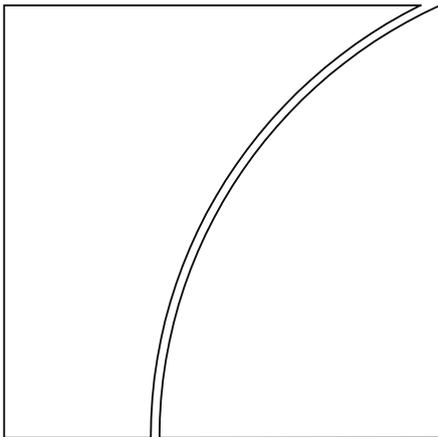


Committee on  
Payments and Market  
Infrastructures

Board of the International  
Organization of Securities  
Commissions



Central counterparty  
default management  
auctions – Issues for  
consideration

June 2020



BANK FOR INTERNATIONAL SETTLEMENTS



**OICU-IOSCO**

This publication is available on the BIS website ([www.bis.org](http://www.bis.org)) and the IOSCO website ([www.iosco.org](http://www.iosco.org)).

© *Bank for International Settlements and International Organization of Securities Commissions 2020. All rights reserved. Brief excerpts may be reproduced or translated provided the source is stated.*

ISBN 978-92-9259-373-5 (online)

## Contents

1.	Executive summary.....	1
2.	Introduction .....	2
2.1	Background and inputs to the paper.....	2
2.2	Objectives of the paper.....	4
3.	CCP default management auctions: roles and responsibilities .....	4
3.1	CCP Board of Directors' Responsibility and Delegation of Responsibilities.....	5
3.2	Role of Experts and a Default Management Group.....	5
3.3	Testing of auction roles and responsibilities .....	6
4.	Considerations for a successful default management auction.....	6
4.1	Hedging strategy .....	7
4.2	Auction design elements .....	9
4.2.1	Preparing the defaulted participant's portfolio for auction .....	9
4.2.2	Auction format.....	9
4.2.3	Auction participants .....	11
4.2.4	Timing consideration .....	12
4.2.5	Bidding requirements or incentives .....	12
4.2.6	Trade-off between flexibility and predictability .....	13
4.3	Responses to an unsuccessful auction.....	13
5.	Operational considerations.....	14
5.1	Preparation during BAU process .....	14
5.1.1	Preparing and onboarding auction participants.....	14
5.1.2	Information-sharing and related restrictions .....	15
5.1.3	Participant contact lists .....	16
5.2	Communication before and during an auction event.....	16
5.2.1	Information communicated ex ante.....	17
5.2.2	Information communicated during a live auction.....	17
5.2.3	Methods for communicating during a live auction .....	18
5.3	Testing.....	19
5.3.1	Types of testing exercises .....	19
5.3.2	Specific aspects of end-to-end default management testing exercises related to auctions .....	20
5.3.3	Testing framework, plan and documentation.....	21

6.	Client participation .....	21
6.1	Methods for client participation .....	21
6.2	Considerations for client participation .....	22
6.3	Factors that may potentially affect client participation .....	23
7.	Default of a common participant across multiple CCPs .....	24
7.1	Multiple-CCP default management testing exercises .....	24
7.2	Composition of the DMG .....	26
	Annex A Members of the PSG and the Auctions Subgroup .....	27

## 1. Executive summary

The purpose of this paper is to provide a description of the issues that a central counterparty (CCP) should consider when planning and conducting default management auctions and to identify practices that a CCP could consider in its development of, and improvements to, default management auction rules, governance arrangements and procedures to address these issues.

The paper reflects the current practices at one or more CCPs, and by facilitating the sharing of existing practices and views on default management auctions, it aims to help advance industry efforts and foster dialogue on the key concepts, processes and operational aspects used by CCPs in planning and executing default management auctions.

The effective and smooth management of a participant default is essential to a CCP's resilience and can help reduce systemic risk; a default management auction is one of the tools that a CCP may use to transfer a defaulting participant's positions or subset thereof to a non-defaulting participant, thereby restoring the CCP to a matched book. In contrast to other default management tools that a CCP may use, such as sale on an exchange (for listed products) or a negotiated bilateral sale (for standardised over-the-counter (OTC) products), auctions require active involvement of a group of auction participants and may impose operational strains on the auction participants. Accordingly, the effective conduct of auctions necessitates clarity and understanding of auction procedures, with well documented and transparent auction governance arrangements, on the part of both the CCP and the auction participants.

An effective auction process includes specifying the roles and responsibilities of the CCP's board of directors, management and other personnel who may be involved in the auction process, as well as those of the auction participants. Chapter 3 discusses the roles and responsibilities of key stakeholders in a CCP's default management auction.

Chapter 4 outlines considerations of a successful default management auction and, by contrast, identifies scenarios in which a CCP may determine an auction to be unsuccessful. It then identifies key elements that a CCP should consider when designing its auction process, including the structure of the portfolio and the format of the auction (including how bids are submitted, how the winning bid is chosen and how the portfolio is allocated, participation in the auction (whether mandatory or by invitation), and bidding requirements or incentives to participate. It also discusses activities that take place before the auction (ie hedging) and the potential options available to a CCP in the event of an unsuccessful auction.

Chapter 5 describes the operational issues a CCP should consider when planning and executing a default management auction. In order to maximise the likelihood of a successful auction, a CCP should take steps under business-as-usual (BAU) conditions to prepare for a potential auction. Effective communication of information between relevant parties prior to and during an auction is also an important element that can influence the auction's success. Testing exercises in relation to default management auctions during BAU also serve as preparation for a live auction.

Client participation in an auction, as discussed in Chapter 6, can be either direct (where clients submit bids independently of clearing members) or indirect (where clients submit bids through their clearing members). A CCP and its clearing members should take into account several considerations when deciding whether to permit or facilitate client participation, including liability of the clearing member, incentives of clients to bid competitively, the level of legal and operational readiness at the client, and the risk of information leakage.

The default of a participant common to more than one CCP is considered in Chapter 7. This chapter identifies potential issues inherent when two or more CCPs conduct auctions concurrently, thereby creating further operational and/or financial strains on auction participants. This chapter also discusses the use of multiple-CCP default management exercises.

In June 2019, CPMI-IOSCO published “A discussion paper on central counterparty default management auctions”<sup>1</sup> for public consultation, including an industry workshop and written responses. The consultation process indicated considerable industry consensus on a variety of topics related to default management auctions. However, further work and convergence among industry participants on a number of additional issues is critical to advancing the development of effective auction practices and procedures.

Therefore, based on the public consultation, CPMI-IOSCO have observed several areas for further industry work, which can be grouped into three categories:

- The first category includes several operational issues (such as methods of communication and formats for auction files) where there is broad industry consensus to support further development and where CCPs should be well-positioned to advance these issues, bringing such work to closure.
- The second category includes areas (governance of a CCP’s default management process, use of traders in default management groups, the scope of client participation) where there are differing views among clearing members and other stakeholders.
- The third category includes potential nascent and emerging practices (synchronizing default management processes, identification of potential hedges between CCPs) that may require further coordination and harmonisation among the default management processes of multiple CCPs.

These areas for further work are further discussed in the cover note to this paper<sup>2</sup>.

## 2. Introduction

### 2.1 Background and inputs to the paper

CCPs have become increasingly critical components of the financial system in recent years, due in part to the introduction of mandatory clearing for standardised OTC derivatives in some jurisdictions. Consistent with the key responsibility of guaranteeing the fulfilment of transactions to its clearing participants, CCPs play an important role in mitigating contagion in the event of a participant default. A CCP’s ability to effectively manage a participant default is essential to its resilience and can help reduce systemic risk.

In 2012, the Committee on Payments and Market Infrastructures (CPMI) and the Technical Committee of the International Organization of Securities Commissions (IOSCO) published the *Principles for financial market infrastructures* (PFMI),<sup>3</sup> which significantly strengthened the international standards for risk management by financial market infrastructures, including CCPs. Principle 13 of the PFMI states that a CCP “should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the [CCP] can take timely action to contain losses and liquidity pressures and continue to meet its obligations.” Key Consideration 2 to this Principle further states that a CCP “should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules”.

<sup>1</sup> [www.iosco.org/library/pubdocs/pdf/IOSCOPD631.pdf](http://www.iosco.org/library/pubdocs/pdf/IOSCOPD631.pdf) and [www.bis.org/cpmi/publ/d185.pdf](http://www.bis.org/cpmi/publ/d185.pdf)

<sup>2</sup> [www.bis.org/cpmi/publ/d192\\_covernote.pdf](http://www.bis.org/cpmi/publ/d192_covernote.pdf) and [www.iosco.org/library/pubdocs/pdf/IOSCOPD657-cover-note.pdf](http://www.iosco.org/library/pubdocs/pdf/IOSCOPD657-cover-note.pdf).

<sup>3</sup> [www.bis.org/cpmi/publ/d101a.pdf](http://www.bis.org/cpmi/publ/d101a.pdf) and [www.iosco.org/library/pubdocs/pdf/IOSCOPD377-PFMI.pdf](http://www.iosco.org/library/pubdocs/pdf/IOSCOPD377-PFMI.pdf).

In 2014, the CPMI and IOSCO published a report entitled *Recovery of financial market infrastructures*, with a revised version of that report published in 2017.<sup>4</sup> In response to the public consultation that resulted in the revised report, the CPMI and IOSCO agreed that follow-up work should be conducted in the area of CCPs' default management auctions.<sup>5</sup>

The CPMI and IOSCO, through the Policy Standing Group (PSG) established by the CPMI-IOSCO Steering Group, gathered information on current industry practices in the area of CCP default management auctions to further their work and understanding. As part of this, the PSG conducted an industry information session and distributed a questionnaire to CCPs, both of which, along with CPMI-IOSCO's working knowledge of current CCP practices, formed the basis for the content of a discussion paper which CPMI-IOSCO published in June 2019. The response received in the public consultation on the discussion paper demonstrates the commitment the industry brings to this area and reflects the importance of default management auctions in a CCP's default management process. This paper has been informed by the responses received from the consultation.

