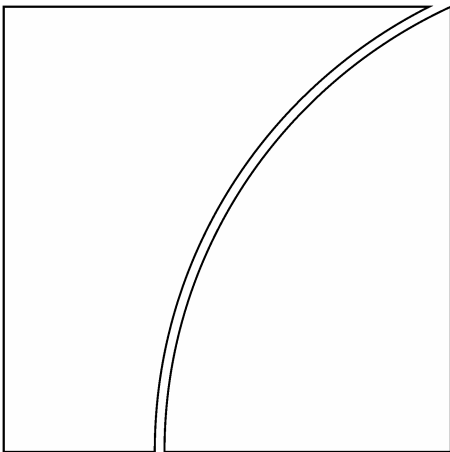


Committee on Payment and
Settlement Systems

Technical Committee of the
International Organization of
Securities Commissions



Recommendations for Central Counterparties

November 2004



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Foreword

This is the third report prepared by the Task Force on Securities Settlement Systems, which was jointly established in December 1999 by the Committee on Payment and Settlement Systems (CPSS) of the central banks of the Group of Ten countries and the Technical Committee of the International Organization of Securities Commissions (IOSCO). *Recommendations for Central Counterparties* aims to set out comprehensive standards for risk management of a central counterparty (CCP).

CCPs occupy an important place in securities settlement systems (SSSs). A CCP interposes itself between counterparties to financial transactions, becoming the buyer to the seller and the seller to the buyer. A well designed CCP with appropriate risk management arrangements reduces the risks faced by SSS participants and contributes to the goal of financial stability. CCPs have long been used by derivatives exchanges and a few securities exchanges. In recent years, they have been introduced into many more securities markets, including cash markets and over-the-counter markets. Although a CCP has the potential to reduce risks to market participants significantly, it also concentrates risks and responsibilities for risk management. Therefore, the effectiveness of a CCP's risk control and the adequacy of its financial resources are critical aspects of the infrastructure of the markets it serves. In the light of the growing interest in developing CCPs and expanding the scope of their services, the CPSS and the Technical Committee of IOSCO concluded that international standards for CCP risk management are a critical element in promoting the safety of financial markets.

In March 2004, the CPSS and the Technical Committee of IOSCO released a consultative version of this report for public comment. More than 40 comments were received from central bankers and securities regulators, as well as operators of and participants in CCPs. The Task Force benefited greatly from this input, and several recommendations have been changed significantly.

This report has 15 headline recommendations and accompanying explanatory text. The recommendations cover the major types of risks CCPs face. The report sets out the intended scope of application of these recommendations and their relationship with the Task Force report on *Recommendations for Securities Settlement Systems* (RSSS). The report also includes a methodology for assessing implementation of the recommendations, which identifies key issues and key questions and provides guidance on the assignment of an assessment category.

The CPSS and the Technical Committee of IOSCO encourage CCPs to conduct a self-assessment of their observance of the recommendations and to utilise the answers to the key questions as a basis for their public disclosure. National authorities responsible for the regulation and oversight of the CCPs are also expected to assess whether the CCPs in their jurisdiction have implemented the recommendations and to develop plans for implementation where necessary.

The CPSS and the Technical Committee of IOSCO are grateful to the members of the Task Force and its Co-Chairmen, Patrick Parkinson of the Board of Governors of the Federal Reserve System and Shane Tregillis of the Monetary Authority of Singapore, for their excellent work in preparing this report in a timely manner.

Tommaso Padoa-Schioppa, Chairman
Committee on Payment and Settlement Systems

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1. Introduction

Background

1.1 A central counterparty (CCP) interposes itself between counterparties to financial contracts traded in one or more markets, becoming the buyer to every seller and the seller to every buyer. CCPs have long been used by derivatives exchanges and a few securities exchanges and trading systems. In recent years they have been introduced by many more securities exchanges and have begun to provide their services to over-the-counter (OTC) markets, including markets for securities repurchase agreements and derivatives.

1.2 A CCP has the potential to reduce significantly risks to market participants by imposing more robust risk controls on all participants and, in many cases, by achieving multilateral netting of trades. It also tends to enhance the liquidity of the markets it serves, because it tends to reduce risks to participants and, in many cases, because it facilitates anonymous trading. However, a CCP also concentrates risks and responsibility for risk management in the CCP. Consequently the effectiveness of a CCP's risk controls and the adequacy of its financial resources are critical aspects of the infrastructure of the markets it serves.

1.3 A risk management failure by a CCP has the potential to disrupt the markets it serves and also other components of the settlement systems for instruments traded in those markets. The disruptions may spill over to payment systems and to other settlement systems. Because of the potential for disruptions to securities and derivatives markets and to payment and settlement systems, securities regulators and central banks have a strong interest in CCP risk management.

1.4 In November 2001 the Committee on Payment and Settlement Systems (CPSS) of the central banks of the Group of Ten countries and the Technical Committee of the International Organization of Securities Commissions (IOSCO) issued a report entitled *Recommendations for Securities Settlement Systems* (RSSS). That report sets out and discusses 19 recommendations for promoting the safety and efficiency of securities settlement systems. Recommendation 4 focused on CCPs. It called for the benefits and costs of a CCP to be evaluated. Furthermore, where a CCP exists, it called for the CCP to rigorously control the risks that it assumes. But that recommendation did not set out detailed or comprehensive standards for CCP risk management. Several other recommendations were also relevant to CCPs, notably those on operational reliability, efficiency, governance, transparency, and regulation and oversight.

