through the development of the FSB's Key Attributes of Effective Resolution Regimes (KAs) and related standards and guidance. Material progress was also achieved in cross-border cooperation, through work on coordination regimes for cross-border recognition of resolution actions. Yet, although some smaller or developing countries have upgraded their framework in the light of international developments, it was mostly larger, developed countries and those with global systemically important banks that undertook far-reaching reforms to align national regimes with the KAs.

As part of the preparation of the exercise, participating authorities were surveyed on their current legal framework for bank crisis management, applicable rules and principles and the institutional setup, including governance and decision-making arrangements. This process, while not an assessment, revealed important differences between the current frameworks of participating countries and one that is fully KA-compliant:

- Some frameworks focus primarily on closure and liquidation of failing banks, rather than resolution for orderly wind-down with continuation of critical functions and services. Whilst some jurisdictions have transfer powers, they lack the full range of resolution powers: for example, powers that enable the continuation of systemically important functions through bridge institutions or officially mandated recapitalisation with creditor involvement (bail-in).
- Most frameworks do not provide explicitly for resolution planning and resolvability assessments and, relatedly, there are no explicit powers for authorities to require systemic banks to improve their resolvability.
- There are no explicit mandates for cross-border coordination or requirements on authorities to consider the impact of domestic measures on other jurisdictions.

These differences do not necessarily imply that the current frameworks are inadequate for the local banking sectors. In addition, the existing legal frameworks might still allow for certain resolution measures to be taken, even in the absence of explicit provision. Doing so, however, exposes the measures to legal uncertainty and authorities to legal risk, something the KAs aim to minimise.

The KAs specify an effective resolution framework for any bank that could be systemic in the event of failure. Therefore, its core elements, such as administrative transfer powers, legal safeguards, recovery and resolution planning and cross-border cooperative arrangements, are relevant for any country with banks that could be locally or regionally systemic if they fail.

Recommendations

Resolution toolkits should give a sufficient range of powers to develop and implement a suitable resolution strategy. The resolution framework should enable authorities to design resolution strategies that are tailored to market conditions and the circumstances of the bank. This includes the ability to establish a bridge bank in circumstances where private sector transfer options are not immediately feasible. The legal framework should include a clear credit hierarchy, to ensure that the treatment of depositors and creditors in resolution is transparent. Jurisdictions should also consider the need for bail-in powers as outlined in the FSB's Key Attributes of Effective Resolution Regimes (KAs), taking into account the nature of bank balance sheets in the specific country and the availability of subordinated debt that can be bailed in without systemic impact.

Bank-specific resolution plans setting out the preferred resolution strategy and operational details of how it would be implemented should be developed in advance. For a banking group, the strategy would indicate whether it should be resolved through the application of resolution tools to the top company of a group by a single resolution authority (single point of entry (SPE)), or through a coordinated application of resolution powers to several group entities in different jurisdictions (multiple points of entry (MPE)). The description of the strategy should be accompanied by an operational resolution plan that details how the strategy would be implemented. This includes the resolution tools that will be used to execute the strategy and how they will be applied; assumptions about sources of liquidity and funding for the bank while in resolution; the intragroup and third-party support arrangements needed to ensure that the bank's critical functions can continue to operate during and immediately after resolution; and obstacles to the effective application of those tools that have been identified and how they will be addressed. The operational plan might also consider how the authority's general valuation policy would apply to the asset classes to which the banking group is exposed. Finally, a communication plan should be included to ensure clear and consistent messaging by authorities and the banking group.

Resolution plans should be reviewed regularly to ensure they remain credible and could be feasibly executed as market and the banks' circumstances change. This process includes conducting regular resolvability assessments and addressing identified gaps. A resolution plan should also be reviewed if material aspects of the banking group, its business model, legal structure or risk profile change.

Authorities should monitor banks' capacity to support implementation of the resolution strategy as part of the ongoing process of resolution planning and resolvability assessment. The existence of well developed resolution plans does not imply that banks will be able to support their implementation, as this requires operational structures and capabilities that are not necessarily available at the required scale. Authorities should therefore ensure that banks build the appropriate capabilities and can mobilise them quickly as stress increases. For example, authorities can work with banks to ensure that their information management systems (MIS) are capable of supporting resolution. This may involve testing the ability of MIS to: provide detailed and accurate information in the format and (short) time frame needed by the resolution authority; support the different types of valuation required for resolution; or assess the funding and liquidity situation and accessibility of collateral. Where a resolution plan is based on a strategy to sell all or part of the bank, the bank should be required to prepare for such transaction. This may include adjustments to the legal entity and business structure and ensuring it is able to provide the required information and documentation rapidly. Banks should also be required to demonstrate that they have governance and funding arrangements to support protection of critical functions and services in any resolution strategy.

Finally, authorities themselves should be adequately prepared to implement a resolution. Authorities are equally challenged in resolution as complex decisions need to be taken under significant time pressure, affecting a large number of stakeholders and often at a level of detail that exceeds usual supervisory topics. To this end, authorities should prepare playbooks that allow crisis organisation to be ramped up quickly and with clear decision-making and operational responsibilities. For example, where a sale strategy is envisaged, authorities should prepare to handle negotiations by developing guiding principles and a playbook, and ensuring relevant expertise is available in-house or on call externally. It might also be helpful to explore options during good times, such as by doing market soundings and tabletop exercises. The preparatory measures for any resolution strategy should include a general policy on the approach to valuation (timing, suitable external providers, process and methodology).