<sup>4</sup> *Recovery of financial market infrastructures* (revised July 2017) (Recovery Report), [www.bis.org/cpmi/publ/d162.pdf](http://www.bis.org/cpmi/publ/d162.pdf) and [www.iosco.org/library/pubdocs/pdf/IOSCOPD569.pdf](http://www.iosco.org/library/pubdocs/pdf/IOSCOPD569.pdf).

<sup>5</sup> Cover Note to the Recovery Report, [www.bis.org/cpmi/publ/d162\\_covernote.pdf](http://www.bis.org/cpmi/publ/d162_covernote.pdf) and [www.iosco.org/library/pubdocs/pdf/IOSCOPD569.pdf](http://www.iosco.org/library/pubdocs/pdf/IOSCOPD569.pdf).

## 2.2 Objectives of the paper

The purpose of this paper is to provide a description of the issues that a CCP should consider regarding its default management auction processes, and to identify practices that a CCP could consider in its development of, and improvements to, default management auction rules, governance arrangements and procedures to address these issues. These considerations may well impact other stakeholders (such as clearing members and clients), and CCPs should work with them to address the issues.

This paper reflects the current practices at one or more CCPs and builds upon the themes expressed in the discussion paper by:

- promoting a common understanding of key concepts, key processes (including information needs) and operational aspects that a CCP should consider when planning and conducting default management auctions;
- highlighting key issues and challenges in auctions for those who are looking to develop auction procedures or to improve upon their auction procedures; and
- encouraging collaboration between industry participants to work towards addressing and resolving common challenges and ensure effective default management auctions.

This paper is not intended to create additional standards for CCPs.

## 3. CCP default management auctions: roles and responsibilities

Strong governance is a necessary component of an effective financial risk management framework that encompasses a CCP's default management procedures, of which a default management auction process may be an element. Principle 2 of the PFMI sets forth governance standards for a CCP, including that a CCP should have "governance arrangements that are clear and transparent, promote the safety and efficiency of the [CCP], and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders".

As stated in Key Consideration 2 of Principle 2 of the PFMI, a CCP "should have documented governance arrangements that provide clear and direct lines of responsibility and accountability," and "[t]hese arrangements should be disclosed to owners, participants, and, at a more general level, the public." Further, a CCP's board "should have procedures in place to support its capacity to act appropriately and immediately if any risks arise that threaten the [CCP's] viability as a going concern". and its governance arrangements "should also provide for effective decision making in a crisis and support any procedures and rules designed to facilitate the recovery or orderly wind-down of the [CCP]".<sup>6</sup> Moreover, as set forth in Key Consideration 7 of Principle 2 of the PFMI, a CCP's board "should ensure that the [CCP's] design, rules, overall strategy, and major decision reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders."

These aspects of the PFMI apply to a CCP's governance arrangements for default management procedures, including a default management auction process. Accordingly, such governance arrangements should be consistent with Principle 2, including Key Considerations 2 and 7. A CCP should document its governance arrangements with respect to default management auction procedures and provide clear and direct lines of responsibility and accountability. Further, a CCP should disclose such arrangements to owners, relevant authorities, participants, and, at a more general level, the public.

<sup>6</sup> See Explanatory Note 3.2.13.

### 3.1 CCP Board of Directors' Responsibility and Delegation of Responsibilities

Key Consideration 6 of Principle 2 of the PFMI, along with the accompanying guidance, further specifies that it is a CCP's board of directors' ultimate responsibility to "establish a clear, documented risk-management framework that includes the [CCP's] risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies".<sup>7</sup>

While a CCP's board has ultimate responsibility for establishing a risk management framework, "it may assign certain tasks, so long as the board clearly defines the assigned tasks and retains ultimate responsibility for those tasks".<sup>8</sup> This includes specifying the responsibilities of a CCP's board of directors, senior management, relevant governance bodies, and other personnel who may be involved in the auction process. A CCP should specify this in its rulebook or other auction procedures made available to participants ex ante to improve efficiency and transparency of the auction process.

In particular, there are several areas related to an auction where a CCP's board may choose to assign such tasks or risk decision-making responsibilities, including decisions related to hedging, auction design, auction incentives, internal and external communication, approval of auction results or acceptance of individual bids, and the rerunning of an auction or utilisation of the default fund. For example, a particular person or team may be responsible for coordinating or determining a strategy for the overall default management process, including the auction. Additionally, individual tasks related to the auction may be executed by different parties, including senior management, staff of individual business lines, a default management group (DMG),<sup>9</sup> or other internal committees that may be established by the CCP.

The board also may choose to assign decision-making responsibilities for certain steps in the auction process based on the scale and potential impact of those decisions. For example, senior risk management staff may be able to decide on the content and number of the auction packages, but board approval may be necessary for accepting an auction result that would require utilisation of resources in the CCP's default fund.

As timing can be a critical factor in an auction's success, a CCP may specify alternative arrangements or decision-making personnel should the party responsible for authorising a certain action be unavailable, so as not to delay the progress of the auction. For example, if the individual or group authorised to approve the hedging strategy (within the predetermined limits set by the board) were unable to do so, approval could be escalated – for example, to the CCP's chief executive officer.

### 3.2 Role of Experts and a Default Management Group

To improve the efficiency of the liquidation process and any related decisions, a CCP may consult experts (eg independent consultants or clearing members) during certain stages of the auction process. Such experts may include, for example, a DMG. When inviting clearing members to participate in a DMG, a CCP should specify under what circumstances a DMG would be convened (including, for example, whether a DMG would only be used for particular asset classes) and what the role of the DMG would be in the default management process, in particular the hedging phase and the conduct of an auction.

<sup>7</sup> See Key Consideration 6 of Principle 2 of the PFMI and Explanatory Note 3.2.12. The Explanatory Notes to the PFMI also state that "[t]he board and governance arrangements, generally, should support the use of clear and comprehensive rules and key procedures, including detailed and effective participant default rules and procedures", which may include a default management auction process. See Explanatory Note 3.2.13.

<sup>8</sup> See Paragraph 2.2.1 of Resilience of central counterparties: Further guidance on the PFMI, [www.bis.org/cpmi/publ/d149.pdf](http://www.bis.org/cpmi/publ/d149.pdf) and [www.iosco.org/library/pubdocs/pdf/IOSCOPD568.pdf](http://www.iosco.org/library/pubdocs/pdf/IOSCOPD568.pdf)

<sup>9</sup> Typically, a DMG consists of three to five seconded personnel from participants of a CCP. In their role in the DMG, these personnel are required temporarily to shift their duties and responsibilities from the participant that employs them to the CCP. The DMG may make recommendations to the CCP's management on how to hedge and split the portfolio for auction.

When assigning tasks to external parties or DMG, a CCP should clearly define the role of such parties and address how to maintain confidentiality when working with such parties. In addition, a CCP should consider and address conflicts of interest that may arise when assigning tasks to DMG members or other external parties. A CCP should specify how DMG members or other external parties should interact and collaborate with internal staff at the CCP.

### 3.3 Testing of auction roles and responsibilities

A CCP's board also establishes procedures for testing and reviewing auction roles and responsibilities.<sup>10</sup> The testing of auction roles and responsibilities should be included as part of the CCP's default management testing exercises (see Section 7.3 for further detail). Such tests are generally conducted periodically and may involve a CCP's board, senior management, staff, potential auction participants, DMGs, external experts, and other stakeholders (eg trading venues or information technology providers). The conclusions from these exercises may inform or be used to make changes to the various roles and responsibilities as related to the auction.

## 4. Considerations for a successful default management auction

Principle 13 of the PFMI states that, "An FMI should have effective and clearly defined rules and procedures to manage a participant default." A default management auction can be an important step in this wider default management process, and the success of an auction will depend on both advance planning and the market conditions at the time of default.<sup>11</sup> A CCP should be well prepared to effect the default management auction as the CCP's preparedness can have a significant influence on the overall success of an auction.

In order to effectively minimise the potential losses and return to a matched book, a CCP aims to transfer the risk of the defaulting participant's entire portfolio in a timely manner. In an auction, a CCP generally seeks to liquidate the portfolio at a reasonable estimate of its market value (which may include a risk premium<sup>12</sup>) while at the same time seeking to limit disruptions to the market to the extent possible.

In the case where the CCP does not receive any bid or decides not to accept the results of an initial auction, a CCP should have processes and governance arrangements in place to determine whether to conduct another auction or employ other default management tools.

There are key elements of an auction that a CCP should consider when designing its auction procedures, and a CCP's choices among various auction design elements are part of this preparation. How the CCP optimally calibrates these design elements may depend on the type of contracts expected in the particular defaulted participant's portfolio and the characteristics of potential auction participants.

This chapter details the key design elements that a CCP should consider when planning an auction.

<sup>10</sup> Principle 13, Key Consideration 4, addresses a CCP's testing and review of its default procedures, which would include default management auctions.

<sup>11</sup> In some situations, a CCP may choose to liquidate the defaulter's portfolio on the open market, as opposed to holding an auction, depending on, among other potential considerations, market conditions and the contracts included in the defaulter's portfolio. For example, if the defaulter's portfolio contains exchange traded, liquid products, the CCP may determine that it is preferable to liquidate the portfolio on the open market.

