Committee on Payments and Market Infrastructures

Board of the International Organization of Securities Commissions

A discussion paper on central counterparty practices to address non-default losses

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Contents

Executive summary

The purpose of this discussion paper is to facilitate the sharing of existing practices to advance industry efforts and foster dialogue on central counterparties' (CCPs) management of potential losses arising from non-default events (ie non-default losses or NDLs), in particular in the context of recovery or orderly wind-down.[1]

The *Principles for financial market infrastructures* (PFMI)[2] of the Bank for International Settlements' Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO) addresses NDLs in a number of places. Principle 3 calls for CCPs to "have a sound risk-management framework for comprehensively managing" the range of risks that they are subject to. Principle 15 addresses general business risk. Explanatory note (EN) 3.15.1 of the PFMI explains that "general business risk refers to the risks and potential losses arising from an FMI's administration and operation as a business enterprise that are neither related to participant default nor separately covered by financial resources under the credit or liquidity risk principles." The EN and CPMI-IOSCO's *Recovery of financial market infrastructures – Revised report*) ("Recovery Guidance")[3] note that business-related losses may also arise from legal, custody, investment or operational risks. For the purpose of this paper, NDL risks are used to refer to the various risk events that could lead to non-default losses.

While NDLs are addressed in the PFMI and the above-mentioned guidance, there is limited common understanding of CCPs' current practices to address NDLs. This discussion paper is informed by the current practices at various CCPs and is intended to help advance industry efforts and foster dialogue on the key concepts and processes used by CCPs in:

1. developing methodologies and practices for (a) identifying scenarios in which NDLs may occur (NDL scenarios); (b) quantifying potential NDLs; and (c) assessing the adequacy of resources and tools available to address NDLs (Section 2).
2. achieving the operational effectiveness of plans to address NDLs (Section 3).
3. reviewing, exercising and testing plans for addressing NDLs (Section 4).
4. providing effective governance of, and transparency regarding, plans for addressing NDLs both in advance of and during a non-default event, and engaging with participants[4] and authorities (Section 5).

Section 1 surveys the background and inputs to this paper and clarifies its objectives.

Section 2 discusses the underlying analysis conducted by CCPs to develop their plans to address NDLs. The starting point of the analysis is to identify NDL scenarios in a manner consistent with PFMI Principle 3, Key Considerations 1 and 4, including those that might lead to recovery. This is in line with the Recovery Guidance, which notes that an FMI should identify scenarios that may prevent it from being able to provide its critical services as a going concern.[5] Further analysis includes quantifying potential loss exposures under the identified scenarios, identifying the tools and quantifying the resources available to

1 The paper also recognises that liquidity shortfalls may arise from such events and addresses CCPs' practices to identify and address potential liquidity gaps from non-default events.

2 Committee on Payment and Settlement Systems and International Organization of Securities Commissions, *Principles for financial market infrastructures*, April 2012.

3 Committee on Payment and Settlement Systems and International Organization of Securities Commissions, *Recovery of financial market infrastructures – Revised report*, July 2017.

4 Participants include direct participants (ie clearing members) and indirect participants (eg customers of clearing members).

5 See Recovery Guidance, paragraph 2.4.5. This analysis is also informed by related work by the Financial Stability Board. See Section 1.2 of Financial Stability Board, *Guidance on Financial Resources to Support CCP Resolution and on the Treatment of CCP Equity in Resolution*, November 2020. ("FSB Guidance on Financial Resources in Resolution").

address those losses, comparing the available tools and resources with the potential loss exposures, considering the timing of any liquidity needs to help identify any potential resource shortfalls and developing plans to address any shortfalls. Finally, the section discusses a range of practices in planning for an orderly wind-down as a result of NDLs if the recovery plan proves, in particular circumstances, to be ineffective.

Section 3 addresses practices to promote the operational effectiveness of a CCP's plans to address NDLs, ie taking steps to assess, and to increase, the likelihood that the intended results of the CCP's approach are achieved. This discussion includes the enforceability of the CCP's intended tools and whether the performance of relevant stakeholders and third parties is likely to prove reliable. These aspects are both especially important given the historical lack of experience with NDLs that have been severe enough to require the use of recovery tools. The section also discusses how resources and tools can be appropriately used within any applicable regulatory or contractual constraints. Finally, the section surveys the information technology systems and processes that are available to support CCPs' efforts to address NDLs should they arise.

Section 4 considers the review and testing of plans to address NDLs. This includes internal reviews of plans to address NDLs, the use of crisis management exercises to test plans (both at a CCP-specific level and participation in industry-led multiple-CCP exercises), and the inclusion of internal governance structures and participants (and other relevant third parties) in such exercises. It also addresses how the results of such reviews and exercises can be used to improve the plans to address NDLs and to inform the design and conduct of future exercises.

Section 5 discusses effective governance, transparency and engagement with participants and authorities. Here, the discussion on governance addresses reviews by senior management and ultimately the board of the methodology, practices and assumptions for managing potential NDLs. It also addresses who should be responsible for taking decisions regarding the use of tools for addressing specific NDL scenarios. The discussion on transparency addresses various practices to promote adequate disclosure to relevant stakeholders of the CCP's methodologies for identifying potential NDL scenarios and quantifying potential NDLs, including any relevant assumptions, and the CCP's plans to address the NDLs, including the resources and tools available to address the NDLs. Disclosure to relevant stakeholders concerning tools that have a direct impact on market participants is particularly important to ensure that market participants are prepared to manage these impacts.

Finally, Section 6 sets forth a series of consultation questions for comment.

1. Introduction

1.1 Background and inputs to the discussion paper

In 2012, the predecessors to the CPMI and IOSCO[6] published the PFMI, which significantly strengthened the international standards for risk management by financial market infrastructures, including CCPs. CPMI and IOSCO have advanced these standards by publishing additional reports and guidance, including the Recovery Guidance.

This work, as well as other work by authorities, CCPs and clearing participants, has significantly advanced our understanding on how to address losses arising from clearing member defaults and estimate their magnitude. For example, the principal CCP methodologies for quantifying potential default losses are covered in detail by the foregoing standards and guidance, and are reasonably well understood by all stakeholders. These include the use of margin models and stress testing, as well as resources (eg initial and variation margin, own funds ("skin-in-the-game") and prefunded default funds), and tools (eg assessment powers and variation margin haircutting). Furthermore, the industry is working on enhancing and standardising some aspects of CCP default auctions, in line with the CPMI-IOSCO report *Central counterparty default management auctions – Issues for consideration.*[7] By contrast, while NDLs are addressed in the PFMI and the above-mentioned guidance (as discussed below), there is much more limited common understanding of CCPs' current practices to estimate the magnitude of NDLs. The same is true of CCPs' practices to ensure that they have adequate resources and appropriate tools to address NDLs.

The severity of NDLs can be considered across a continuum, ranging from small losses that arise from minor day-to-day incidents, through larger losses from more serious but less frequent risk events, to significant losses from catastrophic events that could threaten the CCP's ability to continue providing critical services and even its viability as a going concern. All well run businesses, including CCPs, should have policies, procedures and plans to address the NDLs that may arise, in addition to a sound risk management framework to mitigate and manage those risks.