Public liquidity support tools, including emergency liquidity assistance (ELA)

Findings

The scenario included deterioration of liquidity in all subsidiaries, requiring participants to take emergency measures. Liquidity needs differed between countries, with around half of the participants facing potential bank runs and severe strain. Participants were expected to evaluate liquidity requests from the failing bank and consider the suitability of the available collateral. Authorities were also expected to identify the most suitable sources of funding, considering the impact on the wider economy and viability of the failing bank. Furthermore, it was expected that requests would lead to cross-border coordination, although the operational complexities of this are recognised.

In all cases there was a clear process to evaluate whether the bank was eligible to receive ELA. Prior to granting funding in response to liquidity requests, most authorities consulted supervisory and resolution authorities, including to obtain confirmation of the bank's solvency. In some cases, consultation also involved the fiscal authority. In most cases, the procedure was well defined and swift.

However, for some authorities, the analysis of ELA included little forward-looking assessment. In general, there was limited discussion within the exercise regarding: (i) the eligibility and valuation of different types of collateral; (ii) the appropriate haircut; or (iii) the impact at group level (discussed further in cross-border section).[5] Conditions for access were clear, but sometimes inflexible. Excessive inflexibility could make it difficult to provide liquidity in all types of crisis, or to tailor the terms of the assistance to the severity of the stress of the ailing institution (though at least one authority did adjust term and eligible collateral conditions to reflect the circumstances of the fictional bank).

Recommendation

Funding in resolution emerged as a key topic that could be better formalised, particularly regarding valuation and eligibility of collateral. Clear approval procedures, with proper regard to both quantitative (eg liquidity amount, collateral required) and qualitative (eg collateral eligibility, terms of ELA) aspects of the decision, would facilitate rapid decision-making, which is fundamental to emergency measures. While the process should enable rapid action, it should also allow authorities to critically assess collateral eligibility and sources of funding in the specific circumstances. Internal guidance on the suitability of different sources based on the financial situation and viability of the requesting bank could help frame the exercise of judgment, while ensuring that a reasonable degree of flexibility and "constructive ambiguity" is maintained.

Privately sourced resolution funding

Findings

As it is recognised policy that public funds should only be used as a last resort, the availability of private resolution funding is a key component of an effective resolution regime. Private investors may fund a distressed bank through an equity injection or through the acquisition of the entire bank, a business line or a package of assets and liabilities. However, this is usually only possible where the bank, in whole or in part, has an ongoing business value exceeding the current distressed net book value. In the absence of a private sector investor or purchaser, other sources of funding are likely to be needed if authorities consider it necessary to preserve specific functions of the bank. Even if a purchase and assumption option is available, additional funding may be required if there is a shortfall in the value of assets compared with the amount of liabilities to be transferred. In these circumstances, privately sourced funding may come either from loss-absorbing capacity on the bank's balance sheet, or from industry-funded arrangements.

KA-compliant resolution regimes allow for mandatory contributions of bank creditors outside bankruptcy. This includes forced writedowns of claims or the conversion of contingent capital by authorities or at contractual quantitative thresholds.

The other main type of privately sourced funding is a deposit insurance scheme (DIS) or resolution fund (RF). They are generally privately funded through assessments paid by banks covered by the scheme. If the pre-funded resources are not sufficient in specific cases (for example, the failure of a large bank or multiple concurrent failures), the schemes usually benefit from a public backstop, but are required to pay back such support in an accelerated way once the crisis has ended, again through assessments paid by banks.

[5] It is acknowledged, however, that the scope for detailed bconsideration of these aspects may have been limited within the format of the exercise.

In the simulation, the majority of authorities prioritised the search for a private solution, effectively considering market options. Most authorities carefully analysed the feasibility of investor contribution through the conversion of hybrid instruments (where available) and, for subsidiaries, the writedown of capital instruments. The involvement of private debt holders was not considered, since none of the resolution regimes of the participating countries provided for writedown of other liabilities outside a formal liquidation.

Recommendations

Reliable access to private sources of resolution funding requires measures that pertain to the funding structure of the bank and the financial safety net. For banks that are too big or too interconnected for a liquidation, an increase in their loss-absorbency buffers should be considered, in particular if their failure might overload existing public safety nets and backstops. The bank's ability to access markets needs to be taken into account.

The aggregate sufficiency of safety nets, such as deposit insurance schemes and resolution funds, should be regularly reviewed. The target funding level should be adequate for a crisis without resorting to a public backstop in all but the most systemic cases (eg severe economy-wide shock, several banks failing at the same time). This needs to take into account the objective of the fund in question. A deposit insurance scheme aims at protecting insured deposits, and its funding level needs to be calibrated accordingly. A RF, however, would need to support liabilities and critical functions beyond deposits, and might therefore require a higher funding level than a DIS. If the backstop is used, its repayment through assessments should be conceivable in the medium term without overburdening the banking system. If the target funding level is regarded as too high for the banks to cope with, requiring them to internalise such funding through additional loss-absorption capacity should be considered.

Public solvency support tools

Findings

Given the magnitude of the simulated crisis, most authorities needed to assess the legal conditions for the use of public funds and the political implications of supporting banks from public sources. It was expected that resolution authorities would prioritise private solutions that limit fiscal impact. Nevertheless, where the use of public funds was not subject to prohibitive conditions or limitations, authorities used the available room for manoeuvre when designing resolution action.