<sup>12</sup> Generally, a risk premium is an additional return on an investment required to compensate for the possibility of losing all or part of that investment if future events prove adverse. In case of a CCP default auction, the risk premium will typically be a discount on the price of the portfolio to be liquidated (or an increase in compensation to be paid to the bidder).

## 4.1 Hedging strategy

A CCP should establish a framework for its approach to hedging risks from a defaulted participant's portfolio prior to a default management auction to increase the chance of a successful auction. The framework can provide certainty and guidance to those responsible for choosing a specific hedging strategy or deciding not to hedge under certain conditions. A CCP may consider disclosing part of its framework to the market participants (such as, for example, by integrating key elements of the framework in the CCP's rulebook), in order to facilitate their preparedness. However, maintaining flexibility in the framework is important, as it assists the CCP in tailoring the hedging strategy to the defaulted participant's portfolio or current market conditions as required.

The goals of a CCP's hedging strategy are generally to minimise the CCP's exposure to the defaulted participant's portfolio and to decrease the overall risk that the portfolio may pose to the CCP and the auction participants. Portfolios with less risk exposure lessen the potential effects of market volatility on the portfolio, thereby reducing the probability of incurring larger losses, and potentially reducing the volatility and time dependency of valuations by auction participants. If a position is not hedged, auction participants may reflect larger risk premia in their pricing to take into account possible market volatility (between the submission of the bid and the announcement of the auction results) and the need to manage exposures that are outside relative to themselves and/or the available liquidity. Therefore, hedging a portfolio could result in more competitive bids, as the reduced risk exposure of the hedged portfolio may permit or attract more participants to bid. Finally, hedging could reduce the liquidity risk of the CCP, as it could assist in balancing its payment flows (ie variation margin and settlement payments) until the completion of the liquidation of the defaulter's portfolio.

When developing a hedging strategy, a CCP should consider the following elements: (i) timing for hedging; (ii) the portion of the risk to be hedged; (iii) the instruments to use for risk reduction; and (iv) the execution method for the transactions.

### *(i) Timing for hedging*

Given the objectives of hedging, the most appropriate time to hedge generally would be immediately following the declaration of default. However, relevant decision-makers at the CCP may determine that additional time is needed to allow for adequate analysis of market conditions<sup>13</sup> or to complete porting of clients' positions.<sup>14</sup> A CCP may continue to monitor for hedging opportunities until completing the default auction process.

### *(ii) Portion of the risk to be hedged*

When deciding which portion of the risk to hedge, a CCP should take into consideration a number of factors, including the characteristics of the portfolio (ie products cleared, size, direction, liquidity and complexity), the prevailing market conditions, any margin offsets applied to the defaulted participant's portfolio, and the potential splitting of the portfolio for auction.

A CCP has choices on which risks in the portfolio should be hedged and to what degree. It may focus on reducing a portfolio's exposure to up and down movements in major risk factors (eg dv01, cs01, and beta) or reducing specific exposures that lessen the portfolio's broad appeal. In certain cases, a CCP may choose to hedge only the delta exposures or currency exposures of a portfolio using instruments in

<sup>13</sup> A CCP should analyse the market liquidity of the contracts used for hedging, as in some cases hedging could be more costly than going directly to auction.

<sup>14</sup> In some instances, following an evaluation of the porting feasibility, a CCP may choose to assume that porting of clients' positions is successful and proceed to hedge the remaining positions immediately.

a liquid market;<sup>15</sup> for the remaining exposures, going straight to auction may be a preferred option, as this may result in a better outcome than what may otherwise be achieved in the market through additional hedging.

Further, where a defaulted participant's portfolio includes products that are cross-margined between two CCPs, the CCPs should consider these cross-margining arrangements and specify how hedging would work under such arrangements.

*(iii) Transactions to use for risk reduction*

After deciding which risk exposures to hedge, a CCP chooses the types of instruments or contracts to apply to such exposures. These contracts can be over-the-counter or listed depending on the defaulted participant's portfolio. In addition to product characteristics, the CCP should take into account the market liquidity of these contracts, as in some cases it could be more cost-effective and efficient from a CCP's perspective to hedge using a more liquid, proxy instrument. After hedging, the CCP calculates the residual risk exposure associated with the portfolio to ensure that the residual risk is appropriately managed within the default management framework. For example, if a CCP decides to hedge a portfolio consisting of OTC derivatives, such as interest rate swaps, by using listed derivatives such as interest rate futures, it may wish to ensure that the basis risk between these products is taken into account.

In order to reduce the time necessary for internal approvals, a CCP should consider if its management could pre-authorise a list of instruments eligible for hedging purposes.

*(iv) Execution methods*

Execution methods may vary and depend on a CCP's choice of hedging instruments. Hedging generally is executed through a broker for market transactions or directly with auction participants through a hedging auction or direct offer.

A CCP should consider establishing arrangements with these parties in advance of a default, such as trading agreements or brokerage mandates, as this could help ensure timely execution. A CCP should evaluate the costs and benefits before establishing such arrangements. For example, if the hedging instrument is listed on a trading venue with adequate market depth, it could be more beneficial to choose this execution method.

A CCP may consult multiple price sources when looking to execute hedges to manage the risk of the defaulted participant's portfolio. However, if the market discovers that the CCP is looking to trade multiple hedging-style instruments, there may be speculation that a default event in those product classes has occurred, in turn leading to an increased risk of market price movements.<sup>16</sup> The CCP should balance the risk of information leakage and the aim of obtaining a competitive price when deciding on the most appropriate execution method. Requesting a two-way price for auctions could be one way to address the risk of information leakage (see section 4.2.2). Hence, a CCP should consider the possibility and impact of information leakage when considering the price sources to consult and the possible mitigants it can put in place to address this.

<sup>15</sup> For example, a study concluded that the most efficient method is to hedge the risk which can be covered by the most liquid transactions: F Cerezetti, A Sumawong, U Shreyas and E Karimalis, "Market liquidity, closeout procedures and initial margins for CCPs", Bank of England, *Staff Working Papers*, no 643, pp 12–17, February 2017.

<sup>16</sup> A CCP's rules may provide that the default of a clearing member should be disclosed to all surviving clearing members, in which case the default would be known to the market.

## 4.2 Auction design elements

### 4.2.1 Preparing the defaulted participant's portfolio for auction

When preparing for an auction, a CCP should consider whether to auction the defaulted participant's portfolio in its entirety or split the portfolio into smaller segments to increase the likelihood of a successful auction. Depending on the specific circumstances of the auction, smaller segments of the portfolio could potentially be easier to price and absorb; auction participants may thus be able to quickly price or provide better prices. In addition, as auction participants could be subject to capital or risk restrictions, splitting the defaulted participant's portfolio could increase auction participation.

If a CCP decides to split the portfolio, it may use various criteria for doing so, including size, asset class, product type, segment, currency, settlement method and maturity. In addition, in some cases, a CCP might choose to split the portfolio for operational reasons. In some cases it could be beneficial to take into account the usual trading strategies of participants.<sup>17</sup> Moreover, the format in which a CCP conducts an auction and the bidding requirements imposed by the CCP, as discussed further below, also have some relationship to the decision whether and how to split the portfolio.

When splitting the portfolio, a CCP should also consider netting sets, margin offsets and cross-margining arrangements, to avoid creating directional risk.

Where a defaulted participant's portfolio has been hedged, the hedged transactions are included in the auction portfolios to incorporate the risk reduction benefits following such transactions. In some cases, a CCP's rulebook may permit including portions of the defaulter's collateral, as it may have risk reduction benefits for the portfolio as well (eg including the underlying security of a short call option).

### 4.2.2 Auction format

In designing its auction procedures, a CCP should consider the auction format(s) that it will adopt. CCPs may adopt different approaches to determine, for example, how bids are submitted, how the winning bid is chosen, and how the portfolio is allocated, consistent with its rulebook or governance arrangements. To make decisions on auction format, a CCP should generally take into account the entirety of the auction design to develop a comprehensive strategy for auctioning the defaulted participant's portfolio. A CCP should disclose *ex ante* to auction participants what auction format will be utilized for each relevant asset class in the event of a default (see section 5.2.1).

In designing a mechanism or process for bidding, a CCP may require auction participants to bid for the defaulted participant's portfolio as a whole (single unit) and allocate the portfolio to a single bidder. Alternatively, a CCP may divide the auction portfolio into multiple identical units (ie a multi-unit auction) or into multiple non-identical items (ie a multi-asset auction), and allow auction participants to bid for one or several of these units or items.

When choosing the winning bid, a CCP may choose the highest price (first price) or the second highest price (second price). In a second-price auction, the auction participant submitting the highest price wins but pays the price of the participant submitting the second highest price. Theoretically, a second-price auction may result in more competitive bids, as it makes it possible for participants to avoid the "winner's curse".<sup>18</sup>

<sup>17</sup> A CCP could decide to keep in the same sub-portfolio products usually traded together as part of a spread or basis trading strategy. For example, a CCP that usually splits index and single name CDS could decide to keep them in the same sub-portfolio if the portfolio includes index-based packages.

<sup>18</sup> The "winner's curse" is an overestimation of the portfolio's value due to the auction mechanics, where the auction winner's bid exceeds the true value of the positions.

In the case of multi-unit auctions, a CCP may choose to apply to each participant the bid price that the participant submitted (discriminatory price) or to apply the same price to all winning bidders (uniform price).

Two commonly established auction formats are the single unit first price auction, referred to as a Single Unit Pay Your Price auction, and the multi-unit uniform price (lowest accepted price) auction, referred to as a Modified Dutch auction<sup>19</sup>.

### *Single Unit Pay Your Price*

In a Single Unit Pay Your Price auction, each participant bids for the entire portfolio. The winner of the auction is the participant that provides the highest price. This type of auction format would commonly be used for interest rate swaps, where CCPs tend to hedge the majority of the risk associated with an interest rate swap portfolio prior to the auction, hence lowering the residual risk of the portfolio.