1.5 The CPSS and the IOSCO Technical Committee subsequently concluded that detailed comprehensive international standards for CCP risk management are essential because of CCPs' large and growing role in securities settlement systems and the potential for risk management failures by CCPs to disrupt markets and payment and securities settlement systems. Accordingly, in February 2003 they directed their Task Force on Securities Settlement Systems to develop such standards. The standards were to address all the major types of risk that CCPs face. The Task Force was to draw upon relevant work by private and public sector bodies, including the European Association of Central Counterparty Clearing Houses (EACH) and CCP-12, a group that includes CCPs from Asia and the Americas as well as Europe. Work on a methodology for assessing implementation of the standards was to proceed in parallel with development of the standards. This report presents the Task Force's work.

Relationship to the RSSS

1.6 With one exception, the recommendations regarding CCPs that are set out in this report are intended to supersede the recommendations in the RSSS. That exception is the recommendation that the benefits and costs of introducing a CCP should be evaluated in securities markets in which a CCP does not exist. The issuance of this report is not intended to imply that CCPs should be introduced in all financial markets. If a CCP's observance of these recommendations has been assessed, no further assessment of the CCP relative to the RSSS is necessary. The assessment of the overall securities settlement system against the RSSS should simply cross-reference the results of this assessment of the CCP. Elements of a securities settlement system other than a CCP should continue to be assessed against the RSSS.

Assessments of these recommendations

1.7 As in the case of the RSSS, the CPSS and the IOSCO Technical Committee intend to promote implementation of these recommendations for CCPs through periodic assessments of observance. Ideally, an assessment should first be performed by the CCP itself. In any event, as part of their responsibilities for regulation and oversight of CCPs, the relevant national authorities are expected to assess observance of the recommendations by CCPs in their jurisdiction in connection with such authorities' oversight programme. (Where multiple CCPs operate in a single jurisdiction, national authorities may choose to limit their assessments to those CCPs that they regard as most significant from a financial stability perspective.) In addition, observance of these recommendations may be assessed by the international financial institutions (IFIs, ie the International Monetary Fund and the World Bank) as part of their Financial Sector Assessment Program (FSAP) or other technical assistance activities.

1.8 In previous standard-setting efforts the CPSS and the IOSCO Technical Committee have found that development of a clear and comprehensive assessment methodology is critical if assessments are to be objective and consistent. As noted above, the Task Force was asked to develop the assessment methodology in parallel with the CCP recommendations themselves. The methodology that has been developed takes the same approach as the November 2002 *Assessment Methodology for "Recommendations for Securities Settlement Systems"*. This methodology has been used extensively and generally has been considered a highly effective approach. For each recommendation, key issues that need to be evaluated to determine the extent of observance of each recommendation and the key questions corresponding to those key issues are identified. Guidance is then provided on how to translate the answers to the key questions into the assignment of an assessment category.

1.9 Assessors should bear in mind that this guidance on the assignment of assessment categories is not intended to be applied in a mechanical fashion. In some instances, a CCP may not strictly meet the assessment criteria for observance of a recommendation but may successfully address the safety or efficiency objectives that underlie the recommendation, the key issues and key questions. A more favourable assessment would be appropriate if those objectives have been met. Nonetheless, the guidance establishes a rebuttable presumption as to the appropriate assessment category. If an assessor chooses to assign a more favourable assessment than is indicated by the guidance, the assessor should document the rationale for deviating from the guidance.

1.10 In undertaking an assessment of a CCP, the assessor should first obtain a good overview of the market which it serves, including the characteristics of products cleared, the settlement cycle, product volumes and types of participants. The assessor should also seek to obtain an overall understanding of a CCP's risk management approach, including how the various risk management measures employed are intended to work in combination.

1.11 Where recommendations are not observed, actions should be taken to promote observance. In most cases, those actions can and should be taken by a CCP. However, in some cases a CCP itself may be unable to ensure observance. For example, weaknesses in the legal framework can often be addressed only through legislation. Similarly, addressing weaknesses in money settlement arrangements may require changes to central bank payment systems or commercial bank practices. In such circumstances, regulators and overseers would be expected to work with CCPs to foster the changes necessary for observance. Finally, weaknesses in regulation and oversight can only be addressed by regulators and overseers or through legislation.

1.12 No simple weighting of the assessment categories assigned to individual recommendations can be translated into a "grade" of a CCP's safety or efficiency. If national authorities' assessment of a CCP concludes that one or more recommendations are not observed and that the lack of observance poses significant financial stability concerns, they should work with that CCP to develop a formal action plan to achieve observance. Where multiple recommendations are not observed, this may require national authorities and a CCP to establish priorities, based on an analysis of the implications of a lack of observance of the various recommendations for risk to a CCP and to the financial system. In such an analysis, the results of an assessment can only provide a starting point.

Organisation of the report

1.13 Exhibit 1 lists the recommendations. The intended scope of application of the recommendations is set out in Section 2. Section 3 discusses the risks faced by CCPs and provides

an overview of common elements of the approaches CCPs typically take to manage risks and how risk management tools are interrelated. The heart of the report is Section 4, which discusses the recommendations and presents the methodology for assessing them. Section 5 identifies issues relevant to an evaluation of guarantee arrangements that exist in certain markets that are not served by a CCP. Annex 1 contains a template for a self-assessment report by a CCP or a national authority, while a template for public disclosure based upon the answers to the key questions of the recommendations is presented in Annex 2. A glossary is provided in Annex 3. Annex 4 lists the members of the Task Force.

Exhibit 1:
CPSS-IOSCO Technical Committee
Recommendations for Central Counterparties (CCPs)

1. Legal risk

A CCP should have a well founded, transparent and enforceable legal framework for each aspect of its activities in all relevant jurisdictions.

2. Participation requirements

A CCP should require participants to have sufficient financial resources and robust operational capacity to meet obligations arising from participation in the CCP. A CCP should have procedures in place to monitor that participation requirements are met on an ongoing basis. A CCP's participation requirements should be objective, publicly disclosed, and permit fair and open access.