Requests to fiscal authorities were generally informal and did not follow a set procedure. This may have been due to the nature of the exercise, since public solvency support would have required agreement and action by political bodies such as the ministry of finance, which was played by role players (instructed to emphasise the complications and the expectation that participants should find solutions that did not rely on public solvency support).[6] In real life, fiscal and monetary constraints play a significant role in the decision to provide public support, and often constitute the most important constraint to the scale of such measures. By design, these factors did not play a role in the scenario, as it would have required adding complex macroeconomic dynamics. Participants' considerations therefore mostly focused on legal and regulatory aspects.

Recommendation

Whilst the use of public funds should be a last resort, it may be needed in exceptional cases, and there may be benefits to formalising the procedures for its use more clearly. Public resources might be required to implement the most suitable solution, particularly if the safety net capacity is not sufficient to deal with

6 This stance was consistent with the fundamental policy underlying the FSB Key Attributes that use of public funds should be a last resort, to minimise the risks for taxpayers and the moral hazard that expectation of bailout entails.

a systemic bank failure. Therefore, crisis management protocols should contemplate situations when public support tools are required, and ensure procedures are not excessively burdensome or time-consuming. The design of public support tools should also provide for how losses incurred by the state would ultimately be recovered.[7]

4.2 Domestic inter-agency cooperation

Cooperation between central bank and supervisory authority

Findings

The early rounds of the exercise were designed to require close interaction between central banks and supervisory authorities. Central banks play a prominent role in enabling implementation of emergency measures and overseeing the impact on the wider economy. Close interaction with the national supervisor should allow the central bank to obtain a complete view of the situation of the distressed institution and participate in the decision-making process as appropriate to its mandate.

Roles and responsibilities were clear within each authority, facilitating decision-making. Many participating authorities have formal mandates providing guidance on decisions within their remit and, in some cases, there was a clear procedure for coordinating decisions involving different functions (eg ELA decisions were taken by the central bank, using input from supervisors). Formal committee structures proved useful for data-sharing and swift decision-making. In the light of the exercise, some participants are considering setting up formal structures to govern the relationship between agencies.

The role of central banks (to the extent they did not also have supervisory responsibilities) mainly focused on analysing ELA requests. In several countries, this requires the supervisory authority to confirm that the bank is solvent. Whilst mandates vary, on some occasions central banks would have benefited from a clearer understanding of the situation of the stressed bank. Supervisors, in turn, can materially benefit from the market intelligence gathered by central banks. This should be ensured through seamless communication between central banks and the relevant supervision or resolution authorities.

Recommendation

A more formal arrangement to guide inter-agency coordination would ensure swift decision-making and an adequate level of central bank involvement. While formal powers are provided by legislation, central banks and supervisors should agree on a protocol – such as a memorandum of understanding (MoU) – that sets out mutual responsibilities and expectations, details of information exchange at various levels within the organisations, and formal and informal coordination arrangements. Communication should be tested in advance of a crisis to ensure all authorities are aware of their mandates and to identify possible gaps or shortcomings.

Cooperation with resolution authorities and deposit insurers

Findings

The scenario was designed to require interaction between supervisors, resolution authorities and deposit insurers throughout the exercise, although their degree of individual involvement varied depending on the stage of the crisis. The exercise proved particularly useful for arrangements that had been recently

[7] The KAs specify that, to minimise the moral hazard associated with public support, there should be arrangements to recover funds as far as possible from the shareholders and creditors of the failed bank and, where appropriate, from the industry more generally through mechanisms such as ex post assessments or levies.

created and had not yet been tested. It highlighted the relevance of testing communication protocols and fostering cooperation between agencies.

In most of the participating countries, the same authority is responsible for both supervision and resolution, making communication easier and decision-making faster. In such cases, participants did not identify any material conflicts of interest within the activities simulated in this exercise.[8] Resolution teams were involved early on, although supervision led the first interactions with the failing entity and took the lead in discussions on recovery and early intervention measures, with the understanding it would "pass on" to the resolution team as crisis severity escalated.

Communication between the resolution authority (RA) and the deposit insurer (DI) was not always proactive, and DIs sometimes had limited access to information about the situation.[9] While most DIs had formal communication protocols with relevant authorities, they had not always been tested. Additionally, in some cases RAs had limited knowledge of the constraints on the amount of DI funding available to support resolution measures and the conditions for its use, and did not fully consider the need for the DI to maintain sufficient reserves to perform its functions in the event of other potential bank failures. DIs were generally precluded from contacting the failing bank directly and had to rely on data from the supervisor or RA, highlighting the importance of effective communication channels between agencies. In the cases where the DI was also the RA, their access to information was generally better.

Some authorities developed their strategies on the basis of the maximum amount of funding available from the DIS, rather than exploring opportunities for sharing the costs with private sources. In such cases, private or fiscal sources were relied on to make up any shortfall between the maximum amount available from the DIS (or RF) and the funding needed to implement the strategy. Shaing the burden across available sources (possibly including bank creditors where the resolution powers made that possible) was not always a primary consideration in the design of the strategy.

Recommendation

Formalising a communication and coordination protocol between supervisory authorities and the DI would improve crisis management capabilities in some countries. This should include considerations (and expectations) of DI support and inter-agency communication as a bank deteriorates and approaches likely failure, which can be integrated in crisis management playbooks. Conditions for use of specific instruments by those agencies (eg amounts, types of instruments, operational and other possible constraints) should be made clear in advance, ideally tied to the resolution and funding strategy for the bank in question.