### *Modified Dutch*

In a Modified Dutch auction, each participant bids for a self-determined percentage of the entire portfolio. However, the percentage could be subject to a minimum. The winners are defined on a cumulative basis from highest to lowest bid price, up to the size of the portfolio. The price applied to all winning bidders is the lowest accepted price. This auction format would commonly be used for products for which the residual risk is high, and splitting the portfolio into several units can increase participation.

### *Two-way Pricing*

In designing its auction format, a CCP should also consider and determine if it intends to apply a two-way pricing and/or a reserve price.

In some cases, a CCP may use two-way pricing to anonymise the defaulted participant's portfolio. Specifically, a CCP may require that participants submit bids to both buy and sell the same portfolio, and a CCP may set a maximum spread between the submitted bids. Further, to reduce information leakage of the defaulted participant's portfolio, a CCP may delay revealing the actual direction of the portfolio until after the results of the auction are determined. This two-way pricing methodology can be applied to any auction formats. When considering two-way pricing, a CCP should also consider the additional time it could take auction participants to price both portfolios, and accordingly factor this into the timeline for bid submission.

### *Reserve Price*

In some cases, a CCP applies a reserve price for the auction portfolios. The reserve price is the lowest price that the CCP considers a valid bid, and it can be known to the CCP only or be provided to all auction participants. It establishes an upper limit on the amount the CCP will pay winning auction participants per unit. This price may be calibrated by taking into consideration factors such as the financial resources available to the CCP, and it may be used by the CCP as an indicative economic value of a portfolio auctioned. Although this tool may limit auction losses, it could potentially present certain disadvantages. First, the reserve price could be far from the market price. For example, it may be based on the statistical models used to calibrate the default fund, which may be less reactive to changes in the market. This might cause an automatic rejection of bids and hinder the speed of portfolio liquidation. Second, if the reserve price is applied to an auction with mandatory participation, it can (if participants are required to bid the reserve price) have similarities to a forced allocation tool.<sup>20</sup> Third, if the reserve price is disclosed to all

<sup>19</sup> The use of the terms "Single Unit Pay Your Price" and "Modified Dutch" is consistent with that those used in the Uniform CCP Terminology for Default Management Auctions. That document was created by a Default Risk Management Working Group, composed of eight CCPs, and is available at [www.cftc.gov/sites/default/files/idc/groups/public/@aboutcftc/documents/file/mrac062716\\_uniformccp.pdf](http://www.cftc.gov/sites/default/files/idc/groups/public/@aboutcftc/documents/file/mrac062716_uniformccp.pdf).

<sup>20</sup> Forced allocation is discussed further in the Recovery Report, Sections 4.5.6 to 4.5.11.

auction participants, the reserve price may affect bidding behaviour and discourage more competitive bids higher than the reserve price.

### 4.2.3 Auction participants

Following a default, a CCP should seek to ensure that participation in the auction is sufficiently broad to promote the auction's success. All things being equal, the more auction participants, the more competitive the bids are expected to be.

On the other hand, providing information about the auction to additional auction participants increases the likelihood of information leakage and, correspondingly, the risk that the market may move against the portfolio (Section 5.1.2).

Therefore, a CCP should consider several factors when determining whom to invite to an auction, choosing to invite all or a subset of participants to bid.

First, the capacity of a participant to bid for the defaulted participant's portfolio is a key factor. A CCP should aim to assess participants' ability to assume the positions they bid for, when participating in an auction, to the extent possible. Regulatory requirements (eg capital and/or liquidity requirements, statutory position limits) and internal risk limits may restrict auction participants' ability to bid on certain portfolios. A participant may need to structure its bids based on the amount of capital and/or liquidity that it holds and on statutory position limits that may apply to any of the contracts in the defaulting participant's portfolio, so that if it wins the auction, it is not in violation of applicable regulatory requirements. A participant may also have internal risk or position limits that can influence how it provides bids and the types of contracts it can bid for. A participant's activity may also be restricted through position limits or concentration charges imposed by the CCP. Each of these constraints may be particularly acute when bidding on large or concentrated portfolios. As discussed in Section 4.2 above, splitting the defaulted participant's portfolio into several subportfolios is one approach to mitigating such constraints. Additional constraints such as operational capacity of the clearing member to take part in the auction, eg having successfully taken part in the CCP's default management exercises may be included in the criteria used by the CCP to determine auction participation (see Section 5.1.1).

Second, the business model of a participant is another factor. Some participants may be more relevant to an auction due to their role in a particular market. For example, a CCP might include market-makers of the product or currency in the defaulted participant's portfolio, as such entities could be better equipped to price and absorb a portfolio in those products or currencies. A CCP should also consider including participants that may be better able to price risk promptly, as well as a higher tolerance and capacity for absorbing financial risk due to the risk appetite and nature of their business (ie speculation), even if such participants do not participate in the relevant market or contract class. Taking on the risk of a defaulting participant's positions may well fit better with the business model (and trading mandates) of financial firms. Indeed, commercial firms that are direct participants in a CCP may, as a matter of corporate policy or regulatory constraint (eg imposed by regulators of energy utilities), have fairly narrow limits for speculative risks, in contrast to the risks that may apply when they are hedging positions.

Third, a CCP should also consider the nature of the asset or product types to be auctioned. For contracts with physical settlement, it could be beneficial to include physical market participants that are active in that asset class. Certain assets in the defaulted participant's portfolio may require special permissions or capabilities regarding aspects like settlement or position limits that should be addressed by the auction participant prior to taking on the asset. Additionally, firms may not have the ability or expertise to effectively manage certain product and/or asset types, which may prevent them from prudently bidding on portfolios that contain the product/asset types. Therefore, a CCP may need to confirm that it has sufficient participation to cover the full range of products cleared.

Finally, CCPs should also consider adapting the type and number of participants to accommodate the way a portfolio is split and hedged. For example, a CCP may split a portfolio between positions with and without options such that only participants that trade options are asked to bid on the former part.

#### 4.2.4 Timing consideration

In determining the timing for auction participants to submit an auction bid, a CCP should seek to provide auction participants sufficient time to evaluate and price the portfolio.<sup>21</sup> Several factors may have an effect on the amount of time that auction participants need. The type of bidder is one factor that may impact the amount of time necessary to price the portfolio. For example, financial firms with more sophisticated trading operations may be able to evaluate the portfolio in less time than end users. The type of contracts included in the auction may be another factor influencing the amount of time auction participants may need to evaluate the portfolio. Less liquid products, such as certain credit default swaps, may prove more difficult to evaluate and require more time than more liquid ones, such as certain interest rate swaps. Auction format may also be a factor influencing the amount of time that auction participants need to react. Multi-unit auctions or auctions with two-way pricing may take more time for auction participants to price the portfolio and make a bid. A CCP should also consider time zones when determining when to run an auction. For example, if the markets for certain contracts in the defaulter's portfolio are located in a particular region, the CCP should consider holding an auction for those positions when markets in that region are open.

#### 4.2.5 Bidding requirements or incentives

In some cases, a CCP requires mandatory auction participation either in the CCP's rulebook or other governance arrangements, with fines or other disciplinary actions imposed on participants who do not adhere to the bidding obligations. CCPs should provide information to auction participants on the use of such mandatory participation, as well as for other incentives employed.

The obligation to participate could be for the full portfolio or portions of it (ie a minimum bid size obligation) in the event of multi-unit or multi-asset auction. Such minimum bid size obligations may be proportionate to each participant's activity in the relevant product or product class or to the risk exposure of its portfolio. The CCP may also distinguish between house and client activity when considering imposing mandatory participation to the auction on a clearing member.

If a CCP requires mandatory auction participation, it should consider what the portfolio coverage of the mandatory bids should be. It could be beneficial for the CCP to have a cumulative coverage that is higher than the size of the portfolio to improve pricing or provide a buffer in the event that not all auction participants submit bids.

A basic incentive to bid competitively is the opportunity to profit. If a bidder has greater capacity to bid than other bidders, it may be able to win a portfolio at a price that will permit it to profit over time. In order to win, the bidder would need to balance the fact that some other bidders may also have sufficient capacity to bid, against its aim to bid the minimum amount necessary to win. Moreover, the direct relationship between the strength of the bids and the eventual loss allocation provides an additional incentive to bid competitively. For example, if a member does not bid well and a very low bid wins, more of the mutualised default fund would be used, and the participant's losses would be greater than if it had submitted a competitive bid and taken on the portfolio.

To increase the probability of a CCP receiving competitive bids, a CCP should also consider establishing additional incentives to encourage participants to bid in a competitive manner or use a system in which competitive bids are rewarded. One incentive that some CCPs use is to "juniorise" the default

<sup>21</sup> The time available to participants to evaluate the portfolio and capital constraints may be further constrained if there are multiple-CCP auctions. See Chapter 7.

fund contributions of those clearing members who did not submit a bid or provided less competitive bids, compared with other bidders. To juniorise means to use the default fund contributions of juniorised members sooner and to only use the default fund contributions of other members after the juniorised contributions are fully consumed.<sup>22</sup>

Juniorisation is likely to be most effective in incentivising bidding within a certain range. If the bidder believes that the entire default fund is going to be consumed, bidding would not be incentivised, because more competitive bidders will nonetheless have all of their default fund contributions used. Similarly, if the bidder believes that the default fund is not at risk of being used, because losses will be covered by the defaulter's resources, bidding would not be incentivised, because less competitive bidders will not have their default fund contributions used. It is when the bidder believes that a portion of the default fund is going to be used that juniorisation will best incentivise bidding<sup>23</sup>.