3. Measurement and management of credit exposures

A CCP should measure its credit exposures to its participants at least once a day. Through margin requirements, other risk control mechanisms or a combination of both, a CCP should limit its exposures to potential losses from defaults by its participants in normal market conditions so that the operations of the CCP would not be disrupted and non-defaulting participants would not be exposed to losses that they cannot anticipate or control.

4. Margin requirements

If a CCP relies on margin requirements to limit its credit exposures to participants, those requirements should be sufficient to cover potential exposures in normal market conditions. The models and parameters used in setting margin requirements should be risk-based and reviewed regularly.

5. Financial resources

A CCP should maintain sufficient financial resources to withstand, at a minimum, a default by the participant to which it has the largest exposure in extreme but plausible market conditions.

6. Default procedures

A CCP's default procedures should be clearly stated, and they should ensure that the CCP can take timely action to contain losses and liquidity pressures and to continue meeting its obligations. Key aspects of the default procedures should be publicly available.

7. Custody and investment risks

A CCP should hold assets in a manner whereby risk of loss or of delay in its access to them is minimised. Assets invested by a CCP should be held in instruments with minimal credit, market and liquidity risks.

8. Operational risk

A CCP should identify sources of operational risk and minimise them through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Business continuity plans should allow for timely recovery of operations and fulfilment of a CCP's obligations.

9. Money settlements

A CCP should employ money settlement arrangements that eliminate or strictly limit its settlement bank risks, that is, its credit and liquidity risks from the use of banks to effect money settlements with its participants. Funds transfers to a CCP should be final when effected.

10. Physical deliveries

A CCP should clearly state its obligations with respect to physical deliveries. The risks from these obligations should be identified and managed.

11. Risks in links between CCPs

CCPs that establish links either cross-border or domestically to clear trades should evaluate the potential sources of risks that can arise, and ensure that the risks are managed prudently on an ongoing basis. There should be a framework for cooperation and coordination between the relevant regulators and overseers.

12. Efficiency

While maintaining safe and secure operations, CCPs should be cost-effective in meeting the requirements of participants.

13. Governance

Governance arrangements for a CCP should be clear and transparent to fulfil public interest requirements and to support the objectives of owners and participants. In particular, they should promote the effectiveness of a CCP's risk management procedures.

14. Transparency

A CCP should provide market participants with sufficient information for them to identify and evaluate accurately the risks and costs associated with using its services.

15. Regulation and oversight

A CCP should be subject to transparent and effective regulation and oversight. In both a domestic and an international context, central banks and securities regulators should cooperate with each other and with other relevant authorities.

2. Scope of application of the recommendations

2.1 These recommendations and the related assessment methodology have been designed to apply to a CCP, that is, an entity that interposes itself between counterparties to contracts in one or more financial markets, becoming the seller to the buyer and the buyer to the seller. In the case of derivatives exchanges, use of a CCP typically is mandatory, and it is often mandatory in the case of securities exchanges to which a CCP provides services. Exchange rules often require trades to be executed at the best bid or offer, regardless of the creditworthiness of the party making that bid or offer. Indeed, trading is often anonymous. Market participants in such exchanges cannot effectively manage their counterparty credit and liquidity risks with other participants. The mandatory use of a CCP makes such bilateral risk management unnecessary because the CCP is counterparty to every trade. In OTC markets in which CCP services have been introduced, use of those services typically is optional. Counterparties may agree to submit their trades to a CCP, thereby substituting the CCP as counterparty, or they may not agree to do so, in which case they must manage their counterparty risks with each other. Whether it serves an exchange or OTC markets, a CCP typically concentrates risks and risk management responsibilities. Even where use of a CCP is optional, its services are often used intensively by the largest market participants.

2.2 The Task Force has considered whether the recommendations and the assessment methodology should be applied to other institutional arrangements that perform similar yet distinct functions to those of a CCP: guarantee funds and clearing participants (also known as general clearing members).

Guarantee funds

2.3 In many markets for which there is no CCP, some type of guarantee fund has been introduced that provides market participants with a degree of protection against losses from counterparty defaults.¹ Often the market operator or the central securities depository (CSD) for the securities traded in the market organises and administers the fund. Such protection typically is viewed as desirable or even necessary because best execution rules or other features of the marketplace make it practically impossible for market participants to manage their counterparty credit risks bilaterally. Unlike a CCP, the organiser of a guarantee fund, known as a guarantor, does not have an exposure to a defaulting participant and typically does not assume a role in managing a default. Details of such guarantee arrangements vary considerably across markets, and the Task Force's information on the arrangements is incomplete. The guarantor usually places an explicit limit on the amount of losses from counterparty defaults that it is prepared to cover. This limit equals the value of the assets held in the guarantee fund. Non-defaulting participants would be entitled to make a claim against the assets of the guarantee fund for losses on their trades with the defaulting participant or participants. However, if the aggregate losses of non-defaulting participants exceeded the value of the fund, they would be compensated only to the extent of their pro rata share of the value of the assets in the fund. The value of the assets held in the fund is usually quite modest. Furthermore, in some cases use of the fund to cover losses is reportedly at the discretion of the organiser of the fund.

2.4 Regulators and overseers of securities settlement systems clearly have an interest in the extent to which a guarantee fund operating in their jurisdiction provides protection to market participants against counterparty credit losses. If potential losses exceed the value of the fund or if the guarantor chooses not to make the funds available, non-defaulting parties would suffer losses. If the uncompensated losses were large enough, the capital of the non-defaulting participants could be impaired or, in the extreme, further defaults could occur. As a result, the operation of the markets that the guarantee fund supports could be disrupted, with severe consequences for investors and issuers of the securities traded in those markets. The problem could be compounded if insufficient information is provided to market participants as to the coverage of the fund and the obligations of the guarantor and participants.