Cooperation with the fiscal authority

Findings

For most of the countries, the fiscal authority was involved as the crisis escalated. It was expected that authorities would keep fiscal authorities informed of the deteriorating situation of the bank. Where the resolution strategies under consideration might require public solvency support, input from fiscal authorities was necessary, and provided by role players within the simulation.

[8] The potential for conflicts of interest between supervisory and resolution functions is discussed in P Baudino, C Sánchez and R Walters, "Institutional arrangements for bank resolution", *FSI Insights on policy implementation*, no 32, May 2021, on institutional arrangements for bank resolution. After investigating the institutional arrangements for resolution in 16 jurisdictions, the authors conclude that conflicts of interest between the resolution and supervisory functions can arise irrespective of whether they are institutionally co-located or separate. The paper notes that a combination of structural or legal separation with well developed cooperative mechanisms and clear decision-making procedures may ensure adequate operational independence for the resolution function while benefiting from the synergies with the supervisory function.

[9] Two countries had separate RAs which were also the DIs. The other freestanding DI represented in the exercise did not have resolution functions.

Involvement of fiscal authorities generally focused on assessing the availability of public funding. Ministries of finance were typically not involved in discussion regarding non-public funding options or interventions that did not require public funding. Although some ELA frameworks allow the central bank to ask for an indemnity from the government to cover possible losses, such discussions did not take place during the exercise. However, in one case the fiscal authority was engaged in discussions about legal changes needed to enable the provision of ELA.

Most authorities strived to keep the fiscal authority informed and took into consideration any recommendations received. Jurisdictions with established crisis committees approached communication with the fiscal authority in a more structured manner. However, in some cases inter-agency crisis planning involving the ministry of finance was informal. There were cases where authorities failed to convene committees established in legislation, most likely due to the fictional nature of the exercise. In one of the jurisdictions, the central bank gave limited consideration to the ministry of finance's concerns, as legislation gave them ample powers.

Recommendations

The situations in which fiscal authority support may be needed should be identified in advance and measures taken to limit the probability and size of such support. This should ideally be part of the resolution planning process for individual banks, and allow the resolution authorities both to liaise with fiscal authorities in advance and work to improve the bank's resolvability. In addition, a clear protocol covering aspects of information exchange and decision making should be put in place between the resolution and fiscal authorities, such as through an MoU. Legal obstacles to information-sharing should be identified and removed.

Given the particular sensitivity of funding needs for cross-border banks, specific arrangements for burden-sharing across borders are also advisable when public funding comes into play. Measures to prevent such situations from occurring, such as the review of cross-border funding relations and risk transfers or prepositioning of capital and liquidity, should be considered.

4.3 Cross-border cooperation

Cooperation frameworks, bodies and agreements

Findings

The scenario was designed to encourage participants to communicate and to consider a cooperative solution. Throughout the exercise, there was explicit reference to the interrelations between countries, and participants were prompted to consider a group solution.

Most authorities identified cross-country issues and requested bilateral and multilateral meetings with their counterparts from other jurisdictions. Two college meetings with all relevant authorities were convened by the home authority.[10] The first focused on understanding the situation in each country. Although a chairperson was not designated to moderate the meeting, the collaborative attitude of the participants facilitated the session. Each authority described the situation in its jurisdiction and actions taken to date. The second meeting was convened to discuss an offer for the group received by the home authority. The conversation focused on evaluating the feasibility of the offer and whether a group-wide resolution transaction could be funded and implemented by all jurisdictions. The experience of those meetings was positive for participants, and some noted later that similar arrangements could have facilitated previous resolutions of foreign banks.

[10] For the second college, the home authority received several bilateral requests for meetings by host authorities, and decided to respond by holding a plenary meeting.

Outside those college meetings, cross-border interaction was informal and meetings were primarily held to obtain information to support national decision-making. In the absence of formal arrangements, it was not always clear when or on what matters others should be consulted, and this may have led to lack of clarity in the agenda for some bilateral or multilateral meetings. Conversations were primarily backward-looking and did not lead to an action plan. Additionally, there was limited sharing of quantitative information (possibly due to assumptions that, within the exercise, asymmetries of information would be limited).

Recommendations

A structured cross-border cooperation arrangement for the region would foster collaboration in resolution and facilitate cooperative solutions. At present, there are no cross-border arrangements for crisis management between authorities in the region. A cross-border college for regional groups exists for supervisory matters but is not targeted at resolution. Home and host authorities should consider a format for preparing and conducting such meetings, which ideally should be used to build trust and expertise during "good times". A cross-border cooperation framework should encourage authorities to exchange information and consider implications of resolution decisions on other jurisdictions.

Cross-border information exchange, consultation and coordination on planned measures

Findings

The scenario was designed to provide opportunities for coordination and information exchange on supervisory measures, mitigation action and resolution solutions. There was some information-sharing between participants, but limited exchange of insights from supervisory measures. Most authorities were open to sharing the situation of their domestic subsidiaries, but discussions focused mainly on explaining measures taken, and less on a forward-looking assessment of the whole banking group. Generally, authorities did not request additional details about the results of local supervisory measures, although news articles provided as exhibits in the simulation could have prompted them to worry about the situation in a particular country. Joint supervisory measures were not explicitly considered. However, those limitations in coordination may have been due to the format of the exercise, in which supervisory measures, being fictional, were not expected to generate substantial results.