#### 4.2.6 Trade-off between flexibility and predictability

When considering the establishment and communication of the elements of default management auctions, as well as the associated governance arrangements, CCPs generally consider it important to have discretion to exercise flexibility when conducting a live auction.<sup>24</sup>

Although rigidly pre-determined auction elements make an auction fairly predictable for its potential participants, predictability alone may not necessarily ensure the success of the auction. A number of other factors need to be considered, including the specific details of the portfolio to be auctioned and the relevant market conditions. Therefore, a CCP's auction arrangements generally include mechanisms that provide flexibility for the CCP to respond to the specific conditions that the default presents in order to more precisely adjust certain auction parameters and facilitate a successful auction while managing the impact on the markets.

Flexibility can be achieved by outlining ex ante the authority of a CCP to determine or select certain auction parameters, including auction format, auction participation and mechanisms that incentivise competitive bidding. While still achieving flexibility, a CCP should consider explicitly outlining the possible values which auction parameters can take, by establishing rules and conditions to govern the determination of such auction parameters and by testing these rules and conditions (see section 5.3).

### 4.3 Responses to an unsuccessful auction

A CCP may encounter a scenario where the auction is not successful, and additional action is therefore necessary. For example, this would include a scenario in which the CCP does not receive any bids on the defaulted participant's portfolio or on certain portions of the portfolio. It would also include a scenario in which the CCP determines that the bids received are too low for the CCP to accept for a variety of potential reasons.<sup>25</sup>

<sup>22</sup> Potential ways to implement juniorisation include using two categories (eg juniorised and not juniorised); three categories (eg juniorising those who bid less competitively, seniorising those who bid most competitively, and leaving others in the middle); and rank-ordering (ordering non-defaulting participants' bidding from least to most competitive and using the default fund contributions of each in that order).

<sup>23</sup> This is subject to the bidder being not prohibited from bidding due to specific rules or other limitations.

<sup>24</sup> The relationship between transparency and predictability is discussed further in the Recovery Report, Section 2.3.6.

<sup>25</sup> For example, a CCP may decide not to accept a bid or bids because doing so would go beyond a predetermined and internally authorised limit (eg based on the resources in the CCP's default fund or waterfall) or the bids received diverge from the CCP's reasonable estimate of the market value, including, potentially, due to changes in the value resulting from information leakage (eg on the details of the defaulting participant's portfolio).

A CCP should have processes and governance arrangements to assess if it should either rerun the auction or use other default management or recovery tools, in the event an auction is unsuccessful.<sup>26</sup>

A CCP may take into consideration the financial soundness of itself and its non-defaulting participants, prevailing market conditions, especially liquidity and volatility, as well as the broader financial system and potential leakage of information, when determining next steps. Further, if a participant defaults across multiple asset classes, a CCP may choose to vary its approach for different products, depending on how its default funds are structured or segregated across different asset classes.

If a CCP elects to rerun an auction, it could seek, on a very prompt basis, feedback from participants to determine why the initial auction failed. This could allow the CCP to make changes to increase the probability of an improved result when rerunning the auction. Such changes could include:

- splitting the portfolio differently or into smaller segments;
- inviting additional auction participants to submit bids;
- altering the hedging strategy;
- apply incentive tools (such as juniorisation) not used in the first auction or change incentive tools (where legally possible consistent with the CCP's rules); or
- providing auction participants with additional time to price the portfolio.

## 5. Operational considerations

There are a number of operational aspects a CCP should consider to facilitate effective auctions. This chapter discusses the preparatory work which a CCP should conduct during BAU to be better prepared for an auction event. It also discusses the flow of information that may occur during a potential auction event and how a CCP should conduct default management testing exercises during BAU to prepare for a live auction.

### 5.1 Preparation during BAU process

Taking steps during BAU helps a CCP better prepare for an auction. Such preparatory measures should include onboarding auction participants, clarifying any restrictions on information-sharing with potential participants, and developing contact lists.

#### 5.1.1 Preparing and onboarding auction participants

During BAU conditions, a CCP should communicate its auction participation criteria to potential auction participants, including through rulebooks or other terms and conditions. Such communications should include whether participation is limited to the CCP's participants or some subset thereof, and whether, and under what conditions, auction participation may include clients. Further, conditions and requirements for participation in an auction should be specified. If auctions with mandatory participation are conducted, a CCP should specify the types of auctions in which participation is mandatory, as well as for whom and for which products this obligation is applicable. Where applicable, a CCP should also provide information regarding the methodology and any factors on which the minimum bid amount is calculated.

Onboarding and approving potential auction participants in advance helps ensure timely action in the event of a default. As part of this, the CCP should engage with potential auction participants to

<sup>26</sup> The defaulted participant's portfolio may also be liquidated in the open market; however, a CCP would weigh the potential market impact of such an action.

confirm readiness and alignment from operational, governance and resource perspectives. For example, a CCP should specify how bids are to be submitted and received within the auction procedures. A CCP should also confirm the readiness of potential auction participants periodically after the initial onboarding or approval.

Before permitting auction participation, a CCP should require potential participants to take part in a default management testing exercise, in order to test whether the processes, systems and terminology used in the auction process, as well as tasks necessary for auction participation, are understood and operational. Potential auction participants should also be required to take part in regular testing exercises, including additional default management testing exercises, if they wish to join or clear additional product or contract types at the CCP. A CCP should also maintain up-to-date information on whether a potential auction participant remains able to bid for those products or contract types.

A CCP and its participants may conduct training for staff at the participant firms, so that sufficient personnel (in terms of skillset, role and number) understand the CCP's auction processes. Auction participants should be asked by the CCP to confirm that they have established the necessary internal governance approach (including approval processes) for auction participation, while taking into account the implications which signed confidentiality agreements or non-disclosure agreements may have for their organisational response to an auction event. The internal governance approach should also be in scope for testing exercises. When the potential auction participant is a client, the internal governance approach may be more complex, as it would involve both the client and its clearing member. In such cases, the CCP should seek to understand how separate arrangements at the client and its clearing member may interact during the default management process.

In addition, to better prepare auction participants to price the portfolio submitted for auction in a timely manner, some CCPs request that potential auction participants price illiquid or difficult to value contracts on a daily basis, even if some of them do not have these products in their portfolio.

### 5.1.2 Information-sharing and related restrictions

Sharing confidential information during a default management auction may create risks related to front-running the auction and price manipulation. These risks may lead to uncompetitive bids and increase market volatility as well as hedging and auctions costs for the CCP. Potential risks associated with information leakages should be addressed by a CCP jointly with all relevant parties receiving confidential information during the default management process. Tools available to CCPs to balance and address those risks include, for instance:

- establishing confidentiality / non-disclosure agreements, on the basis of which a CCP would also have a way to challenge breaches of such agreements;
- reflecting on potential risks of information leakage in all relevant governance arrangements of the CCP and other relevant parties;
- sharing information<sup>27</sup> with a limited audience in a staggered way<sup>27</sup> in line with the objectives of the various phases of the default management process;
- masking the directionality of the defaulted portfolio by applying two-way pricing (Section 4.2.2);
- ensuring that the information technology environment built to support information dissemination provides sufficient controls, eg access, encryption; and
- facilitating the timely completion of the default management process in a manner that reduces opportunities for misusing confidential information.

<sup>27</sup> Staggered information sharing may be operationalised through "preliminary auction files." Such files would omit sensitive information, but would, however, include portfolio information that is sufficient for participants to prepare operationally.

Information-sharing restrictions should apply to auction participants and a CCP should clarify such restrictions. There are different ways a CCP could do this, eg on the basis of the aforementioned confidentiality / non-disclosure agreements and/or rulebook provisions. Steps should be taken, before a default occurs, to mitigate any concerns a CCP and its potential auction participants may have which arise from such information-sharing restrictions. For example, if needed, a CCP should establish or share draft non-disclosure agreements with participants during BAU conditions. A CCP should assess whether auction participants have processes to align their auction-related internal governance and procedures with such a confidentiality / non-disclosure agreement, in particular to appropriately manage conflict of interests and sharing of confidential information within the participant's organisation.

Participants should consider how they can fulfil their role in the CCP default management process, taking into account the potential resources and information technology support needed. CCPs should require that participants identify and share with the CCP which experts (within their organisation) are authorised to receive auction-related information from the CCP and who (typically senior management) is authorised to make decisions based upon it. For instance, in order for participants to price the portfolio and communicate a bid back to the CCP, participants should try as much as possible to involve staff with the appropriate expertise to make recommendations to senior management, taking into account internal risk limits, liquidity constraints and capital implications.

### 5.1.3 Participant contact lists

A CCP should maintain contact lists of its potential auction participants, including each contact's name, position, email, phone number, location and, in the case of a client, its clearing member. The contact list should include multiple points of contact for each participant. The contact list may reflect the possibility that auctions may take place outside normal business hours. A CCP should update and test contact lists periodically to confirm that they remain accurate. Processes to keep contact lists updated would vary depending on the ways they are established (for example, authorised users of a web-based auction portal may be able to update entries in real time). Conversely, a CCP should consider whether to distribute staff contact information to auction participants to ensure that participants are able to quickly reach CCP staff during an auction.

## 5.2 Communication before and during an auction event

The effectiveness of information communication between relevant parties both under BAU conditions and during an auction impacts the success of an auction. As stated in the PFMI, "timely communication with stakeholders, in particular with relevant authorities, is of critical importance".<sup>28</sup> A CCP should consider whether to tailor its communication with different parties so that it is appropriate for the given audience. For example, there may be a need to differentiate between the information received by clearing members compared with other parties (eg clients participating in an auction), and different confidentiality and privacy considerations may apply to different recipients. A CCP should assess if it has adequate procedures in place so that, if an auction needs to take place, effective communication of each key piece of information is achieved.