¹ The term "guarantee fund" is also used in some jurisdictions to describe funds that indemnify investors when default or bankruptcy by their bank, investment firm or custodian leads to loss of their cash or securities deposited with that entity. This type of guarantee fund is not being discussed here, and it contrasts with the "guarantee fund" of this section, which offers a form of credit enhancement to market professionals between execution and final settlement of their trades.

2.5 For these reasons, regulators and overseers should evaluate the robustness of guarantee funds, particularly those that support trading on critical markets such as national stock exchanges. Indeed, where a guarantee fund exists, the cost-benefit analysis of a CCP required under Recommendation 4 of the RSSS should involve an evaluation of the fund's robustness. If such an evaluation indicates that there is a significant risk that defaults could result in substantial losses to non-defaulting participants, steps should be taken to strengthen the guarantee fund or to introduce a CCP that meets the recommendations for CCPs.

2.6 However, the use of the CCP assessment methodology for the evaluation of guarantee funds is problematic. Because the obligations of a guarantor differ from those undertaken by a CCP, several of the recommendations regarding CCPs are not relevant to guarantee funds. Moreover, even when the recommendations are relevant, often only a subset of the key issues is applicable. Nonetheless, the Task Force is of the view that there are benefits to conducting an evaluation of such guarantee arrangements on the basis of the CCP recommendations where these recommendations are applicable - namely Recommendations 1, 2, 3, 5, 6, 7, 14 and 15. Section 5 provides a checklist of issues that should be raised in an evaluation of a guarantee fund. Most of these are drawn from (or parallel) the CCP assessment methodology. Given the heterogeneity of such arrangements and the lack of detailed information on their design and operation, no attempt has been made to develop a formal assessment methodology.

Clearing participants

2.7 In many markets served by a CCP, only a subset of market participants are also participants (counterparties) of the CCP. Other market participants (usually but not exclusively smaller participants) access the CCP's services through an intermediary (a "clearing" participant of the CCP) and such non-clearing market participants are often exposed to counterparty credit risk vis-à-vis their clearing participant and vice versa. Where many market participants rely on the same clearing participant, counterparty risk and responsibility for risk management may be concentrated to a significant degree in that clearing participant. Thus, a risk management failure by such a clearing participant could have effects similar to a risk management failure by a CCP. In some jurisdictions, such clearing participants are subject to regulatory capital requirements and other regulations that explicitly address the risks arising from clearing (as well as risks from other non-clearing activities that are not addressed by these recommendations but may affect the clearing participants' ability to meet their obligations to their clients). National authorities may wish to consider whether the overall regulatory framework in their jurisdiction and the risk management policies and procedures of the clearing participants effectively address the issues and concerns underlying certain of these recommendations, notably those addressing measurement and management of credit exposures, investment and custody risk, operational risk and physical deliveries.

3. Overview of a CCP's risks and risk management

Risks

3.1 The exact risks that a CCP must manage depend on the specific terms of its contracts with its participants. Still, many CCPs face a common set of risks that must be controlled effectively. There is the risk that participants will not settle obligations either when due or at any time thereafter (counterparty credit risk) or that participants will settle obligations late (liquidity risk). If a commercial bank is used for money settlements between a CCP and its participants, failure of the bank could create credit and liquidity risks for the CCP (settlement bank risk). Other risks potentially arise from the taking of collateral (custody risk), the investment of clearing house funds or cash posted to meet margin requirements (investment risk), and deficiencies in systems and controls (operational risk). A CCP also faces the risk that the legal system will not support its rules and procedures, particularly in the event of a participant's default (legal risk). If a CCP's activities extend beyond its role as central counterparty, those activities may amplify some of these risks or complicate their management.

Counterparty credit risk

3.2 CCPs face the risk of loss from default by a participant, typically as a consequence of its insolvency. This counterparty credit risk may have two dimensions: pre-settlement or replacement cost risk, which is the loss from replacing open contracts with the defaulting participant, and settlement or principal risk, which is the risk of loss on deliveries or payments from the defaulting participant.

3.3 If a participant were to default, a CCP typically would terminate the defaulter's contracts. But a CCP still has an obligation to other participants, and it thus would need to take steps to avoid assuming market risk. A CCP would enter the market and purchase or sell contracts identical to those held by the defaulting participant at current prices. Replacement cost risk arises because the contracts may be sold at prices lower than the original traded prices or purchased at prices higher than the original traded prices.² The magnitude of this replacement cost risk depends on the volatility of the contract prices, the amount of time that has elapsed between trade dates and default, and the size of the positions being replaced.

3.4 In addition to replacement cost risk, CCPs also face settlement risk. CCPs can incur large credit exposures on settlement days when the full principal value of transactions may be at risk. This occurs when contracts are settled through delivery, but delivery versus payment (DVP) is not achieved. If an instrument is delivered prior to receipt of payment, the deliverer risks losing its full value. If payment is made prior to delivery, the payer risks losing the full value of the payment.

Liquidity risk

3.5 Depending upon the terms of its contracts with its participants, a CCP may have an obligation to make a wide variety of payments, including pass-through of profits on outstanding contracts, pass-through of dividend or interest payments, return of surpluses of margin or payments for deliveries. A CCP must continue operating and fulfil its payment obligations to non-defaulting participants on schedule, even if it faces one or more participant defaults or operational difficulties. As a result, a CCP is exposed to liquidity risk.