Authorities focused on stabilising and resolving their domestic subsidiary, and in some cases took unilateral action with limited regard to the impact on the group or other subsidiaries. Analysis of contagion and resolution spillovers focused on domestic market and intra-group exposures (credits and deposits), and less so on the possible spillovers to both domestic and regional economies transmitted through the impact on market confidence and reputational considerations. In addition, discussion of resolution measures focused on seeking buyers for domestic operations, and a possible group solution was really only considered when the participants were presented with an offer as part of the simulation material. Typically, authorities that had a swift resolution process placed less emphasis on the international component of the crisis, suggesting that a rapid domestic response was prioritised over taking time to investigate other options.

There was strong willingness to accept the group offer, but implementing it proved challenging. In particular, several authorities faced obstacles to using domestic funding sources, such as deposit insurance funds, to capitalise the group parent. In at least one case, the mandate of the deposit insurer and applicable "least cost" restrictions on the application of funds precluded it from contributing to the funding of the group offer, even if that would have been more beneficial to the region as a whole and less disruptive to local operations. In the end, given the time constraints of the exercise and the lack of clarity on how to fund and implement a group solution, most participants resorted to domestic solutions. Importantly, in a stressed and time-constrained situation, authorities generally prioritised solutions with which they have more experience and over which they have individual control, suggesting there could be benefits from increased advanced planning and preparation of more group-focused options.

Recommendations

Participants expressed interest in a regional communication platform that could be used for regular information exchange, in advance of and within a crisis. The arrangement should clarify:

- at what point in a crisis specific authorities should be involved and how;
- the format of college meetings (eg who can convene a college meeting, guidance on possible agenda points, role of the college chair);
- what information can be shared between authorities; and
- on what matters coordinated action may be useful (eg timing of initiation of actions, communication to general public).
- Matters that could usefully be considered within the arrangement in "peacetime" to help prepare for any cross-border banking crisis that may arise include:
- mechanisms to identify and address possible conflicts of interest between jurisdictions and authorities;
- what burden-sharing arrangements could be contemplated in a crisis, or an agreed set of principles and a framework for making decisions about burden-sharing in the event it is needed;
- an understanding of the extent to which public sources of liquidity might be available to material group entities in stress and in resolution, including in foreign currencies where relevant, and the type of collateral required for access to those sources;
- material differences between countries' legal and institutional frameworks for crisis management and the implications of those for group resolution strategies or coordinated resolution actions;
- the extent to which countries can recognise or give effect to resolution or insolvency measures taken in another country, and the conditions that must be met;
- understanding of relevant supervisory and regulatory requirements that might affect the implementation of a resolution measure in the countries (eg authorisations and change of control approvals, listing and disclosure requirements); and
- review of resolution plans and the operational implementation of actions with a cross-border dimension.

Operational issues in implementing resolution

Findings

Materials shared during the exercise prompted participants to consider the operational aspects of specific domestic or group-wide solutions. A number of exhibits highlighted the relevance of services provided by the group and the implications that their withdrawal would have on the financial stability of the region. Participants identified the need to preserve critical services within the group, but there was limited consideration of operational implications. During the first college meeting, as participants shared the status of their local subsidiaries, some authorities raised questions regarding services provided within the group, but discussion of operational details was limited (possibly due to time constraints of the exercise).

Recommendation

Resolution planning is key to identifying operational dependencies and ensuring that their continuity is planned for. Resolution strategies and their implementation should take these into account, both at domestic and group-wide level. After the exercise, some participants expressed interest in including provisions in their cross-border arrangements on the need to take operational links with other entities in the group (as service providers and receivers) into account when designing resolution measures.

4.4 Operational capabilities of participating authorities

Findings

The exercise aimed to provide participants with an opportunity to test team dynamics in a crisis scenario. Authorities participating in the exercise were represented by, on average, three senior officials and six members of the support team. They were asked to simulate as far as possible the decision-making process they would follow during a crisis.

Distribution of responsibilities was clear. Members of the support teams contributed to discussions, performing the required analysis and providing input to senior officials. In some cases, teams could have more frequently summarised their understanding of the situation as it evolved, to ensure everyone had the same level of knowledge. However, lack of information and uncertainty did not hinder decision-making.

Decisions were mostly based on data-driven judgment. Support teams performed calculations and analysis to aid the discussion. Decisions and analyses were structured and prioritised. For example, one authority started by separating solvency and liquidity issues. Most authorities did not follow a playbook to guide decision-making and rather identified the input needed to take a decision ad hoc.

Recommendation

A crisis playbook would establish a chain of command and provide guidance on the required analysis. During the debrief session, participants emphasised the relevance of ensuring support teams could act independently within their own responsibilities and competence. For example, senior officials frequently had to attend meetings with other authorities within the exercise, leaving support teams to decide how to prioritise analysis. Guidance on delegation of decision-making competences and escalation procedures, and a clear allocation of responsibilities among technical teams, could alleviate this problem. This would allow officials to take decisions that do not require full senior involvement.

Section 5 – Conclusion

The crisis simulation exercise was effective in testing policies and capabilities, and prompted participants to consider adjustments to their resolution frameworks. Participants managed the simulated crisis well and were immersed in the exercise. The exercise revealed certain shortfalls across the region, in particular related to available resolution tools and cross-border cooperation.