Because of CCPs' importance to the financial system, the PFMI calls upon them and other financial market infrastructures to consider scenarios covering the entire spectrum of risks that may potentially prevent them maintaining their critical operations and services as a going concern, even where the realisation of those risks is highly unlikely, to assess the effectiveness of a full range of options for recovery or orderly wind-down given those scenarios, and to prepare appropriate plans based on that assessment.[8] The Recovery Guidance further notes "these scenarios should take into account the various risks to which the FMI is exposed."[9]

The PFMI addresses the various risks that could lead to NDLs in Principle 15 on general business risk. EN 3.15.1 states that "general business risk refers to the risks and potential losses arising from an FMI's administration and operation as a business enterprise that are neither related to participant default nor separately covered by financial resources under the credit or liquidity risk principles." The EN and the

6 These predecessors were, respectively, the Committee on Payments and Settlement Systems and the Technical Committee of the International Organization of Securities Commissions

7 See Committee on Payment and Settlement Systems and International Organization of Securities Commissions, *Central counterparty default management auctions – Issues for consideration*, June 2020.

8 See PFMI, Principle 3, Key Consideration 4 (a CCP "should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down," and "should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment.")

9 See Recovery Guidance paragraph 2.4.5.

Recovery Guidance note that business-related losses may also arise from legal, custody, investment or operational risks.[10]

A number of additional provisions in the PFMI address recovery and orderly wind-down that are applicable to recovery from NDL events. Principle 15 of the PFMI states that "liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services." Further, Key Consideration 2 of Principle 15 of the PFMI states that "[t]he amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken. Key Consideration 5 of Principle 15 of the PFMI also states that "[a]n FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed."

The Recovery Guidance calls on FMIs to develop a set of recovery tools that, to the extent practicable, is (i) comprehensive with respect to all relevant scenarios (including, for these purposes, NDL scenarios), as well as being (ii) effective, (iii) transparent, measurable, manageable and controllable and (iv) creates appropriate incentives while (v) keeping negative impacts to a minimum.[11]

With respect to NDLs in particular, the Recovery Guidance provides that an FMI needs to have both sufficient liquid net assets funded by equity to implement its recovery plan or to conduct an orderly wind-down of its critical operations, and a viable plan to raise new equity capital in circumstances where the FMI's equity capital is used to address NDLs.[12]

To address the more limited common understanding of industry practices implementing these standards and guidance in the context of addressing NDLs, the CPMI and IOSCO gathered information on current industry practices. The CPMI and IOSCO distributed and received 17 answers to a questionnaire, representing responses from 20 CCPs in 10 jurisdictions, and conducted an information session with representatives of CCPs. Together with the CPMI-IOSCO's working knowledge of current CCP practices, these inputs form the basis for this discussion paper.[13]

One theme common to the questionnaire responses is that there is a dearth of relevant internal or external historical data related to actual experience of NDLs threatening the viability of a CCP. However, as CCPs generally recognise, past performance is no guarantee of future results, and there is hence a need to avoid conflating "low risk" with "no risk."

1.2 Objectives of the discussion paper

The discussion paper is intended to help advance industry efforts and foster dialogue by facilitating the sharing of existing practices CCPs employ to address NDLs, and by highlighting opportunities and

[10] The PFMI explicitly address the mitigation of each category of risks that can lead to NDL events. For example, Principle 15 (General Business Risk) provides that an "FMI should identify, monitor, and manage its general business risk," while Principle 17 (Operational Risk) provides that an "FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls." Principle 16 (Custody and Investment Risks) provides that an "FMI should safeguard its own and its participants' assets and minimise the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market and liquidity risks." Principle 1 (Legal Risk) provides that an "FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions."

[11] Recovery Guidance paragraph 3.3.1

[12] See Recovery Guidance paragraph 4.6.1 ("An FMI will need to plan to recover from [NDLs]. To that end, an FMI needs to have both sufficient liquid net assets funded by equity to implement its plan to recover from these losses or to conduct an orderly wind-down of its critical operations and a viable plan to raise new equity capital in circumstances where the FMI's equity capital is used to address such losses. An FMI should also consider having other ex ante loss-absorbing arrangements, which may include explicit insurance or indemnity agreements to cover such losses.")

[13] This work has also been informed by the FSB Guidance on Financial Resources in Resolution.

challenges for CCPs to improve their planning for management of NDLs. It considers both developing plans during business as usual for addressing NDLs and implementing those plans to address NDLs during an actual event, particularly in the context of recovery and orderly wind-down. Some of these existing practices may not be explicitly set out in the PFMI or existing guidance but appear to have the potential to be helpful, and thus to be worthy of consideration by CCPs; these practices are described in this discussion paper as "notable."

This discussion paper is not intended to create additional standards for CCPs beyond those set out in the PFMI. Nor is it intended to be an assessment of the extent to which CCPs have implemented the standards set out in the PFMI. However, upon due consideration, certain practices are identified as inconsistent with the PFMI.

2. Identifying scenarios that could lead to NDLs, quantifying potential NDLs, and assessing the sufficiency of resources and tools

Principle 3 of the PFMI states that "an FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks," while Key Consideration 1 of Principle 3 of the PFMI states that "an FMI should have risk-management policies, procedures and systems that enable it to identify, measure, monitor and manage the range of risks that arise in or are borne by the FMI." EN 3.3.3 of the PFMI further clarifies that comprehensive FMI risk policies, procedures and controls should "cover routine and non-routine events" and "address all relevant risks, including legal, credit, liquidity, general business and operational risks."

In addition, Key Consideration 4 of Principle 3 of the PFMI states a CCP "should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down," and "should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment". The Recovery Guidance further states that in the recovery plan, "[a]n FMI should identify appropriate recovery tools, indicate the necessary steps and time needed to implement them, and assess the associated risks to the FMI, its participants, linked FMIs and the market more generally."[14] The Recovery Guidance notes that an FMI should evaluate the strengths and weaknesses of recovery tools so that it can choose the set most appropriate for each relevant recovery scenario, including the sequence in which the tools should be used.[15]

A CCP's efforts to quantify, to the extent practicable, the potential NDLs from various scenarios it identifies based on its unique risk profile, support the CCP's development of a recovery plan, making it more likely that the plan will be effective.[16] Endeavouring to quantify potential NDLs is a notable means to help CCPs understand potential NDLs, assess the effectiveness of their plans to address losses from non-default events as well as the effectiveness and comprehensiveness of their recovery tools, and identify further tools as necessary.[17]

14 Recovery Guidance paragraph 2.4.9.

15 Recovery Guidance paragraph 3.3.1 to 3.3.2.

16 As noted above, Key Consideration 1 of Principle 3 of the PFMI calls upon CCPs to "measure [...] the range of risks that arise in or are borne by the FMI."