3.6 A CCP has a range of resources to draw upon in fulfilling its payment obligations. These include assets of the defaulting participant as well as a CCP's own capital and retained earnings or possibly assets of non-defaulting participants. But often few of these resources are cash assets. Non-cash assets must be liquidated or pledged in order for a CCP to meet its obligations, and this process may be difficult or costly to complete in the time required. Furthermore, for CCPs that effect settlements in multiple currencies or accept margin denominated in multiple currencies, foreign exchange transactions might also be necessary to convert the proceeds of borrowings or asset sales into the required currency.

² A CCP may have periodically marked the trades to market and collected cash or collateral to cover exposures that had arisen after the date of the original trade. In this case, the size of replacement cost risk is a function of price change since the last collection.

Settlement bank risk

3.7 In addition to the risk associated with a counterparty's default, a CCP faces the risk that the bank that provides cash accounts for money settlements with its participants may fail. Such an event would create credit and liquidity pressures for a CCP, with the size of these pressures dependent upon the amounts flowing through the failed bank, the timing of the bank's failure, and the terms of the settlement agreement between a CCP and a settlement bank. Multiple participants may use an individual settlement bank, and the total exposures of a CCP to a settlement bank could far exceed the largest exposure of any single participant. The effect of such a failure thus may be particularly severe.

Custody risk

3.8 A typical device for a CCP's management of its counterparty credit risk is the requirement that participants post margin to secure the exposures they present. This process generates custody risk. If a CCP invests its capital or retained earnings in securities that are held at a custodian, similar custody risk arises. The holder of the margin for a CCP may act negligently, commit fraud or perhaps become insolvent, resulting in its loss. Alternatively, a CCP's ability to use the margin may be temporarily impaired because of inadequacies in the holder's operations.

Investment risk

3.9 A CCP has resources such as equity and reserves that are typically invested in order to generate revenues to partially offset the costs of operations. These funds would usually be invested in very short-term bank deposits or securities that have minimal market risk. But a CCP faces credit and liquidity risks relative to the banks or issuers of these obligations. If a CCP also has a programme to invest cash deposited to meet margin requirements, similar investment risk could arise.

Operational risk

3.10 Operational risk is the risk of unexpected losses as a result of deficiencies in systems and controls, human error, management failure or disruptions from external events such as natural disasters, terrorism or health crises. Of particular concern is the breakdown of systems that would impair a CCP's ability to monitor and manage its risks or complete its settlements.

Legal risk

3.11 Legal risk is the risk that a party suffers a loss because laws or regulations do not support the rules and contracts of a CCP or the property rights and other interests associated with a CCP. CCPs face a variety of such risks that have the potential to substantially increase losses from default. Perhaps most significant is the risk that bankruptcy administrators might challenge a CCP's right to close out or transfer positions and liquidate a defaulting participant's assets. In a cross-border context, particularly that of links between CCPs, evaluation of legal risk becomes more complicated because the laws of more than one jurisdiction apply or can potentially apply to a contract. A CCP may face losses resulting from the application of a different law than it had expected. Legal risk thus may amplify the risks a CCP typically manages.

Approaches to risk management

Counterparty credit and liquidity risks

3.12 CCPs have a range of tools that can be used to manage the risks to which they are exposed, and the tools that an individual CCP uses will depend upon the nature of its obligations. Nonetheless, there is a common set of procedures that are implemented by many CCPs to manage counterparty credit and liquidity risks. Broadly, these procedures enable CCPs to manage their risks by limiting the likelihood of defaults, by limiting the potential losses and liquidity pressures if a default should occur, and by ensuring that there are adequate resources to cover losses and meet payment obligations on schedule. In designing their risk management procedures, CCPs generally seek to create incentives for participants to manage their risks prudently in the first instance.

3.13 *Participation requirements.* The most basic means of controlling counterparty credit and liquidity risks is to deal only with creditworthy counterparties. CCPs typically seek to reduce the likelihood of a participant's default by establishing rigorous financial standards for participation. Most commonly, participants are required to meet minimum capital requirements both for admission and for continuing participation. These capital requirements are often related to the riskiness or scope of a participant's activities. Some CCPs limit participation to supervised firms; others establish a minimum acceptable credit rating. CCPs generally do not impose specific liquidity requirements for participation, but some CCPs review participants' access to funding, especially their lines of credit from banks.

3.14 Because values of participants' positions can change quickly, CCPs typically have reporting and monitoring programmes. These programmes supplement a CCP's knowledge about participants from regulatory reporting systems when CCPs have access to this information, and they provide an essential source of information when participants are regulated elsewhere but regulatory information is not available or when participants are not regulated. CCPs generally monitor participants' risk and require participants to provide notice of any marked deterioration in financial condition. In that event, a CCP may initiate heightened monitoring of the participant's activities and possibly impose restrictions on its dealings.

3.15 In addition to financial requirements, some CCPs establish standards of operational reliability that address a participant's ability to submit deal-related information in a timely fashion and to continue operations even if a participant's primary operating system is disrupted.

3.16 *Position or trading limits.* Some CCPs use exposure, position or trading limits to control potential losses should a default occur.³ These limits enable a CCP to exert some control over the build-up of participants' positions, which, together with price changes, determine changes in a CCP's exposures to its participants. The effectiveness of such limits as a risk management tool depends on the timeliness of data on actual positions, which may be virtually instantaneous for some products traded electronically. In any event, such limits provide no control over changes in exposure as a result of price changes.

3.17 *Margin requirements.* Participation requirements cannot reasonably be expected to eliminate the possibility of default, and thus many CCPs require participants to post collateral to cover exposures, with the aim of limiting losses and liquidity pressures in the event that a participant defaults. A CCP typically imposes requirements that participants provide collateral (or guarantees) to cover potential future losses on their open positions. These requirements are often set to cover some high percentage of potential exposures. CCPs for derivatives transactions generally refer to these requirements as margin requirements.⁴ Similarly, some cash market CCPs require each participant to provide collateral to cover this exposure; they may call these requirements margin, or they may hold this collateral in a pool known as a clearing fund.⁵ The common risk management tool is a requirement to post collateral in order to protect a CCP against some high percentage of potential future losses on its contracts with its participants. In this report, we refer to such requirements as margin requirements.