The exercise highlighted that planning should be carried out during peacetime to ensure preparedness and limit impact on financial stability. The simulation sought to illustrate how rapidly crises escalate and convey to participants the importance of being well prepared. Recovery plans, prepared both at group level and for subsidiaries, should set the basis for discussion with management and serve to evaluate effectiveness of containment measures. Such plans are the responsibility of the bank's management, but should be reviewed by authorities to assess their credibility and frequently updated. Resolution plans should be developed in advance and take full account of legal, funding and operational considerations. Resolution planning should include discussion with home and host supervisors of the preferred resolution strategy. Authorities should regularly review the feasibility of implementing the resolution strategy and plan, and monitor institutions' ability to support that implementation.

Furthermore, an effective early intervention regime can complement the resolution framework. Enriching the crisis toolkit with a playbook of early intervention measures in accordance with crisis severity would help ensure a clear pathway for crisis escalation. Early intervention measures should be assessed as part of a holistic crisis management strategy for the bank, given the possible implications they could have for an eventual resolution.

The exercise confirmed that crisis management toolkits across the region would benefit from further alignment with the FSB Key Attributes. In the event of resolution, tools such as bridge banks or a power to restructure liabilities could be useful. Such tools can facilitate the continuation of critical functions and services, rather than focusing primarily on closure and liquidation of failing banks.

Cross-border cooperation was the focus of the exercise and, while there was fluid communication between participants, there is room to formalise cross-border cooperation. A cross-border cooperation framework would encourage authorities to exchange information, consider implications of resolution decisions on other jurisdictions and, where consistent with national financial stability and their institutional mandates, tailor their actions to those that are least disruptive for the region. Authorities would also benefit from establishing forums, such as crisis management colleges or groups, for coordination on crisis preparedness and management, and agreeing the basic operational principles.

Authorities are encouraged to review their experience and the outcome of the simulation and consider steps to further strengthen the crisis management framework and related capabilities. We encourage participating authorities to discuss their experience and the findings and recommendations both internally and with domestic and cross-border peers and develop a roadmap to address any issues for improvement identified. The roadmap would reflect the fact that many of these changes will take time and require extensive deliberation and consensus-building.

Annex A: Details of the exercise

A.1 Participants

The participating authorities comprised central banks, supervisory authorities, resolution authorities and deposit insurers. This composition was based on the roles of those authorities under their national frameworks in preventing and managing banking crises, although the degree of involvement of individual authorities varies over the "life cycle" of a crisis. Central banks participated given their role as macroprudential authorities concerned with financial stability and providers of emergency liquidity. In countries where banking supervision is separate from the central bank, the supervisory authority also participated. Deposit insurers were included given their role in depositor payouts in case of a liquidation and, where applicable, funding resolution measures. Some also had resolution functions.

Finance ministries did not participate in the exercise. Despite significant progress on bank liquidation and resolution frameworks, fiscal resources may still be required if a systemic banking crisis exceeds a certain scale. However, this should be the exception, not the norm. For this reason, and to limit complexity of the exercise, it was decided that ministries of finance and treasuries would not be represented. This helped to increase incentives for participants to work out a solution that would not require the use of public solvency backstops.

The banking sector did not participate. Crisis management requires strong cooperation with banks. This includes provision of information and interactions on recovery and resolution strategies and their implementation. Industry participation could therefore have increased the realism of the exercise, and simulations do take place between banks and authorities. However, such exercises are of a very different nature. They typically involve fewer authorities and are much more limited in scope than this exercise – for example, focusing on technical competencies to carry out operational procedures rather than official sector decision-making and cooperation. This exercise, by contrast, aimed to test the crisis management frameworks and arrangements of the public sector participants.

Stakeholders that did not participate directly were represented through written material and role players. Role players represented the ministries of finance and treasuries (for questions related to public backstops and to put political pressure on participants), bank executives (for questions about the situation of the bank) and investors (for sales negotiations). This interactive engagement supplemented information such as balance sheets and purchase offers that was provided in document form.

Participating authorities were each represented by a team that included senior decision-makers. The teams from each authority were assembled from those departments that would be involved in a real crisis, such as line supervisors, crisis management specialists and market operations experts. Participation from all authorities included the senior officials who would take the critical decisions in the event of a real banking crisis. This was important for several reasons. First, the decision-making structures and operational setup within the simulation mirrored reality, which strengthens the robustness of the simulation findings. Second, as addressing identified gaps will require high-level support, the direct experience of senior officials will foster understanding of the issues. Third, leadership involvement facilitated the authorities' decision to make significant resources available for the preparation and execution of the exercise. And finally, the exercise allowed leaders of various authorities to cooperate domestically and across borders, which will strengthen confidence and mutual trust.

The simulation was run by an operations team that consisted of:

- a chair, Patrick Honohan, former Governor of the Central Bank of Ireland, who moderated the event;
- representatives of the FSI and Oliver Wyman, who ran the exercise;

- role players from the FSI, Oliver Wyman and participating authorities who acted as stakeholders (such as senior management of the fictional bank) to interact with participants as required; and
- neutral observers, one for each participating authority, who were present at all interactions and compiled observations on the conduct of the exercise in accordance with a checklist. That information was one basis for the findings and recommendations.

A.2 Operational aspects

Logistics

The simulation was conducted in a virtual format in March 2021. Originally, it was planned to carry out the exercise at the premises of Central Bank of Brazil. Representatives of the participating authorities would have gathered physically on-site. Although some authorities did contemplate involving staff of their organisations remotely, most interactions, including negotiations, would have taken place face to face. However, the Covid-19 pandemic made a physical exercise impossible.