17 This quantification of potential NDLs is a separate exercise from calculating the sufficient amount of liquid net assets funded by equity to implement a recovery or orderly wind-down plan under Principle 15 of the PFMI. Principle 15 states that "liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services." Furthermore, Principle 15 of the PFMI states that "an FMI should identify, monitor and manage its general business risk and

2.1 Identification of NDL scenarios and quantification of NDLs

While CCPs have generally implemented risk management practices to address NDLs, the level of sophistication of these approaches varies significantly. Generally, CCPs consider a range of NDL scenarios that may arise from risks relevant to their business activities, including general business risk, operational risk, investment risk, custody risk and legal risk. Some CCPs have frameworks that adopt the practice of considering the risks arising from their activities both comprehensively and separately from each other, in line with the nature of the CCP's business, its products and the markets cleared. This helps to ensure that resources and tools to address NDLs are tailored to the specific nature of the risks faced by a CCP, and to achieve an appropriate degree of granularity.

Some CCPs also consider the possibility that a default loss event could occur at the same time as an NDL event (eg the simultaneous defaults of a clearing member and of an investment counterparty or custodian holding collateral posted by that clearing member). In this context, some CCPs also consider the possibility that a highly interconnected entity might fail (eg an entity that is a clearing member, custodian, settlement bank and liquidity provider) and consider the implications for the CCP's default management, liquid resources and capital adequacy.[18]

CCPs mitigate risks unrelated to a participant default as part of their business as usual risk management activities in line with the PFMI.[19] These practices are in line with the PFMI. However, the PFMI also states that a CCP should have a recovery plan to address losses should these risks materialise so that the CCP can continue operations and services as a going concern.

The risk of a specific type of NDL materialising might be low due to the CCP's internal controls and other risk mitigants. However, low risk is not zero risk, and consequently, CCPs should have a plan to address NDLs from these scenarios should they materialise. Some CCPs, however, do not include certain types of NDL scenario in their planning because these CCPs seem to assume that regulated financial institutions or central securities depositories pose zero custody risk, or that legal risk cannot cause an NDL (because Principle 1 of the PFMI requires a legal basis with "a high degree of certainty"). These approaches appear to be inconsistent with the standards set forth in the PFMI.

2.1.1 Quantification of potential NDLs

Some CCPs conduct analysis to quantify the potential NDLs and support the development of appropriate resources and tools for addressing NDLs, including NDLs that may lead to recovery. Examples of approaches adopted by some CCPs include quantifying the amounts of potential NDL exposures separately for each relevant type of risk and confirming adequate resource coverage. To this end, some CCPs use sensitivity analysis, scenario simulations, drills or stress-testing analysis. These include approaches based on extreme adverse business and operational scenarios (eg fall in capital and profits, financial losses resulting from system outages or cyber-attacks) extrapolated from past incidents, historical

hold sufficient liquid net assets funded by equity to cover potential general business losses." Key Consideration 2 of Principle 15 of the PFMI states that "An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken."

18 Approaches used by CCPs to understand the challenges in simultaneous participant default and non-default events similarly include scenario analysis, tabletop exercises (internal and multi-CCP), and stress testing. See Section 4 for discussion of these approaches.

19 In particular, a CCP's ongoing compliance with Principle 1 (Legal Basis), Principle 3 (Framework for the comprehensive management of risks), Principle 5 (Collateral), Principle 15 (General business risk), Principle 16 (Custody and investment risks) and Principle 17 (Operational risk) of the PFMI is essential for mitigating these risks. For example, CCPs have investment policies to mitigate investment risk, and implement measures to mitigate and monitor custody risk.

market volatility or historical price movements. In their analysis, some CCPs also considered in their quantification approaches varying degrees of market stress, which could include wider macroeconomic scenarios such as a global financial crisis.

2.1.2 Sources of information

Scenarios and assumptions concerning potential losses are commonly informed by expert judgment, from both internal and external subject matter experts, given the inherent challenges of modelling potential losses in what are low-probability, high-impact events with limited historical data.

Moreover, some CCPs also consider lessons learned from other types of financial institution (banks in particular) when assessing NDL exposures. This includes using and adapting risk assessment best practices, publicly available data related to operational risk events and external loss events and industry best practices for banks.

For example, some CCPs use the methodology from the former Basel II framework, which offers multiple options for risk quantification: the Advanced Measurement Approach (using an internal risk model), the Standardised Approach (using calculations based on business-line gross income), and the Basic Indicator Approach (using calculations based on total annual gross income).[20] Some CCPs have concluded that the tools in these frameworks can be adapted to their specific circumstances. Other CCPs have used a variety of accounting standards to help capture potential losses in specific risk areas. Some CCPs also participate in industry groups where they can compare their internal risk frameworks with practices adopted by similar financial institutions.

While considering insights from other parts of the financial industry is, in principle, a helpful practice, there can be limitations in terms of accurately assessing the risk of NDLs on this basis. Industry-specific data sources can be difficult to adapt to CCP markets and risk frameworks. Nonetheless, there is room for industry collaboration to adapt external frameworks to meet the needs of CCPs, perhaps including anonymous sharing of events resulting in NDLs.

2.1.3 Considering risk-specific factors

In survey responses, many CCPs noted that certain non-default events that could lead to financial losses, such as custody[21] or physical disaster risks, require risk-specific analysis, such as considering factors that are highly specific to the geographic location of the CCP's operations. Consequently, effective means of identifying scenarios and quantifying potential losses would reflect those unique characteristics; no single solution would work everywhere.

2.2 Available resources and tools to address NDLs

CCPs have a variety of resources and tools at their disposal to cover potential NDLs. The available tools can draw on internal or external sources of funds and can vary depending on the ownership structure of the CCP (eg industry utility vs for-profit ownership). Some tools draw on financial resources held in the

[20] In December 2017, the Basel Committee on Banking Supervision published a new set of regulatory capital standards for internationally active banks, which includes a new standardised approach for operational risk capital (ie the Standardised Measurement Approach). See Basel Committee on Banking Supervision, *Basel III: Finalising post-crisis reforms*, December 2017.

[21] For example, CCPs reported that there are generally limited avenues for addressing custody risk – irrespective of where assets are held. In a market with fewer options for holding assets in custody, transparency and engagement with participants and relevant third parties is an important means of addressing custody risk. The choice of custodian also may be relevant because the evaluation of risk will differ between a custodian bank and a central securities depository. However, in the event that more than one custody provider is available in a market, holding assets with more than one custodian could be a method for risk mitigation.

form of highly liquid assets; other assets might take time to realise, which can create liquidity gaps depending on when the NDLs crystallise.

CCPs' plans regarding which tools to use in any given scenario are generally based on a number of factors. For example, CCPs consider the type of non-default risk causing the potential or actual loss (or liquidity need), the amount of financial resources required to address the potential or actual loss (or liquidity need), and the speed with which the respective financial resources can be monetised. A few CCPs have sought to define specific scenarios under which certain types of tool would be expected to be used, which can be helpful to guide and speed up activation.

This subsection will discuss own funds maintained internal to the CCP (liquid net assets funded by equity), funding from affiliates, external financing (debt or equity), insurance, and the rule-based allocation of losses.