3.18 The effectiveness of margin requirements depends on a CCP's ability to measure and manage the build-up of exposures. CCPs regularly mark contracts to market and measure the exposures that have arisen as a result of price changes since the last valuation. They generally require participants to cover these current exposures in one of two ways. Some CCPs require participants to pay cash equal to the amount of losses to the CCP; these cash payments are passed to participants whose positions have gained in value. Other CCPs require participants to post collateral to cover mark-to-market losses. (In this latter methodology, participants whose positions have gained in value do not receive explicit payments; rather their holdings are now over-collateralised, and the excess collateral can be withdrawn.) These types of payments are often referred to as variation margin

³ Exposure limits are typically imposed by CCPs, while trading or position limits are typically set by trading systems or exchanges. By limiting the amount or value of transactions that a participant can undertake during any trading day, trading limits help to control a CCP's exposure to counterparty credit risk.

⁴ Some CCPs use the term "initial" margin and others the term "original" margin for this collateral requirement.

⁵ "Clearing fund" may also be used to refer to a CCP's resources available to cover losses generally (ie resources posted by one participant that may be used to cover losses caused by the default of another participant). See the discussion of "financial resources" in paragraphs 3.20-3.24 below. A margin deposit typically is available only to cover losses of the participant posting the margin.

payments. Regardless of the method used by a CCP, the effect either of the cash payment or of the collateral posting is to eliminate or cover the current exposure on the position.

3.19 The key determinants of the protection against credit losses provided by any type of margin system are: (1) the procedures used to determine the level of margin required, including the percentage of potential losses a CCP intends to cover and the methodology it uses to estimate potential losses; (2) the frequency of updating position information; (3) the frequency of marking positions to market and collecting margin payments; and (4) the price stability and liquidity of the assets accepted as margin.

3.20 *Financial resources.* Participation requirements, position limits and the margin system represent a package of techniques available to a CCP to mitigate credit and liquidity risks. While they provide substantial protection to a CCP, losses in the event of a participant's default might exceed the resources of that participant on which a CCP has a claim, for several reasons. Margin requirements cover a high percentage of likely price movements, but they are not set at a level that is intended to cover all price movements (particularly movements in the tails of distributions of probable price changes). More time might elapse before a CCP can liquidate a defaulting participant's positions (for instance because of illiquid markets) than was assumed in the design of the risk management tools. Furthermore, a defaulting participant may have increased its positions since the last settlement.

3.21 CCPs thus maintain resources to provide protection against exposures not covered by a defaulting participant's assets and to provide liquidity while realising the proceeds of those assets. These resources, together with the risk management tools, determine the overall level of protection provided by the system and how risks and costs are shared among the stakeholders of a CCP. Some CCPs hold a blended pool of resources, often called a clearing fund, which is intended to cover both a large proportion of likely exposures and exposures resulting from more unusual market conditions.

3.22 Many CCPs use stress tests to assess the adequacy and liquidity of their financial resources. In these tests, a CCP assumes price moves substantially larger than those the margin requirements are designed to cover. It examines the magnitude of exposures not covered by margining that result from such price moves, and assesses whether a CCP's resources would be large enough to cover exposures from one or more defaults.

3.23 Financial resources can take the form either of assets held directly by a CCP or of contingent claims. Resources commonly held directly include a CCP's capital, reserves, margin and clearing funds. Some CCPs have contingent claims on participants' resources. For example, a CCP may have the authority to assess non-defaulting participants to cover losses. Other contingent claims include a guarantee provided by a parent organisation (either of the CCP itself or of participants) or a default insurance contract. The balance between resources held directly versus those that represent contingent claims varies greatly from one CCP to another.

3.24 The liquidity of financial resources and the manner in which they are held is also of issue because CCPs generally commit that their obligations will be met without delay. But a CCP may not be able to mobilise a portion of its resources within a trading day. CCPs thus obtain committed credit lines that allow borrowing against assets as part of planning for liquidity needs.

3.25 *Default procedures.* In the event of a default, a CCP must take steps to contain and ultimately to eliminate its exposure to its defaulting participant. The longer the positions carried by a defaulting participant remain open, the larger are the potential credit exposures on those positions. A CCP's primary safeguard in this event is the ability to transfer, close out or hedge positions of a defaulting participant quickly. In this regard, a CCP might be constrained by the size of a defaulting participant's positions and the liquidity of the markets in which they were held. If a participant is also carrying positions for customers, those positions typically are transferred to a non-defaulting participant, or in some instances, the customer positions are also closed out.

3.26 The rules of CCPs specify the order in which resources will be used in the event of a default. To create proper incentives for participants to manage their own exposures, the first resources tapped are those of a defaulting participant - the margin it has posted with a CCP and any other assets of that participant that a CCP might have a claim on. If a defaulter's resources are insufficient to cover a CCP's losses, a CCP will turn to its own resources or those of non-defaulting participants. How these latter resources are tapped varies widely, with some CCPs first seeking resources from participants that dealt with a defaulter and others mutualising losses. (The rules of some CCPs also specify different resource pools for defaults occurring in different products.)

3.27 No single tool enables a CCP to manage its counterparty credit and liquidity risks. Furthermore, such risks differ by product, market and participant. CCPs thus rely on different combinations of these tools to manage risks, selecting the combination appropriate for their individual circumstances.