Within the virtual format, some interaction within authorities took place physically, but all other communication within and between teams was done virtually. Within each authority, participants interacted as they did in their working life in Covid-related circumstances. While some authorities worked from their official premises with representatives gathering physically, others operated remotely. For interactions between authorities and with the operations team, virtual means of communication were used.

Video conferencing was used for discussions. In addition to a "plenary room" where all participants gathered for introductions and debrief for each session, virtual breakout rooms were used to provide group rooms for each authority and additional meeting rooms for discussions between authorities. Overall, the video conferencing facilities worked well and communication was clear.

Written messages and documents were exchanged using a text messaging platform. The platform provided multiple channels so that messages could be exchanged within groups, such as all participants of a single authority. In addition, bilateral and multilateral channels were established on request for communications between particular authorities. The platform also provided the channel by which the operations team disseminated scenario material and authorities recorded their decisions. This medium conferred two advantages. All interactions were recorded, so that the operations team could rely on these records in their ex post analysis. At the same time, textual communication was confined to the platform, clearly separating simulation-related from real-life communication.

Structure

The exercise was divided into three rounds, each focusing on a specific phase in a stylised crisis life cycle. In reality, a crisis develops over days, weeks and even years. However, a simulation cannot fully replicate this, nor is it necessary to do so to achieve the stated objectives. For that reason, the team opted for a themed, round-based approach. The initial, "physical" version of the exercise was divided into four rounds, focusing on: (i) preparation and familiarisation; (ii) recovery attempts; (iii) resolution strategy and decision; and (iv) resolution implementation. In the original design, the first round was intended to be a "warm-up" round to acquaint participants with the scenario and background. When the exercise was converted to the virtual format, the first round was incorporated into the preparatory material, consisting of a pre-reading pack and a presentation given to participants in advance of the exercise.

Each round took around three hours and started with the provision of a substantial amount of material to participants, setting the scene for analysis and decision-making. Information, including financial statements and mock media reports, was released at the start of each round. Additional information was provided during each round to increase the dynamism of the exercise, and to nudge participants in certain directions when the operations team observed that participants required more information to continue. Most of the information released was pre-scripted, although certain ad hoc adjustments were made to reflect the flow of the simulation or prior decisions by participants (eg ELA amounts, transaction prices).

Participants analysed the situation and took decisions in accordance with available powers and tools. Authority teams usually took some time to review information with the support of the participating subject matter experts. Based on that, participants discussed and decided the course of action. The decisions were communicated to the operations team at the end of each round. While authorities could take any decisions within their legal powers, participants were encouraged by a "decision menu" to follow the theme of each round.

During each round, discussions took place between authorities domestically and across borders. Authorities could meet other domestic and foreign authorities to deepen their understanding of the situation, get additional insights on issues that might not have been conveyed to them by the material provided, and discuss and coordinate actions. While this worked very well from an organisational and technical point of view, later in the exercise such interactions faced time constraints, further and intentionally increasing the pressure on authorities to take decisions.

Dry runs

The exercise was tested in several dry runs. This was necessary to verify that the exercise would work as planned, and in particular that the material did not include unintended ambiguities. For this reason, a dry run was performed several weeks ahead of the CSE as originally scheduled, with project team members and other representatives of participating authorities executing the simulation. After the decision to conduct the exercise in a virtual format, another dry run was carried out to test the technology and the combination of the platforms. While neither dry run revealed substantial problems, they helped identify smaller issues that were addressed to make the exercise smoother.

Annex B: Details of the scenario

B.1 General design considerations

The scenario centred on the failure of a regionally systemic bank – the fictional "Banco Sao Francisco" (BSF). It was designed to be relevant to all participating authorities, and to achieve a similar level of engagement across countries. It included a background story that framed the events, including some macroeconomic and geopolitical circumstances, the time frame and the context in which events unfolded.

The scenario design was guided by the following principles.

- The scenario was realistic though not overly complex, to focus on critical decision-making over technical analysis.
- It covered the continuum from a "business as usual" state to a systemic stress situation, and the implementation of resolution and crisis management actions.
- The simulated crisis was caused by the materialisation of plausible macroeconomic stresses, amplified by exogenous events (such as market-wide stress, a reputational event or a specific political event in a given country).
- To ensure that the scenario put a comparable degree of systemic stress on all participating countries, it included substantial spillover effects to other local banks in participating countries.
- The focus of the scenario was credit intermediation activity. Other activities, such as asset management, insurance and more complex or ancillary activities, played a less prominent role in the exercise.
- All data were simulated, and the failing bank was fictional although, to ensure the exercise was realistic, loosely modelled on existing banking groups.
- To be effective and realistic, the scenario simulated an environment of stress, complexity and uncertainty as much as possible. Some information supplied was ambiguous or incomplete, and the material included both elements that required escalation and "distractors" with no relevance to the decisions required.