2.2.1 Own funds

As noted above, Principle 15, Key Consideration 3 of the PFMI calls for CCPs to hold liquid net assets funded by equity sufficient to implement their recovery or orderly wind-down plans; at a minimum, a CCP should hold liquid net assets funded by equity equal to at least six months of operating expenses. However, in calculating the necessary amount of resources, some CCPs rely solely on minimum amounts stated in the regulatory capital requirements applicable in the relevant jurisdiction, or the six months of current operating expenses stated as the minimum under the PFMI. Relying solely on the minimum regulatory capital amount without an analysis of the costs of implementing a recovery and orderly wind-down plan may be inconsistent with Principle 15 of the PFMI.[22]

CCPs generally consider own funds, in particular liquid net assets funded by equity, as the primary resource for covering NDLs. Some CCPs plan to use these assets to cover various types of NDL, and some would plan to use such resources to bridge liquidity gaps when the NDL would ultimately be covered by another source of funds that is not immediately available.[23] Notably, some CCPs specifically designate how their own funds would be used in each scenario they have identified (eg differentiating between regulatory capital, buffers and other capital not designated for default losses).

2.2.2 Rule-based loss allocation

Similar to rule-based loss allocations for default losses, some CCPs include in their rulebooks the potential allocation of losses to clearing members, most often for custody and investment losses. However, some CCPs also use rule-based loss allocation mechanisms to address losses arising from general business risk, operational risk and legal risk. In some instances, such allocations are used as a second-order resource after insurance coverage. As discussed further in Sections 3 and 5, some CCPs have developed frameworks to support an effective use of loss allocation. This includes a comprehensive and clear description of how losses would be allocated, the timing of any required payments to the CCP, and dedicated governance arrangements, to support clearing members in anticipating and preparing for potential exposures.

2.2.3 External financing

To supplement internal sources of funds to address NDLs, many CCPs would plan to turn to external financing, through debt or equity. Some CCPs rely on committed or uncommitted credit lines, which are sources of short-term liquidity. A number of CCPs would consider, in cases of more extreme need, other means of borrowing external funds (eg bond placements, issuance of commercial paper), in some cases

[22] See Principle 15, Key consideration 2 (amount of liquid net assets funded by equity "should be determined by [the CCP's] general business risk profile"), and Key consideration 3 ("sufficient liquid net assets funded by equity to implement [a viable recovery or orderly wind-down plan")

[23] This could motivate holding higher levels of own funds as a precautionary measure.

with the aid of a parent. Some CCPs include plans to raise funds through public equity markets to address losses. Clearing members may also be a source of voluntary debt or equity financing, in exchange for consideration that might be negotiated when those resources are needed.

Reliance on uncommitted external financing brings particular challenges. First, it could take time to raise external funds through either debt or equity financing. The process may be even longer if it involves obtaining regulatory approvals, which could create liquidity gaps depending on when the NDLs crystallised.[24] Second, external sources of funds may be unreliable. For example, a CCP could be seeking such financing in a stressed environment when markets may be less liquid.

Thus, external financing is more likely to be successful in addressing NDLs if CCPs have ex ante commitments and specific plans and procedures for raising funds, rather than relying on uncommitted arrangements and ad hoc planning.[25] For example, one notable practice is to maintain committed credit lines for reliable short-term liquidity. Another practice is to pre-register public offerings with the relevant securities' regulator in order to accelerate the fund-raising process.

2.2.4 Insurance

Insurance is an important tool that CCPs could use to cover NDLs. Almost all respondents report having insurance coverage to address losses from some non-default events. Use of insurance is particularly prevalent for legal and operational risk, but generally does not cover custody or investment risk. One possible advantage of insurance is that it draws on funds external to the CCP and its clearing system.

A critical issue for CCPs is determining the specifics of insurance coverage. Some CCPs subject their insurance policies to regular reviews to evaluate the scope of coverage in conjunction with the NDL scenarios contemplated in their framework. To rely on an insurance policy to cover a particular loss event, the CCP should confirm that the event would constitute a peril that is covered by, and not excluded from coverage under, the relevant insurance policy. This calls for a precise understanding of the policy's contractual terms. The policy terms should also specify the amount of loss retained by the CCP and the limit of losses to be covered by the insurer; the CCP should take steps to confirm that it will have resources sufficient to cover the retained loss, and that the limit of losses to be covered by the insurer will be adequate.

Typically, the insurance claim and payout process will take a considerable period of time, which could create liquidity gaps that CCPs need to keep in mind. Therefore, most CCPs consider insurance coverage as a means for loss absorption only in combination with other more reliably liquid resources such as own funds or lines of credit.

2.2.5 Replenishment

Principle 15, Key consideration 5 of the PFMI calls for CCPs to "maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly". If a particular NDL event would exhaust or deplete own funds, CCPs should replenish them. A few CCPs lack pre-established plans to replenish capital following an NDL event, which is inconsistent with the foregoing provision of the PFMI. Most CCPs have at least high-level dedicated arrangements in place. CCPs that are part of a larger corporate entity would typically first turn to intragroup support, for example from their parent company. This type of replenishment would appear likely to be most reliable when there are prior arrangements, such as legal guarantees from a parent company or at least established procedures for drawing on intragroup support. If intragroup support is not guaranteed, its provision could be affected by broader stress in financial markets that might occur at

[24] See discussion in Section 2.3 below.

[25] The utility of such commitments may vary with the conditions on the arrangements. Accordingly, CCPs may wish to review such conditions to ensure that they are consistent with the scenarios under which the commitments are likely to be relied upon.

the same time when an NDL is realised, and that may also affect the relevant intragroup funding or liquidity provider. Some CCPs include plans to raise funds through public equity markets to replenish liquid net assets funded by equity. Clearing members may also be a source of equity replenishment.

2.3 Planning for liquidity gaps

In the NDL context, liquidity gaps can arise where there are time constraints or delays in accessing funds from liquidity providers, members, the parent company or insurance providers, resulting in a mismatch between the time when losses from non-default events could materialise and the availability of the financial resources to cover them. During times of stressed market conditions, the severity of and the consequences from liquidity gaps can increase while a CCP’s ability to close gaps may be reduced.

A notable practice at some CCPs is to confirm that the timelines for raising additional funds from either internal or external parties would correspond to the timing of their potential financing needs, and to take steps to address any liquidity gaps. In this context, some CCPs have also considered that certain costs, and potential losses relating to certain types of NDL event, may crystallise more rapidly than for other types of NDL event.

In survey responses, CCPs report that they use a combination of tools and resources to mitigate the risk of liquidity gaps. Some CCPs ensure that their own funds are prefunded, liquid and unrestricted in use (ie use is pre-approved by the board and not allocated to other losses). Regularly assessing the availability of the CCP’s dedicated tools and resources is a critical step in assuring that the tools and resources to address NDLs correspond to the timing at which losses from non-default events are expected to materialise.

Notably, most CCPs establish strategies for sources of financing, such as committed lines of credit or bridge loans from the parent company or from commercial banks.

The survey responses suggest that a few CCPs appear to have room for continued improvement in their approach to addressing funding or liquidity gaps. These include cases of (i) failure to identify available tools or resources to address potential funding and/or liquidity gaps; (ii) lack of awareness that funding and/or liquidity gaps may exist; (iii) exclusive reliance on central bank support to address liquidity (or possibly funding) gaps; and (iv) CCPs that are still in the process of developing liquidity plans.