Settlement bank risk

3.28 Some CCPs eliminate the risk of settlement bank failure by using the central bank of issue (the central bank that issues the currency in which the payments are being made) as the sole settlement bank. If the central bank is not used, a CCP typically manages the credit and liquidity risks arising from the failure of a settlement bank through choice of the settlement bank or banks and contractual arrangements that minimise the amounts and durations of its exposures to those banks.

Custody risk

3.29 By carefully selecting custodians and monitoring the quality of accounting and safekeeping services provided by those custodians, CCPs seek to limit custody risk. A key concern is that the custodian's procedures protect margin and other assets a CCP holds against the claims of the custodian's creditors. A CCP typically requires that custodians demonstrate strong internal controls and an ability to move margin and assets held in custody promptly in accordance with legitimate instructions from it.

Investment risk

3.30 CCPs face credit, market and liquidity risks from investing their own financial resources and from investing cash margin deposits of participants. To limit these risks, CCPs usually establish standards for the creditworthiness of obligors and limit investment to relatively liquid instruments. Investments may also be secured. Limits on concentrations of investments by obligor may be utilised.

Operational risk

3.31 CCPs face a variety of operational risks related to the functioning of both personnel and systems. Typical safeguards include programmes to ensure adequate expertise, training and supervision of personnel as well as establishing and regularly reviewing internal control procedures. Operational safeguards for CCPs also address the availability, connectivity and capacity of a CCP's computer systems, communications systems, power sources and data feeds. Fundamental is a CCP's business continuity plan that addresses events posing a significant risk of disrupting operations and enables a CCP to continue to meet its obligations on time.

Legal risk

3.32 CCPs manage legal risk through a well founded legal framework that supports each aspect of a CCP's operations and through careful review of relevant law and design of clearing participant contracts and rules, both at creation and on an ongoing basis. Depending upon the legal structure of the jurisdiction where a CCP is established, legislation specific to a CCP may be the most effective means of ensuring it has a well founded legal basis. Some jurisdictions, for example, have special legislation addressing netting or a CCP's ability to take actions in the event of a participant's default. Other tools for mitigating legal risk are careful drafting of a CCP's rule book and contracts to ensure that the obligations of a CCP, its counterparties and agents are clear and that laws of relevant jurisdictions support the application of its rules.

3.33 As cross-border participation and clearing of cross-border products by CCPs have grown, along with links between CCPs, the need for legal analysis in multiple jurisdictions has also grown. In some instances, CCPs can choose the law intended to apply to parts of their operations. In other instances, a conflict of laws may exist. CCPs manage such legal risk in the first instance through adaptations to their rules and contracts. For example, if a CCP is unsure that its rules may be upheld in another jurisdiction, it may require participants from that jurisdiction to post more margin or to hold that margin only in the CCP's own jurisdiction.

4. Recommendations

Recommendation 1: Legal risk

A CCP should have a well founded, transparent and enforceable legal framework for each aspect of its activities in all relevant jurisdictions.

4.1.1 A well founded legal framework should support each aspect of a CCP's risk management and operations. The legal system (including bankruptcy laws) should clearly support: novation or open offer, netting, default procedures, collateral and clearing fund arrangements, enforceability of a CCP's rules with regard to its participants, insolvency of the CCP, conflict of laws determinations, and a CCP's access to information about participants and, directly or indirectly, about underlying customers. Further, the laws and regulations governing a CCP, a CCP's rules, procedures and contractual arrangements, and a CCP's timing of assuming its obligations should be clearly stated, internally coherent and readily accessible to participants and the public. If the legal framework is underdeveloped, opaque or inconsistent, the resulting legal risk will undermine a CCP's ability to operate effectively. Financial market participants will face the dilemma of either: (1) using a CCP with an incomplete ability to assess their risk of participation; or (2) declining to use a CCP. Under either circumstance, the risk reduction benefits of a CCP may not be realised and, depending on the significance of weaknesses in the legal framework, the activity of a CCP could be a potential source of systemic risk.

4.1.2 In most jurisdictions, the legal concept that enables a CCP to become the counterparty is either novation or open offer. Through novation, the original contract between the buyer and seller is extinguished and replaced by two new contracts, one between the CCP and the buyer and the other between the CCP and the seller. In an open offer system, a CCP is automatically and immediately interposed in a transaction at the moment the buyer and seller agree on the terms. If all pre-agreed conditions are met, there is never a contractual relationship between the buyer and seller in an open offer system. Both novation and open offer give market participants legal certainty that a CCP is obligated to effect settlement if the legal framework is supportive of the method used.

4.1.3 The legal framework should support the essential steps that a CCP takes to handle a defaulting or insolvent participant, including any transfers and closing-out of a direct or indirect participant's positions. A CCP must act quickly in the event of a participant's default, and ambiguity over the enforceability of these procedures could delay, and possibly prevent altogether, a CCP from taking actions that fulfil its obligations to non-defaulting participants or minimise its potential losses. Insolvency law should support isolating risk and retaining and applying collateral (including margin) and cash payments previously paid into a CCP, notwithstanding a default or the commencement of an administration or bankruptcy proceeding by or against a participant.

4.1.4 The legal framework should enable a CCP to clearly establish its interest in collateral (including margin). Generally, collateral arrangements involve either a pledge or a title transfer. If a CCP accepts a pledge, it should have a high degree of assurance that the pledge has been validly created in the relevant jurisdiction and validly perfected, if necessary. If a CCP relies on a title transfer, it should have a high degree of assurance that the transfer will be enforced as written and not recharacterised as an invalid or unperfected pledge.