A CCP should design mechanisms to lower the risk of distributing information that includes errors. Errors could be particularly problematic in the event of an auction, leading to flawed bids and a potentially unsuccessful auction. For instance, a CCP and potential auction participants should implement processes to ensure that information is verified before it is shared.

<sup>28</sup> See Explanatory Note 3.13.5.

### 5.2.1 Information communicated ex ante

A CCP has various documents that specify and describe details of the auction process. Such documents include rulebooks, which are publicly available, and any other relevant documents that may not be publicly available, such as auction procedures or default management policies or guidelines. A CCP should make sufficient information available to any potential auction participants to understand how the auction would occur. Additionally, a CCP should consider providing illustrative auction process timelines, auction packs and bid submission templates to potential participants as part of BAU procedures or during default management testing exercises.

The contents of such documents should address several of the topics discussed above, such as the auction format, auction participation criteria and bidding requirements or incentives. Such documents should also identify the particular steps in the auction and address the format in which auction participants can expect to receive information from the CCP during a live auction. Such information assists participants in understanding, for example, what exactly will be included in the auction portfolio information package and the way in which it will be presented.

A CCP should also prepare draft or template communications ex ante for auction participants. Although there may be revisions required to reflect the specifics of the default during a live auction, such templates could improve the efficiency with which the CCP communicates with auction participants.

A CCP may be subject to limitations on the information it may share with certain parties. For example, a CCP may be prohibited under statutory requirements from sharing with regulators, other than its home country regulator, information on positions and other details. A CCP should analyse its confidentiality agreements and rulebook provisions and any applicable statutory limitations regarding confidentiality to determine whether they might hinder the CCP's efforts to run a successful auction. The CCP should then take steps to mitigate those concerns.

### 5.2.2 Information communicated during a live auction

During a live auction, a CCP and its auction participants would have to exchange certain key items of information. This information may be communicated only once during the default management process or several times. Such information includes:

- an invitation to participate in a default management auction: sent from the CCP to potential auction participants;
- auction portfolio information: sent from the CCP to auction participants;
- bids on the auction portfolio: sent from auction participants to the CCP; and
- an announcement of the auction outcome and next steps: sent from the CCP to auction participants (and, potentially, others).

#### *Auction portfolio information*

Of these pieces of information, the auction portfolio information, often referred to as an "auction file," includes information essential to an auction participant's determination and submission of its bid. Although the exact fields of information included as content within the auction file may differ among CCPs because of the different types of financial instrument, in most cases, the auction file will need to include:

- the full trade-level information of the instruments that make up the auction portfolio, which includes details of each position's financial contract type, size, direction, tenor and currency;
- the information needed to price the instruments using market standard pricing methods, including indicative price, market data (eg rate curves), risk sensitivity values for instruments and/or portfolio; and

- information on, or information which is sufficient to calculate, the impact of bidding on margin requirements and other financial obligations.

Different CCPs currently use different auction file formats and communication protocols. For example, the exact fields of information included as content within the auction file differ among CCPs due to differences in underlying asset class or financial instrument type being described. In some cases, this is because the auction process has been built to align with core clearing systems and software used by the CCP for BAU activities. Such alignment enables potential auction participants to meet the often challenging timelines of the auction process. Further, it may decrease the cost of procedures and related information technology systems that support the auction process.

Standardising certain aspects of the auction files across CCPs might improve the reactivity of participants and reduce the costs of having to develop and maintain different IT systems. However there is currently no consensus among the varied options to standardise the format of portfolio files (even if the Financial products Mark-up Language (FpML) is often cited) nor on how the terminology and content could be standardised.

In close cooperation with potential auction participants, a CCP should consider how to best support the impact assessment of various bidding strategies by the auction participants, in particular in terms of provision of adequate information on the related margin requirements or other financial obligations. In most instances, a CCP should provide enough instrument/trade-level details to allow auction participants to estimate the impact on margin requirements and other financial obligations themselves. This in fact would enable potential auction participants to analyse and compare various choices to make in terms of their bidding behaviour (ie "what if analysis"). A CCP should always provide information sufficient to allow its members to understand the financial impact of an unsuccessful auction by potential auction participants, eg as part of auction incentive tools.

#### *Announcement of auction outcome and next steps*

When announcing the auction outcome and next steps, a CCP should also consider how to inform other relevant parties of the possible implications of the completed auction. For example, non-defaulting participants in the CCP could have resources committed to the default fund which may be used to cover losses from the default. If a CCP has only invited a subset of participants to bid in the auction and has not informed other participants of the auction, the CCP will generally need to determine the appropriate time to inform these entities of the auction, its outcome, and the impact on the individual CCP participants (eg utilisation of the participant's default fund contribution and any obligation to replenish mutualised default resources).

In addition, because a defaulted participant may be a clearing participant of more than one CCP or the CCP may be active in more than one jurisdiction, a CCP should consider notifying other relevant regulators of the participant's default and a default management auction following the determination of the default, including regulators of jurisdictions in which the CCP is active or in which the defaulting participant is active.

#### 5.2.3 Methods for communicating during a live auction

Different CCPs may choose to use different methods to share information with other parties. Methods that are appropriate for the dissemination of one type of information may not be appropriate for the dissemination of other types, and the choice may also depend on the particularities of the CCP and its wider operations. Irrespective of the actual file formats and systems used, the CCP and its participants should take steps during BAU to ensure operational alignment between their respective systems, software and servers so that the parties can communicate during the auction without difficulty.

A CCP may use a range of file types/computer file formats (such as XLS, XML, CSV and TXT file language) to store and share its auction file information. A CCP may use encryption methods or password protection methods to protect the auction file information.

Potential methods for a CCP to use for information exchange during an auction include encrypted email and web-based portals. The web-based portal allows a CCP to send the same information to multiple users at the same time and provides better CCP access and control, with a general reduction in operational risks, compared with email-based communication. Web-based portals commonly have a secure username and password entrance for auction participants to access them. A web-based portal may be nested within a more widely used membership portal employed for other clearing-related services. Encrypted email transmissions might be more adapted for less complex portfolios and easier to use by less sophisticated participants, or could constitute a fall-back option in a well-established contingency plan.

### 5.3 Testing

Key Consideration 2 of Principle 13 of the PFMI states that “a [CCP] should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules”. Key Consideration 4 of Principle 13 states that “a [CCP] should involve its participants and other stakeholders in the testing and review of the [CCP’s] default procedures, including any close-out procedures”, and that “[s]uch testing and review should occur at least annually or following material changes to the rules and procedures to ensure that they are practical and effective”.

Testing exercises in relation to default management auctions serve the purpose of preparing during BAU for a potential live auction. Such testing exercises can vary in objective, scope and complexity. A CCP should consider including in such exercises the elements related to operational procedures, financial risk management and CCP decision points. (See also section 7.1)

#### 5.3.1 Types of testing exercises

There are various types of default management testing exercises that a CCP should consider to conduct.

First, there are operationally focused exercises that are designed to test the integrity, functioning and effectiveness of information technology systems and procedures supporting default management auctions. Such operational tests may be conducted by a CCP and each auction participant individually, or jointly with the involvement of other potential auction participants.

Second, there are default management testing exercises that serve the purpose of testing the functioning of the complete default management process (an “end-to-end default management testing exercise”). This type of exercise simulates the default management process from the beginning of the default management process (ie occurrence of default event/declaration of default) to the end. Such a test requires that a CCP design a scenario/set of scenarios to define a hypothetical auction event, containing a full market narrative and considerations for extremeness and plausibility.

In addition to auctioning, there are other elements in the default management process, such as (i) porting; (ii) establishing and executing the hedging strategy; (iii) funding, including liquidating collateral and accessing liquidity providers or funding markets; and (iv) addressing challenges from the defaulting participant providing other services to the CCP (eg investment counterparty, liquidity provider, custodian, payment/settlement bank). These elements are closely linked with the auction process, not only due to the sequencing of the events but also from the perspective of financial risk management. When preparing default management testing exercises, a CCP should consider interplays between the various elements of the default management process and test the elements together.

Third, and to complement the execution of end-to-end default management testing exercises, a CCP should also consider arranging for testing exercises with a limited scope. Such limited-scope exercises allow consideration of specific elements of the default management process, such as porting, hedging,

auctioning, or various communication aspects. A CCP should consider whether to make participation in these limited-scope exercises obligatory for direct participants (or in some cases indirect participants, ie clients) of a CCP. For instance, for parties participating in an end-to-end default management testing exercise, participation in pre-exercise portfolio valuation exercises is often compulsory. This portfolio valuation step of the auction process may also be practised by potential auction participants throughout the year on a voluntary basis. A CCP should consider whether to provide test auction packages on a regular basis (eg monthly or quarterly) to potential auction participants, which can use them for voluntary, internal testing (including practicing portfolio valuation).

In simulating the defaulter's portfolio in any type of default management testing exercise, a CCP should consider all markets and asset classes in which it provides clearing services, not just those that are assessed as presenting the highest risk.<sup>29</sup> By focusing on asset classes that are perceived to be a higher risk while not testing asset classes that are perceived to be somewhat lower-risk, a CCP risks being underprepared to manage a default in all asset classes. Therefore a CCP should explore the challenges it may face in managing a default of a concentrated position in its less widely held contracts.

In addition to taking into account aspects in relation to various asset classes, a CCP should consider how to include unexpected events in the default management testing exercise to provide a more realistic simulation approach. As much as possible, a CCP should consider all relevant aspects of the production environment when building the testing environment. The CCP should assess and document the impact of any remaining differences between the test and production environments on the outcome of the testing exercises.