The use of insurance raises specific issues regarding liquidity gaps (see Section 2.2.5). Assuming that a loss event is a covered peril, there is a time lag between the point at which the loss occurs, and the point at which the insurance claim is paid. Some CCPs reported challenges in accurately forecasting the timing of the insurance claim adjudication and claim payouts. Other CCPs indicated that the required time for obtaining a decision and the release of funds may take several months. A CCP may choose to address the issue of uncertainty around the timing of insurance claim payouts by supplementing insurance coverage with bridging liquidity arrangements.

2.4 Ensuring that NDL exposures are covered by available resources and tools

CCPs engage in a variety of practices to ensure that NDL exposures are covered by available resources and tools, both from a credit perspective (ie total exposures will be covered by total resources and tools) and from a liquidity perspective (ie, considering the CCP’s liquidity resources and tools, sufficient resources will be promptly available when exposures materialise). As discussed in Section 2.1.1, some CCPs conduct an analysis of the specific non-default risks and loss exposures associated with the CCP’s particular business. Some CCPs also conduct a rough quantitative analysis of whether the types and amounts of available resources and tools would meet the CCP’s potential funding needs, both as to amount and timing. This practice may be more helpful than an analysis of the adequacy of available resources that is limited to a high-level qualitative approach.

Notable approaches of some CCPs include estimating potential funding and liquidity gaps in severe stress scenarios. For example, one CCP compares stress scenarios with 80% of available resources, seeking to achieve the result that 80% of available resources is sufficient to cover any single event that the CCP estimates might occur at least once in 1,000 years, any two events that the CCP estimates may occur at least once in 100 years, and any three events that the CCP estimates may occur at least once in 20 years. Another notable approach is to specify the order in which the CCP's tools and resources would be used to address each type of NDL event.

2.5 Orderly wind-down planning

As discussed above, a CCP's identification of NDL scenarios and its quantification of NDLs may support adequate planning to address NDLs with available tools and resources in a timely manner. However, Principle 3, Key Consideration 4 of the PFMI also states that a CCP should prepare appropriate plans for its orderly wind-down. As noted in the Recovery Guidance, "where a recovery plan proves, in a particular circumstance, to be ineffective, it is important that the FMI have a plan to wind down in an orderly manner."[26]

Survey responses indicate a range of practices in this area, and overall, important room for improvement to achieve consistency with the PFMI. For example, some CCPs do very little planning for an orderly wind-down resulting from NDLs, and provide a variety of rationales for this approach. Some CCPs stated that they believe that orderly wind-down scenarios are highly improbable and that recovery measures for NDLs are likely to be effective, while others referenced resolution plans that their authorities have in place. In accordance with the PFMI, CCPs should maintain effective orderly wind-down plans, and such plans should consider NDLs as precipitating events; the possibility of resolution is not a substitute.

CCPs that do plan for orderly wind-down use a variety of approaches to estimate the associated costs. Some use a basic approach to estimate the time frame and resources needed for conducting an orderly wind-down on the basis of their usual operating expenses. Other CCPs notably engage in a more structured approach and take costs specific to a wind-down into account when quantifying the necessary resources. These wind-down-specific adjustments can include estimates of additional costs for retaining critical staff, increases in professional fees that are particularly relevant to the wind-down process (eg legal and accounting fees) and losses from the early termination of operating contracts. Cost savings may be realised due to reduction in non-critical operations.

In addition to adjustments to wind-down costs, some CCPs also consider other financial impacts that an orderly wind-down will have on their business. Some assume reduced revenues during the orderly wind-down period to reflect the possibility of business losses. Meanwhile, if the wind-down fails to proceed as expected, additional resource needs may arise. Some CCPs plan for additional financial resources or funding sources or tools (such as close-out netting authority) to be available to address a disorderly wind-down. Understanding and addressing the relevant costs and other financial impacts is important to support the effectiveness of an orderly wind-down plan.

[26] See Recovery Guidance, paragraph 2.2.2. CCPs are called upon to have both recovery plans and plans for orderly wind-down. Neither is a substitute for the other.

3. Achieving the operational effectiveness of plans to address NDLs

In addition to developing ex ante approaches for quantifying potential NDLs and assessing resource sufficiency, CCPs also evaluate the operational effectiveness of their plans for NDLs, including in the context of recovery and orderly wind-down. The Recovery Guidance states that "[t]he recovery plan should contain (or be complemented by) procedures or other arrangements designed to ensure that the recovery tools can be implemented practicably, effectively and in a timely manner for each of the scenarios identified in the recovery plan."[27] In evaluating effectiveness of their plans, CCPs may consider the factors that would make it more or less likely that the approach will have the intended results.

Although the particular factors considered by a CCP will vary depending on its particular approach, some common factors will influence its effectiveness, such as legal enforceability and participant understanding. Principle 1 of the PFMI requires a CCP to have a "well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions". However, the lack of historical incidence (and, thus, lack of experience) with extreme NDLs means that the legal basis of many tools for addressing NDLs has never been tested in practice. To the extent that an aspect of the CCP's plan or of a specific rulebook provision is contested during an NDL event, time and resources may be diverted away from addressing the NDL while enforceability is determined.

Moreover, Principle 23 of the PFMI sets forth that a CCP "should provide sufficient information to enable participants to have an accurate understanding of the risks, fees and other material costs they incur by participating in the [CCP]". As discussed in detail in Section 5 below, the CCP's stakeholders' knowledge and understanding of the actions the CCP may take during an NDL scenario can contribute importantly to the effectiveness of the CCP's plans to address NDLs. Moreover, a CCP's plans will often rely upon the performance of relevant third parties, such as service providers and liquidity providers. Thus, the understanding and preparedness of these relevant third parties is also important to the effectiveness of the plans.

Some CCPs take steps to ensure that their participants and relevant third parties are prepared for the processes and requirements that are triggered by an NDL scenario. This is a notable practice because, if a CCP's participants and relevant third parties do not have a clear understanding of the requirements or any actions they are expected to take during an NDL scenario, they may not be able to meet those requirements and take the necessary actions. NDLs are typically non-routine, and many extreme NDL events may be unprecedented. There is a real risk that a CCP's participants and relevant third parties may not be able to focus on or prepare for those requirements and actions until the event has already occurred.

There may be constraints on the use of certain tools. Where CCPs, participants and relevant third parties have a clear understanding of those constraints, they may be able to collaborate in developing other tools to close any gaps, thereby promoting the result that the relevant tools are effective, as called for in the Recovery Guidance.[28] A tool cannot be effective if it is unavailable at the time or in the manner that it is needed. There should be a high degree of certainty that the CCP will be able to implement each tool in all relevant circumstances, including in times of stress.[29]

In survey responses, some CCPs reported that practices, procedures and plans were in place to achieve operational effectiveness during NDL scenarios. These included plans and tools to address NDLs in CCP rules and other contracts; identifying the order of the use of tools for each type of NDL risk; and using technology to support the NDL framework.

[27] Recovery Guidance, 2.3.9.