The scenario design was based on an analysis of the conditions and the environment in which the participating authorities actually operate. By design, a simulation is constrained in the scope of issues it can cover. In order to keep the exercise and resulting findings relevant, the scenario was designed to test those aspects that were consistent with the objectives of the exercise. Topics that were less relevant for those aspects could be simplified without compromising the objectives. To this end, the preparation team focused on three aspects:

- *Banking sector landscape:* The crisis scenario was designed to reflect specific aspects of the financial system overseen by each participating authority. This was particularly important for the operational and financial structure of the fictional bank. For this reason, the preparation team – with support of the participating authorities – researched the structure of the countries' financial systems and modelled the fictional bank on those findings. The high capital ratios that are prevalent in the region constituted a challenge. It required a crisis of significant size and depth to get the bank to the point of non-viability, which is one of the reasons a deep, regional macroeconomic crisis was chosen as narrative.
- *Legal powers:* Any actions participants took within the simulation had to be consistent with their current legal framework. While all countries involved have tools to liquidate non-systemic banks and some countries have material experience in applying them, the frameworks are largely untested cross-border or in scenarios that might exhaust the capacity of domestic funding

arrangements. The scenario was structured to test the limits of the current legal arrangements, which required the preparation team to understand the status quo. This was done through a survey in which participating jurisdictions provided detailed information on their legal framework.

- *Institutional arrangements:* As central banks, supervisors and deposit insurers participated in the exercise, the scenario had to engage all these entities. The scenario design therefore considered the role, mandate and responsibilities of these institutions in each participating country. The constraints on cross-border cooperation (such as barriers to information exchange) were also taken into account.

B.2 Starting point

The fictional bank operated a traditional commercial banking business model and was large enough to be systemically important in the region and in most of the participating countries. Several design features increased the risk of contagion so that all participants needed to take action to protect financial stability in their own jurisdictions.

- The macroeconomic scenario caused losses on the banking group's balance sheet in the home country and in each of the subsidiaries in other jurisdictions.
- In one country, where losses were limited, the bank was established as a branch, so that its health depended on the distressed parent.
- Within the banking group, there were several material cross-border funding relations. Such dependencies intensified as the crisis progressed and intra-group support became necessary.
- The bank's operations in each country were to some extent independent, which required host authorities to coordinate with the home authority in order to understand the group situation.
- Entities of the BSF group were linked through critical shared services, in particular related to operations and payments.

The crisis was triggered by a deterioration of regional macroeconomic conditions that caused the bank to lose viability in all participating countries. The scenario had to be designed in such a way as to cause the bank's situation to deteriorate in all countries in which it was active. While several crisis triggers were considered (such as an idiosyncratic trading book loss or a cyber event), a macroeconomic scenario that led to a broad recession and corresponding losses in the bank's loan book proved to be the most credible one, as all participating countries were exposed to it.

B.3 Crisis evolution

The balance sheet weakened and equity was consumed due to losses in the banking group's loan book. This was simulated through a growing share of non-performing loans and increasing provisions. Participants were faced with a significant degree of asset quality deterioration. The profitability of the group also diminished over time, undermining the bank's ability to compensate loan losses.

To add further challenges to the exercise, participants were confronted with idiosyncratic crisis events. In reality, banking crises often come with exogenous shocks and unforeseen events that increase urgency, limit room for manoeuvre or undermine planned strategies. For this reason, the evolving scenario included the following events:

- Rating downgrades
- Liquidity shortages
- Depositor runs

- Negative media reports about a bank
- Large exposures suddenly becoming non-performing
- Intra-group loans not being repaid
- Property prices falling rapidly
- The local currency depreciating heavily
- A lack of collateral of sufficient quality
- A scandal involving potential abuse in the provision of financial services
- Infrastructure problems in the payment system

B.4 Round-based approach

The simulation was divided into rounds, each of which represented a phase in a stylised crisis continuum. The pre-CSE material was intended to familiarise participants with the corporate structure, financial situation and cross-border links of the bank so that they were prepared for swift decision-making once the exercise started. The first round began at a point when macroeconomic pressures were building and the bank was starting to experience stress.

Round 1 – Recovery attempts

At the beginning of round 1, it was already clear that the bank needed to take action to counter adverse events. Value adjustments in the loan book and other losses had absorbed parts of its equity buffer (at the group level and in individual subsidiaries), although regulatory thresholds had not been breached. Participants became aware of the regional nature of the crisis, prompting them to seek information and discuss the situation with foreign counterparts. Towards the end of the round, subsidiaries in several countries were confronted with liquidity shortages due to persistent deposit outflows and requested emergency liquidity assistance (ELA). As it became clear that recovery measures were not sufficient to secure the banking group's viability, a resolution strategy had to be prepared. The simulated time span was about three months, so that the effects of participants' decisions had enough time to materialise.

Round 2 – Resolution strategy and decision

By round 2, it was clear that authorities needed to intervene in the banking group to protect financial stability. This round marked the start of the resolution and insolvency process to the extent that participants were required to develop suitable strategies. Participants had to assess whether the conditions for using a specific power or implementing a measure had been met under the applicable legal framework. Authorities also needed to assess the potential effects of proposed actions domestically and – ideally – internationally. The round therefore placed significant emphasis on information exchange and coordination between authorities. The simulated time span was about four weeks, with significantly increased stress levels and gradually reduced time for reacting to events.

Round 3 – Resolution and liquidation

The final round focused on resolution or insolvency measures. Participants were presented with two offers: one involving the purchase of the entire BSF banking group by a large European bank, which required additional public funds; the other involving the purchase operations in one jurisdiction only by a private equity investor, which did not require additional funding but which would break up the group and result in closures and job losses. Each options involved trade-offs, and authorities were prompted to consider what measures would allow the continuity of critical functions and services and explore financial burden-sharing.