### 5.3.2 Specific aspects of end-to-end default management testing exercises related to auctions

#### *Decision-making and governance at potential auction participants*

A CCP and its potential auction participants generally practise their roles and procedures (including any related governance processes) when running a default management testing exercise (see also Chapter 3). In general, auction participants need to provide their bids within specified timelines and be prepared to conduct a timely assessment of their risk-taking capabilities to support the running of these exercises. A CCP should clarify with auction participants how participants should perform the testing on their side, in particular any assessments or decisions regarding risk-taking.

#### *Market context and sufficient realism of the exercises*

When conducting an end-to-end default management testing exercise, a CCP generally should define the hypothetical market context of the default event and the hypothetical defaulted participant's portfolio. Such market context should be based on stressed market conditions. While the provision of sufficient context and realism should be an integral part of the end-to-end default management testing exercise, testing may have its limitations in terms of achieving a common understanding and simulation of stressed market conditions and related behaviours.<sup>30</sup> Hence scenarios may result in a narrower set of outcomes compared to real life situations due to underlying assumptions made by auction participants for the purpose of the test. Further, creating a hypothetical scenario may require the construction of test market feeds, leading to another deviation between the test and potential live procedures. A CCP should therefore

<sup>29</sup> Although a CCP's default management testing exercises are confined to its cleared products, in a potential real life situation other markets (eg non-centrally cleared markets) may also be impacted by potential stresses. Hence, in some circumstances, a CCP might consider how such non-centrally cleared markets may have an impact on its cleared markets and the related default management.

<sup>30</sup> Basing stresses on past examples of market events could foster such a common understanding.

carefully assess and document the potential limitations of the scenarios tested. These limitations should be also discussed with the auction participants in order to avoid a false sense of readiness<sup>31</sup>.

The hypothetical defaulted participant's portfolio should be constructed to be realistic in that it resembles a representative participant's risk profile. Additionally, to ensure the exercise tests all elements, a CCP should design sufficiently complex portfolios so that, for example, porting, hedging, auctioning and funding perspectives can all be tested at once. In designing default management testing exercises, a CCP should also identify potential liquidity issues it might face when conducting an auction. Specifically, during BAU, a CCP could identify positions that may potentially be difficult to auction, eg positions that are large compared with average opposing open interest.

### 5.3.3 Testing framework, plan and documentation

A CCP should have a comprehensive testing framework that includes an annual testing plan for different types of testing exercises. Such a framework and plans should cover all relevant aspects of the default management process, including auctions.

A CCP should consider covering the following points in its testing framework: (i) the types of testing exercises (that may be conducted on a standalone basis or combined); (ii) the purpose/objective of the various types of testing exercises; (iii) expected frequency of testing; and (iv) documentation for the tests (eg exercise guidelines), which may include further details related to each testing exercise, such as: (a) the parameters or assumptions of the exercise, (b) the success criteria used for the exercise, and (c) the limitations of the planned exercises (eg in terms of realism or the differences between the production and the test environments).

The annual testing plan should include among others: (i) the types of tests to be conducted during the year and their rationale; (ii) annual test schedules; (iii) potential test participants and their roles, including whether the exercise includes a single CCP or multiple CCPs; and (iv) resource planning.

## 6. Client participation

A CCP should consider whether to permit or facilitate clients of the clearing members to participate in the auction. For the CCP, the intent is to increase the number of potential bidders and engage major market participants that may not be direct participants in the CCP, thus increasing the competitiveness and the probability of a successful auction. In addition, benefits may include distributing risk of the portfolio more broadly across market participants. For clients, the incentive to participate in an auction may be to obtain financial gains from acquiring the positions or to avoid potential negative outcomes arising from a failed auction, such as partial or full tear-up. Some CCPs or asset types may be more suited to client participation than others. Further, there are a variety of perspectives from industry participants and CCPs on whether clients should participate in auctions.

### 6.1 Methods for client participation

Client participation in a default management auction generally takes one of two forms:

<sup>31</sup> In particular the CCP and its auction participants should not underestimate the possible impact on behaviours and the related potential market effects.

### *Direct participation*

In the direct client participation model, a client interfaces directly with the CCP to participate in the auction and submit its bids, but with the consent or authorisation of the client's clearing member. In such a model, the client's participation becomes similar to that of a clearing member, although in some cases clearing members impose risk limits on the client's bids.

### *Indirect participation*

In the indirect client participation model, a CCP permits a client to participate in an auction via its clearing member. In such cases, a client typically receives information on the defaulted participant's portfolio via the clearing member, and the client also submits its bid indirectly to the CCP, ie through its clearing member.

## 6.2 Considerations for client participation

Notwithstanding the potential benefits of client participation, there are issues that a CCP and its clearing members generally should consider when deciding whether to permit or facilitate client participation.<sup>32</sup>

### *Liability of clearing member*

Clearing members guarantee all trades they submit for clearing, including their clients' trades. Therefore, irrespective of the method for client participation in an auction: if a client submits the winning bid, it is the client's clearing member who will ultimately be responsible for meeting the obligations arising from the bid. To address the risk inherent in such obligations, a CCP should consider requiring some form of consent or authorisation from the clearing member before allowing clients to participate in an auction. In addition, some CCPs require clearing members to approve or deny a client's bid during the auction before the bid is accepted by the CCP.

Moreover, a clearing member should consider developing some form of agreement with its client during BAU, ie prior to an auction. This agreement could be structured in a way that allows the clearing member to effectively risk-manage its positions and, at the same time, provide a participating client and the CCP with the necessary level of certainty that bids submitted by the client will not be rejected by the clearing member. For example, a client and its clearing member may use predefined or established risk limits on the size and direction of portfolios on which the client is allowed to bid, or on the level of risk (as measured by the CCP's initial margin model) that the client is permitted to undertake. The clearing member may also consider requiring that the client post additional margin to reduce the risk to the clearing member and provide assurance to the clearing member that it will perform its obligations.

### *Incentives to bid competitively*

Unlike clearing members, clients do not contribute to the default fund, and may therefore, have fewer direct financial consequences from submitting a non-competitive bid in an auction.<sup>33</sup> A CCP should explore

<sup>32</sup> These considerations also apply to clients whose clearing member has defaulted and who have their portfolio and clearing relationship successfully ported to another clearing member. If the client is not yet ported to another member, the client would need to either find a new clearing member or become a clearing member to participate in the auction.

<sup>33</sup> However, in the event of a failed auction, clients may be subject to a CCP's recovery tools, such as gains-based haircutting or partial tear-up.

ways in which it could address this, and to avoid having clients participate only to obtain a “free look” at the defaulter’s positions without serious bidding.<sup>34</sup>

### *Legal readiness*

To participate in an auction, a CCP generally requests that clients execute additional agreements (such as non-disclosure agreements or agreements to comply with auction rules). As discussed in Section 5.1, a CCP executes these agreements during BAU in order to avoid a need to negotiate such agreements during the default management process.

### *Operational readiness*

A crucial element of a successful auction is that all participants submit bids on time. In the case of direct client participation, a CCP should establish and test communication channels with participating clients on an ex ante basis. A CCP is typically capable of allowing clients to use the same communication channels that are used by clearing members, if such clients are identified and intend to participate in an auction.

In addition to establishing a communication process, a CCP generally should take steps to make sure that participating clients (direct and indirect) have sufficient experience in the market to evaluate the portfolio and provide competitive bids, and have the operational capability to participate in auctions and, in the event their bids are successful, take on the positions. A CCP should require directly participating clients to familiarise themselves with the auction process, participate in default management testing exercises, and demonstrate that they have the experience and expertise to provide competitive bids, as discussed in Chapter 5.

### *Information leakage*

As mentioned before, all auction participants, including clients bidding in the auction, receive confidential information on the defaulted participant’s portfolio. Leakage of this information into the market could lead to undesirable consequences such as a client trading against the defaulted participant’s portfolio. To mitigate this, a CCP should consider requiring participating clients to enter into non-disclosure agreements, as discussed in Section 5.1.2 above. Other tools to mitigate potential leakage include splitting the defaulted participant’s portfolio and/or requiring two-way pricing or as an alternative to request bids for mirrored portfolios, which could render the entire portfolio less transparent and mitigate the risk of information leakage (Section 4.2.2).

## **6.3 Factors that may potentially affect client participation**

While client participation can increase the competitiveness of bidding and the probability of a successful auction, in practice there may be factors that potentially affect client participation, and some of these factors may make client participation feasible only for the largest and most sophisticated clients.

Most importantly, clients must be able to risk-manage exposures related to the auction portfolio. A CCP typically limits participation to clients that are particularly sophisticated, with a significant amount of activities such as assets under management and/or capital. In addition, as discussed above, a CCP may consider ways to incentivise participating clients to bid competitively.

Moreover, clients must be able to price and bid on the auction portfolio in a compressed time frame which would require a certain level of operational capability as well as the investment of resources in BAU to ensure operational readiness (for example, participation in regular default management testing

<sup>34</sup> A CCP may consider if it is appropriate to require a client who seeks participation in an auction to contribute an established amount prior to participating in an auction, which the CCP can use to cover losses in a manner similar to the default fund contributions of a clearing member.

exercises). Moreover, some clients may not be suitable candidates for participation in a given default management auction depending on the structure of the auction portfolio. However, certain clients – for example, those in the business of proprietary trading – may be well positioned to do so.

In the case of indirect client participation, additional challenges could arise at the clearing member level in the event that a clearing member wishes to submit bids on behalf of multiple clients. Given that the clearing member would need to obtain and submit bids from each client in an expeditious manner, there is likely to be a limited number of client bids that each clearing member can consider and submit to the CCP. A conflict of interest situation could also arise if both the clearing member and its client(s) wish to bid in an auction.