[28] See Recovery Guidance paragraphs 3.3.1 and 3.3.5.

[29] See Recovery Guidance paragraph 3.3.5.

3.1 Setting out plans and tools to address NDLs in CCP rules and other contracts

A CCP that relies on plans with legally binding rules and procedures can reduce potential legal uncertainty and expedite processes taken in response to an NDL. One means of mitigating legal risk is to set out tools to address NDLs in contracts, rules or plans that have been already recognised as containing binding provisions, for which the path to enforceability is known or proven. Some CCPs set out loss allocation mechanisms for certain types of NDL (in particular, investment or custody losses) in their rulebooks in order to address these losses effectively. Some CCPs would immediately begin the process of allocating losses once an NDL materialises, while other CCPs would expect to first rely on other tools, such as their own funds. In any case, it is important that a CCP's rules clearly specify when and under which conditions the CCP will use loss allocation, and clearly specify a time frame for meeting such commitments and sanctions for untimely performance.

Some CCPs reported going further in developing plans and procedures to address NDLs with specified funding sources, ie pre-funded own funds (regulatory capital and additional reserves), and own funds stemming from voluntary recapitalisation or financing debt (credit lines, financing repo, and financing from central banks).

3.2 Identifying the sequencing of tools for each type of NDL scenario

Many CCPs report that they specify the order in which tools or resources would be used to address each type of NDL scenario, with certain tools more likely to be used for certain risks. For example, many CCPs identify liquid net assets funded by equity as the first tool used for general business risk losses, whereas insurance coverage is often the first tool relied upon for operational risk losses.[30] Determining the order of use in advance may reduce the need to analyse tool appropriateness during an NDL scenario, therefore avoiding potential delay. However, there is always a trade-off between proceeding in accordance with a theoretical scenario developed prior to an event and having more discretion. Discretion may permit a CCP to pause long enough to identify the most appropriate tool for a specific situation. However, certain CCPs may be bound by specific regulatory requirements or industry standards that prevent the CCP from having complete discretion in determining the order or amount of tool use. Such restrictions may include requiring a CCP to accept a first loss position for specific types or categories of NDL (eg where the CCP is assigned primary risk management responsibility).

3.3. Using technology to support the management of NDLs

Several CCPs also reported using information technology systems and processes to support their management of NDLs, specifically to facilitate loss allocation during an actual NDL event. These systems and processes enable CCPs to calculate and communicate, accurately and promptly, NDL amounts and their allocation to the relevant participants or third parties, in accordance with CCP rules or other contractual arrangements. Other tools establish the proper connectivity to collect and make payments within the prescribed time frames.

4. Reviewing, exercising and testing plans for NDLs

Section 1.3.8 of the Recovery Guidance provides that "To help ensure that the recovery plan can be implemented effectively, an FMI should test and review the plan, for example by carrying out periodic

30 As noted above, CCPs that rely upon insurance will generally have liquidity arrangements to address the time necessary for insurance claims to be paid.

simulation and scenario exercises. Such testing and review should occur at least annually as well as following changes to the FMI's planning, rules, procedures or services that would materially affect the recovery plan. An FMI may choose to conduct this testing and review, to the extent practicable, as part of its annual testing and review of its participant default rules and procedures, in accordance with Principle 13 of the PFMI. The FMI should update its recovery plan as needed following the completion of each test and review."

In general, responding CCPs perform annual reviews of their recovery plans, which includes an assessment of the sufficiency of tools and resources to address NDLs. Almost all responding CCPs conduct crisis management drills.[31] CCPs report conducting operations-based crisis management exercises, which involve drills and other exercises and discussion-based crisis management exercises, which consist of tabletop exercises and workshops. The scenarios tested generally include the major categories of business and operational risks that could generate NDLs.[32]

Some responding CCPs use crisis management drills to improve their decision-making capabilities and their capacity to address potential NDLs by improving their understanding of scenarios and tools, and testing assumptions about the effectiveness of specific tools. In particular, one CCP highlighted that the results of its crisis management exercises had helped improve its decision-making processes and operational readiness, and had identified the need for higher insurance coverage. In some cases, CCPs test their response to circumstances where their tools and resources can only partially cover the resulting financial losses.

Some CCPs have participated in industry-led multi-CCP crisis management drills in the past. This notable practice recognises the significant interlinkages and dependencies between individual CCPs and may be extended to address additional NDL scenarios and build on efforts to foster coordinated crisis management across CCPs.

In addition, some CCPs engage in a discussion-based exercise, which involves testing the roles and responsibilities of both the internal governance structure and external partners and stakeholders. This notable practice appears to facilitate a better understanding of roles and responsibilities before a crisis occurs. Such considerations serve to reduce the likelihood of purely ad hoc decision-making on the allocation of NDLs in a crisis, while still giving decision-makers the flexibility to respond to the unique circumstances of any particular crisis.

Notably, CCPs typically reported that they include a wide range of internal stakeholders, and in some cases external stakeholders (including participants, regulators and other FMIs), to participate in crisis management drills. This practice enhances the quality of such exercises by strengthening the tie between the exercise and reality of how stakeholders will react. Some CCPs go further and hold discussions to review the results of crisis management exercises with participants who have participated in the exercises. Furthermore, some CCPs collect input from key internal and external stakeholders to inform the design and conduct of future simulations.

These practices may permit CCPs to enhance the tools and resources for identifying, measuring, monitoring and managing NDL risks. Such practices have the potential to increase participants' understanding of the types of scenario that could generate NDLs, the range of magnitudes of such losses and their roles and responsibilities in addressing NDLs. All this could increase the operational effectiveness of a CCP's plans to address NDLs.

Some CCPs report that they have not yet conducted crisis management exercises to test their ability to respond to an NDL event, a gap that may undermine their ability to react effectively if such an

31 Conducting these drills is in line with Principle 17, Key Considerations 2 and 6 of the PFMI, and Section 1.3.8 of the Recovery Guidance. These exercises typically simulate management responses to various scenarios that include cyber attacks and other external (eg power outages) or internal (eg system malfunction) events.

32 These preparations may help mitigate NDLs and could help CCPs to restore normal operations promptly.

event occurs. A few of these CCPs acknowledged the importance of this type of testing, reporting that they plan to commence such testing once their crisis simulation programmes are more mature.

5. Providing effective governance of, and transparency regarding, plans for NDLs and engagement with participants and authorities

5.1 Providing effective governance in planning for NDLs and in executing plans

Principle 2 of the PFMI states that "an FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations and the objectives of relevant stakeholders."[33] The Recovery Guidance also notes that "the FMI should have an effective governance structure and sufficient resources to support the recovery planning process and implementation of its recovery plan, including any decision-making processes."[34] The guidance further notes that "[a]n FMI's governance arrangements should provide for timely and effective implementation of its recovery plan, including documented decision-making processes in a crisis."[35]

Governance arrangements that are well thought-out, clear and documented are a critical component of effective management of risks, including of NDLs. Strong and effective governance arrangements are necessary on an ex ante basis to ensure that well designed and comprehensive plans to address NDLs effectively are in place. They are also necessary during an NDL event to ensure that, to the greatest extent practicable, those plans can be executed properly and the situation resolved successfully.