## 7. Default of a common participant across multiple CCPs

Participation in an auction will require auction participants to divert resources from their BAU operations to assessing the defaulted participant's portfolio and submitting bids. When two or more CCPs conduct auctions concurrently, this could put increased operational and/or financial strains on auction participants who participate in concurrent auctions, including with respect to those auction participants who may have seconded traders to multiple CCPs.

### 7.1 Multiple-CCP default management testing exercises

Default management testing exercises provide an opportunity in BAU for CCPs and potential auction participants to prepare for a default situation. However, such exercises, in isolation, may not reflect the operational and financial stress faced by CCPs and their clearing participants, or the interplay of actions by multiple CCPs, in the event of a default by a clearing participant participating in multiple CCPs.

There are commonalities and differences amongst CCPs with respect to their default management processes and financial risk management practices. Multi-CCP default management testing exercises allow consideration of how such commonalities and differences may influence the running of a successful default management process, including auctions. Commonalities include (i) overlaps in clearing memberships and DMG memberships; (ii) common product classes cleared; (iii) use of the same liquidity providers or funding markets; (iv) common asset holdings; and (v) use of the same service providers, such as payment or settlement banks, investment counterparties or custodians. Aspects (i) and (ii) likely have the most direct relevance to hedging and auction during the default management process.

#### *Benefits of performing multi-CCP default management testing exercises*

There are several benefits in conducting multi-CCP default management testing exercises, including some that are of particular relevance to auctions.

Multi-CCP default management testing exercises can help to identify potential operational and financial bottlenecks in the default management procedures when they are initiated by multiple CCPs concurrently. Such exercises can provide clarity on:

- (i) issues that may arise when multiple CCPs manage a default of a common participant, including potential operational challenges (including those that may arise when the CCPs are in different jurisdictions and in different time zones) and the impact on the financial capabilities of non-defaulting participants in both CCPs;
- (ii) the impact on the market, ie the execution of hedges and auctions and the liquidation of collateral by several CCPs under short notice concurrently;

- (iii) the ability of DMG members to meet requests from multiple CCPs to convene DMGs concurrently (in particular, to identify cases where multiple CCPs may call upon the same clearing participant to provide experts in the same product class); and
- (iv) the impact on auction participants and their respective financial and operational capacities, as they may be required to participate in overlapping auctions and other activities, eg accepting ported portfolios of clients.

Conducting default management testing exercises at several CCPs at the same time serves as an opportunity to identify ways for CCPs to coordinate in order to ease the burden for clearing participants and their clients (if participating in the auction). It also allows for simulation of scenarios in which multiple CCPs may be trying to liquidate similar collateral positions, and it may allow consideration of how the sequencing of multiple CCPs' default management processes may affect the overall efficacy of the CCPs' respective default management plans. Further, it enables exercise participants (ie CCPs, their participants, clients and relevant authorities) to compare hedging and auction practices and procedures across CCPs. Such comparison may help to establish common understanding of similarities and divergences in hedging and auction practices and procedures among CCPs and facilitate the establishment of industry best practices.

### *Challenges of performing multi-CCP default management testing exercises*

Multi-CCP default management testing exercises are challenging and resource-intensive. CCPs may not be able or willing to share certain confidential information with authorities that do not regulate them, or with parties (ie competitor CCPs) participating in the exercise. This may limit the scope and usefulness of the simulation.

For the case of globally active CCPs, working across time zones potentially presents another challenge. To the extent that a default management testing exercise is designed to simulate the default of a clearing member that participates in CCPs in jurisdictions in a number of different time zones, those CCPs will be starting their default management processes and making decisions with urgency and these may be outside of the CCPs' normal business hours. Non-defaulting members of the CCPs will need to face the challenge of responding to the CCPs' requests, such as those regarding hedging and bidding, from each of these CCPs, potentially outside their own business hours. The scope of this challenge directly relates to the scope of the tests and the scope of global overlapping participation in CCPs.

Another challenge will be the application of local insolvency laws, regulatory regimes, and corporate structures to the default. A cross-border multi-CCP default management testing exercise presents an ideal vehicle for stakeholders to understand the impact of the application of such laws in multiple jurisdictions.

Coordination of default management auctions with other CCPs may be subject to constraints. For example, a CCP may have to consider whether coordination of hedging or auctions with other CCPs appropriately serves the interest of its shareholders, participants and their clients. Differences in hedging and auction procedures across CCPs may be beneficial to study for comparison purposes, but may also create further challenges for participants in default management testing exercise due to complexity.

To address these challenges and constraints, CCPs may need to provide incentives for participants to take part. Such incentives could, for instance, come from CCP participation requirements.

Use of common auction terminology among CCPs could also mitigate some of the communication challenges in a multi-CCP default management exercise.<sup>35</sup>

<sup>35</sup> See, eg "Uniform CCP Terminology for Default Management Auctions, Default Risk Management Working Group", available at [www.cftc.gov/sites/default/files/idc/groups/public/@aboutcftc/documents/file/mrac062716\\_uniformccp.pdf](http://www.cftc.gov/sites/default/files/idc/groups/public/@aboutcftc/documents/file/mrac062716_uniformccp.pdf).

Moreover, there may be limitations to designing multi-CCP default management testing exercises that contain scenarios where a contextual narrative and sufficient degree of realism are provided for two or more CCPs. It may also be difficult to simulate the unfolding of events during the default management testing exercise and to model certain behavioural aspects for multiple CCPs. Design constraints can be mitigated by employing a multi-step approach that starts with exercise that include two CCPs with one or more of the following (1) overlapping products, (2) overlapping clearing members, and (3) within a similar geographical area. The exercises could then evolve to be more complex to include additional CCPs with more product lines and in additional geographic locations, but there should be a specific rationale for the design of the exercises.

## 7.2 Composition of the DMG

As noted in Chapter 3, a CCP may choose to convene a DMG to assist the CCP with the hedging, auction and default management processes. As multiple CCPs may convene DMGs concurrently, CCPs should, in close cooperation with clearing members, work to mitigate the operational burden and to coordinate DMG memberships to reduce the possibility of multiple CCPs requesting for the same institution's participation in their respective DMGs following a common participant's default – in particular, multiple CCPs calling for experts in the same product class.

There are several potential options CCPs should consider in order to mitigate the potential burden on their participants as DMG members. One option is for CCPs to exchange information about the current composition of their respective DMGs on a bilateral basis or, if necessary, through a trusted third party. Participants can report their commitments to each of their CCPs so that they can be taken into account. CCPs can consider rotating a participant out of a particular product group into another product group if there was a conflict during a particular period. To further this goal, CCPs can coordinate the commitment period for DMG participation, which can assist participants to plan their trader allocations.

Another possible option is for CCPs to agree to institute a cap on the number of traders that can be seconded from a particular clearing participant at any one time. This limits the resource burden placed on the clearing participant and spreads the load among the clearing participants. Some possibilities for such caps might be to impose them by product class (eg no more than X secondments in interest rate products, no more than Y in equities) or to make them proportional to the number of CCP memberships (eg a financial firm (including affiliates) that is a clearing participant of 50 CCPs might be called upon to provide more secondments than a financial firm that is a clearing participant of two CCPs.) If a cap is implemented, it should be at the election of the CCP and tailored to the CCP's operational need.

Multi-CCP default management exercises provide a way to test that the burden is being distributed equally among clearing members. If the result of such exercises demonstrates that the burden is not being distributed equally among clearing members, the CCP should consider revising the mechanism for mitigating such burden can be more effective.

## Annex A Members of the PSG and the Auctions Subgroup

### PSG Co-Chairs

European Central Bank	Daniela Russo
Commodity Futures Trading Commission, US	Robert Wasserman

### Auctions Subgroup Co-Chairs

Monetary Authority of Singapore	Pui Hoon Loh
Securities and Exchange Commission, US	Elizabeth Fitzgerald

### Members

Reserve Bank of Australia	Jon Cheshire
National Bank of Belgium	Steven Van Cauwenberge
Securities and Exchange Commission of Brazil	Sergio Ricardo Silva Schreiner
Bank of Canada	Peter Youngman Stacey Anderson*
Autorité des marchés financiers, Quebec	Sami Gdoura
Ontario Securities Commission	Jalil El Moussadek
Bank of France	Nicolas Péligny
Autorité des marchés financiers, France	Patrice Aguesse Dionysios Soupios*
European Central Bank	Simonetta Rosati Eszter Tanai*
European Securities and Markets Authority	Giampiero Carlà Benjamin Schiessle*
European Commission	Gilles Hervé
Deutsche Bundesbank	Elvira Scheben
Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)	Felicitas Linden

Securities and Futures Commission, Hong Kong	Ryan Ko
Securities and Exchange Board of India	Manoj Kumar
Bank of Italy	Loretta Frettoni
Bank of Japan	Megumi Takei
Financial Services Agency, Japan	Kosaku Taira
National Banking and Securities Commission, Mexico	Mireya Suarez
Netherlands Bank	Luc Blommers
Central Bank of the Russian Federation	Natalya Nikishanina Denis Tararyshkin*
Finansinspektionen, Sweden	Mia Bjurkell
Swiss National Bank	Thomas Nellen Robert Oleschak*
Bank of England	Laura Wallis Harpal Hungin* Farid Anvari*
Board of Governors of the Federal Reserve System	Emily Caron Jessica Dwyer*
Federal Reserve Bank of New York	Hampton Finer Emilie Walgenbach*
Commodity Futures Trading Commission, US	Kirsten Robbins John Paul Rothenberg*
Securities and Exchange Commission, US	A J Jacob*
World Bank Group	Harish Natarajan
IOSCO Secretariat	Patricia Saenz de Maturana
CPMI Secretariat	Philippe Troussard Wei Zhang

\* Auctions Subgroup member only.