CCPs generally set out specific formal approaches for addressing NDLs and for the review of the underlying assumptions and methodologies by senior management and ultimately the board.[36] This typically includes processes for developing and executing plans for addressing NDLs both in normal times and in recovery, as well as for reviewing such plans. Respective arrangements may be included in CCPs' rulebooks and/or recovery plans or they may be more bespoke. In any case, clearly distinguishing between arrangements and responsibilities for decision-making in normal times and in recovery is an important element in fostering preparedness, particularly for more severe situations. Some CCPs review their plans for addressing NDLs on at least an annual basis.

Some CCPs also take steps to define the timing, rules, procedures and governance arrangements for using specific tools for funding or loss allocation (eg rule-based loss allocation, obtaining additional own funds). This may relate to the decision to use a certain tool, the extent and the way in which the tool will be used, and to notifying affected entities.

Some CCPs have established specific governance arrangements for allocating NDLs to clearing members. For example, some CCPs would require approval from the board or parent company; a few CCPs

33 Furthermore, Key Consideration 2 of Principle 2 of the PFMI provides that "an FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability." A careful consideration of NDL risks is also important in the context of implementing Key Consideration 6 of Principle 2 of the PFMI, which sets out that "the board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies." Key Consideration 7 of Principle 2 of the PFMI calls for the "board [to] ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders".

34 See Recovery Guidance, Section 2.3.3.

35 See Recovery Guidance, Section 2.3.9.

36 See EN 3.3.3 of the PFMI.

also foresee regulatory authorisation. Some CCPs have defined concrete time frames for allocating losses and obtaining the financial resources from clearing members (often very quickly, eg immediately, within one hour or 24 hours).

In addition, some CCPs have in place clear governance for the orderly wind-down process for NDL scenarios. This includes a framework for the formal responsibilities and discretion of the board in initiating wind-down, for considering public interest concerns, and for consulting and communicating with relevant authorities.

Some CCPs have processes for senior management to review the results of crisis management exercises, discussed above, to take steps to incorporate the lessons learnt into improving the tools and resources available to address NDLs, thereby refining their processes.

5.2 Providing transparency to participants

PFMI standards for transparency and disclosure that apply to FMIs, including CCPs, are also relevant in the context of NDLs. Principle 23 of the PFMI sets forth that "an FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed."[37] Specifically, in the context of recovery, the Recovery Guidance states that "[a]n FMI should also identify and provide to stakeholders on a timely basis the information they need with respect to the FMI's implementation of the plan. This includes both the information needed ex ante to enable stakeholders to prepare for implementation and the information needed during the execution of the recovery plan and to enable the stakeholders to mitigate the plan's effects on themselves."[38]

Accordingly, participants should have an accurate understanding of the risks they face from participating in a CCP, including risks arising from NDLs. A CCP's disclosure of, and transparency to participants regarding, its methodologies, practices and assumptions in the context of addressing NDLs are key to developing that understanding.

Many CCPs share their practices, assumptions and methodologies for quantifying and addressing NDLs with participants through their PFMI disclosures. CCPs with a banking licence additionally reported making disclosures under Pillar 3 of the Basel framework. Other CCPs use disclosure in their financial statements or annual report, pursuant to other regulatory requirements. Such reports can be a helpful means of disclosure, as long as there is sufficient granularity, and thus transparency, in the aggregate, "so that participants can assess the risks they would incur by participating in the FMI."[39]

Some CCPs publish additional information and documents on their websites. Some CCPs publish on their websites information regarding tools that have a direct impact on market participants, making their rulebooks and circulars publicly available. Such publications can be a helpful means of disclosure to participants, provided that such information is comprehensive and easily accessible on the CCP's website. Some CCPs solely rely on publication on their website to disclose their frameworks for NDL risks to

[37] Key Consideration 2 of Principle 23 of the PFMI explains that "an FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risk they would incur by participating in the FMI." Key Consideration 3 of Principle 23 of the PFMI further describes that an FMI should "provide all necessary and appropriate documentation and training to facilitate participants' understanding of the FMI's rules and procedures and the risks they face from participating in the FMI".

[38] See Recovery Guidance, paragraph 2.3.9.

[39] See Principle 23, Key Consideration 2 of the PFMI.

participants. If such disclosures are too high-level, they may not provide the level of transparency participants need to assess fully the risk of financial losses from the non-default events faced by the CCP.[40]

Several CCPs consider that sharing recovery plans and other regulatory filings is an effective form of disclosure to participants. However, the amount of information shared with participants during the regulatory filing process varies. These CCPs also look at corporate governance structures as sources of disclosure, looking to risk committees that may include clearing member, exchange and client representation. While it is possible that these disclosures may provide some participants with sufficient transparency regarding the CCP's NDL risks that may affect them, disclosures to a limited set of participants do not appear to be an effective means of providing transparency to all participants. While some participants may be represented within these governance structures and their representatives may have access to information, those representatives may be subject to confidentiality obligations that limit the information that they may share. Moreover, many other participants have neither representation nor access to NDL risk information. If recovery plans, other regulatory filings and corporate governance structures are the sole forms of disclosure used by some CCPs, some participants may not have adequate transparency regarding the risk of NDLs.

The majority of CCPs use loss allocation as a tool to address certain types of NDL, in particular custody and investment losses, based upon the respective rights of clearing members and the CCP, as outlined in CCPs' rulebooks. Where the CCP does this, its allocation arrangements for NDLs should provide a comprehensive description of the way in which losses would be allocated. This should include clear rules, procedures and governance arrangements and the CCP should also ensure that potential clearing member obligations are sufficiently transparent, measurable, manageable and controllable.[41]

Some CCP rulebooks clarify the types of NDL that could be passed on to clearing members and the circumstances in which loss allocation would be used to address NDLs. In this context, some CCPs have defined trigger requirements (eg the required magnitude of the loss, or the order in which rule-based loss allocation may be used in relation to other tools).

Some CCPs have defined upper limits or caps on the amount of losses that the CCP could pass on to clearing members, calibrated separately for each type of NDL event. This helps to ensure that clearing member obligations are transparent, measurable, manageable and controllable. However, not all CCPs have defined such upper limits.

Some CCPs foresee that rule-based loss allocation would be used in line with broader objectives, such as the stability of the broader financial system and the safety of the CCPs' participants. However, unless such objectives are specified in concrete terms, it may not be sufficiently predictable to clearing members how the inclusion of such objectives may affect them.

5.3 Engaging directly with participants and authorities

CCP engagement with participants and relevant authorities is also relevant in the context of NDLs and it is an effective means of building both the CCP's understanding of the interests of its participants and relevant authorities and the participants' and authorities' understanding of the CCP's plans.

40 See generally EN 3.23.9 of the PFMI ("An FMI should make the relevant information and data it discloses as set forth in this report readily available through generally accessible media, such as the Internet [...] The data should be accompanied by robust explanatory documentation that enables users to understand and interpret the data correctly.")

41 See Recovery Guidance paragraph 3.3.1.

A few CCPs do not currently seek input on their NDL frameworks from participants and have no plans to do so. Others seek input only from the larger participants. Some CCPs use their corporate governance and reporting structures as a means of receiving input from participants.

As with disclosure, if the governance structure is the sole means by which the CCP is seeking participant input, the CCP may be excluding some relevant participants by not providing means to all participants to provide feedback effectively. Accordingly, CCPs' use of corporate governance and reporting structures can be a more effective means of receiving participant feedback when used in conjunction with another means of receiving input that is available to all participants, such as direct contact.

Notably, some CCPs go further than disclosure by publication and engage directly with participants, either individually or as a group. This serves as a means of effectively communicating their practices, assumptions and methodologies for quantifying and addressing potential NDLs, collecting input from participants on their views regarding potential NDL risk management and loss allocation, and supporting clearing participants in preparing for their respective contractual obligations. Such direct contact ties in with clearing members (eg banks) fulfilling their regulatory due diligence requirements with respect to their potential obligations and exposures to the CCP. In addition, some CCPs take steps to confirm that clearing participants are familiar with their obligations in NDL scenarios and prepared to meet them, as laid out in the CCP's recovery plans or rule books, including loss allocation rules. While the provision of detailed information and direct contact with participants may be a resource-intensive form of disclosure and seeking input, it may be a notably effective means of helping participants to understand the risks and potential costs they face from CCP NDLs and of enhancing the reliability of tools to address NDLs through facilitating participants' preparation to meet their obligations. To the benefit of both CCPs and clearing participants, this is likely to foster plans that are more operationally effective in addressing NDLs, as discussed in Section 3.1.

Some CCPs hold discussions on practices, assumptions and methodologies for quantifying and addressing potential NDLs with CCP supervisors and/or the resolution authority in order to take into account local requirements and the uniqueness of the markets the CCP serves. Finally, many CCPs share their recovery plans and other regulatory filings with the supervisor, thereby proactively interacting with them for their inputs on the adequacy of the plan.

There is an important linkage between transparency, feedback from participants and authorities, governance and effectiveness: effective transparency concerning the impact on participants of a CCP's plans to address NDLs fosters understanding among its participants, and thus better prepares them to meet their obligations under those plans. It also helps participants to provide feedback concerning those plans, communicating potential difficulties to the CCP's governance structure. This in turn helps the CCP to "ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders",[42] and, as appropriate, to mitigate misunderstandings, adapt those plans or clarify participants' obligations.

6. Consultation questions for comment

The CPMI and IOSCO welcome comments from interested stakeholders – including CCPs, clearing members, clients of clearing members, buy-side, market participants, academics and the general public – on the different topics covered in this discussion paper by 4 October 2022.

The purpose of the paper is to elicit comments and feedback from a broad range of interested stakeholders. The CPMI and IOSCO particularly welcome feedback on the following questions:

[42] See Principle 2, Key Consideration 7 of the PFMI.

Overarching questions

1. Are there areas in the context of CCP NDLs where further guidance under the PFMI might be helpful? If so, what are the potential areas where further guidance might be most helpful?

2. Are there any additional points of consideration or practices, in addition to those mentioned in this discussion paper or in the PFMI and existing guidance, that would help CCPs effectively and comprehensively address losses from non-default events? Are there areas that require additional clarity from authorities? If so, what are they?

3. Are there particular challenges that CCPs face in planning for an orderly wind-down in a NDL scenario? Are there means to motivate further progress in orderly wind-down planning?

4. Would a similar review of practices in the context of NDLs for FMIs other than CCPs be helpful? Would further guidance under the PFMI be helpful in this context?

Identifying NDL scenarios, quantifying NDLs and assessing the sufficiency of resources (Section 2)

5. How can a CCP identify potential NDL scenarios comprehensively as well as with an appropriate degree of granularity?

6. Given that a CCP's efforts to prevent losses from non-default events may fail, what are effective approaches to prepare for and address resulting losses, in particular from low-probability, high-impact events?

7. Are approaches such as sensitivity analysis, scenario simulations, drills or stress-testing analysis useful for quantifying resource needs and assessing adequate NDL coverage? If so, what are potential obstacles hampering progress in this area and what could be possible avenues for reducing those obstacles?

8. Are there particular types of NDL scenario that CCPs could consider to help assess potential resource needs and coverage for NDLs? (eg stressed business and operational risk scenarios extrapolated from past events, NDL scenarios exacerbated by wider macroeconomic stress, or other hypothetical NDL scenarios)?

9. How and to what extent can the potential simultaneous occurrence of default and non-default-related events be taken into account?

10. What factors, in addition to those suggested in the PFMI, might a CCP helpfully consider when calculating the amount of liquid net assets funded by equity that is sufficient to implement its recovery and orderly wind-down plans? How can a CCP effectively incorporate its general business risk profile and the length of time required to achieve recovery or orderly wind-down into this analysis?

11. Given the limited availability of historical data on severe NDL events, what do you consider the most important sources of information in developing plans to address NDLs, particularly for potential recovery situations (eg internal expertise, key stakeholders such as clearing participants and service providers, external market experts, relevant authorities, frameworks and practices in place for other types of financial institution)?

12. Do you have any suggestions for how the clearing industry could leverage loss data from other industries or collaborate to share anonymised loss data?

13. What key measures can help to ensure that capital replenishment could be achieved in a timely and effective manner? Does the clear definition and testing of processes to obtain backup

funding from affiliates or external sources underpin the credibility of that funding? How do you assess the current availability of committed or legally binding funding arrangements?

14. What role should insurance play for NDL, considering potential uncertainties about coverage, pay-out delays and performance risk? Are there certain types of NDL risk for which insurance may be a more appropriate loss-absorbing resource than for other types of NDL risk?

15. What practices might improve CCPs' planning for an orderly wind-down necessitated by NDLs?

Achieving operational effectiveness (Section 3)

16. Are there any additional notable practices that could promote the operational effectiveness of plans to address NDLs?

17. What approaches might be helpful to ensure that relevant third parties (such as service and liquidity providers) fully understand and are prepared for their potential role in addressing NDLs?

18. What are the essential elements of appropriate due diligence vis-à-vis relevant third parties on which CCPs would expect to rely in an NDL event?

19. What are the key factors and constraints that impact the choice and order of different tools for the various types of NDL scenario?

20. What technological tools should be developed to promote the operational effectiveness of plans to address NDLs?

Reviewing and testing plans for NDLs (Section 4)

21. Are there additional notable practices for reviewing and testing plans to address NDLs?

22. What challenges are there to achieving the goal of increasing the involvement of additional stakeholders in different stages of review and testing of plans to address NDLs?

23. Are multi-CCP crisis management drills an effective tool for testing preparedness to address NDLs? Are there any barriers to effectively conducting this type of exercise? What role should authorities play in supporting these exercises?

Providing effective governance, transparency and engagement with participants and authorities (Section 5)

24. Are there additional notable practices for providing effective governance, transparency and engagement with participants and authorities in the context of NDLs?

25. What are the most important elements of appropriate processes and governance arrangements for rule-based loss allocation to support clearing members in anticipating and preparing for potential exposures?