4.1.5 A strong legal framework will support the rapid deployment of the collateral held by a CCP when a participant defaults on its obligations or becomes insolvent. This aspect of the legal framework is critical because delay in the use of collateral may prevent a CCP from meeting its obligations as expected. The legal framework will accomplish this goal if the rules, procedures and contracts for operating a CCP and the obligations of its participants are enforceable, and a CCP has the unimpeded ability to liquidate collateral and close out transactions. This means that actions taken by a CCP under such rules and procedures may not later be stayed, avoided or reversed.

4.1.6 The enforceability of a CCP's netting arrangements should also have a sound and transparent legal basis. Netting involves the offsetting of obligations by trading partners or participants. CCPs often bilaterally net their obligations with each participant. Netting reduces the number and value of deliveries and payments needed to settle a set of transactions and significantly reduces the potential losses to a CCP in the event of a participant's default. Some CCPs also net gains and losses from the closeout of positions in different securities or derivatives. Netting arrangements should be enforceable against a CCP's failed participants in bankruptcy, and the legal framework should support the CCP's netting arrangements. Without such legal underpinnings, net obligations may be challenged

in judicial or administrative insolvency proceedings. If these challenges are successful, the CCP or its participants would be obligated for gross amounts - potentially a huge, even devastating, change because the gross obligations could be many multiples of the net obligations.

4.1.7 A CCP's legal framework should also support finality of settlement. A critical issue in a CCP's money settlement arrangements is the timing of the finality of funds transfers between the CCP's accounts and the accounts of its participants at the banks used to effect such settlements. The funds transfers should be final (irrevocable and unconditional) when effected (when accounts are debited and credited). The laws of the relevant jurisdictions should support the provisions of the CCP's legal agreements with its settlement banks relating to finality. Similarly, there should be a clear and effective legal basis for the finality of the transfers of financial instruments.

4.1.8 Where a CCP crosses borders through linkages, remote participants, or the taking of collateral, the rules governing the CCP's activities should clearly indicate the law that is intended to apply to each aspect of a CCP's operations. Potential conflicts of laws should be identified and the CCP should address conflict of laws issues when there is a difference in the substantive laws of the jurisdictions that have potential interests in a CCP's activities.⁶ In such circumstances, each jurisdiction's conflict of laws rules should specify the criteria that determine the law applicable to the activity. CCPs should take into account the conflict of laws issues when structuring their rules and choosing the law that governs the CCPs. Both CCPs and participants also should be aware of applicable constraints on their ability to choose the law that will govern a CCP's activities. A jurisdiction ordinarily does not permit CCPs and participants to circumvent the fundamental public policy of that jurisdiction by contract.

4.1.9 A CCP and the appropriate regulatory authorities should organise and license a CCP in a manner that enables it to take advantage of all of the legal protections available in the jurisdiction. Regardless of its organisation or regulatory status, a CCP should have the legal authority to establish requirements for direct access to its services and deny access to entities that fail those requirements. Further, legal, regulatory or confidentiality restrictions should not prevent market participants from providing information about themselves relevant to their participation in a CCP.

Key issues

1. The laws and regulations governing the operation of a CCP and a CCP's rules, procedures and contractual provisions for its participants should be clearly stated, internally coherent, and readily accessible to participants and the public.
2. The legal framework should provide a high degree of assurance for each aspect of a CCP's operations and risk management procedures.
3. The rules, procedures and contracts of a CCP should be enforceable when a CCP participant defaults or becomes insolvent. There should be a high degree of assurance that actions taken under such rules and procedures may not later be stayed, avoided or reversed.
4. A CCP should identify and address any potential conflict of laws issues arising from cross-border arrangements.

Key questions

1. Are the laws and regulations governing the operation of a CCP and the rules, procedures, and contractual provisions for its participants clearly stated, internally coherent, and readily accessible to participants and the public?
2. Does the legal framework demonstrate a high degree of assurance that there is a clear and effective legal basis for:
 - The CCP to act as counterparty, including the legal basis for novation or open offer.

⁶ In this connection, deliberations of the Hague Conference on Private International Law relating to the promulgation of a Convention on the Law Applicable to Proprietary Rights in Indirectly Held Securities are encouraged.

- The timing of assumption of liability as CCP.
 - Netting arrangements.
 - The CCP's interest in collateral (including margin) that a participant pledges or transfers to the CCP.
 - Default procedures.
 - Finality of transfers of funds and financial instruments.
 - Other significant aspects of the CCP's operations, risk management procedures and related rules.
3. Are the rules, procedures and contracts of the CCP enforceable when a CCP participant defaults or becomes insolvent? Is there a high degree of assurance that actions taken under such rules and procedures may not later be stayed, avoided or reversed?
4. Is there a significant level of cross-border participation in the CCP? Has the CCP determined whether there are other jurisdictions relevant for determining the adequacy of the legal framework? Has the legal framework been evaluated for the other relevant jurisdictions? Do laws and rules support the design of any cross-border arrangement and provide adequate protection to both CCPs in the operation of the arrangement? Are there conflicts of laws issues and, if so, have they been addressed? Have cross-border collateral arrangements been evaluated?

Assignment of an assessment category

1. *Observed*
- (a) The laws and regulations governing the operation of the CCP and the CCP's rules, procedures, and contractual provisions for its participants are clearly stated, internally coherent, and readily accessible to participants and the public. (Q1)
 - (b) The legal framework demonstrates a high degree of assurance that there is a clear and effective legal basis for all of the CCP's operations and risk management procedures. (Q2)
 - (c) The rules, procedures and contracts of the CCP are enforceable even in the case of the insolvency of a CCP participant, and there is a high degree of assurance that actions taken under such rules and procedures may not later be stayed, avoided or reversed. (Q3)
 - (d) The CCP has identified the relevant jurisdictions in which it has cross-border arrangements and has taken steps to address conflict of laws issues; or it is not necessary to address conflict of laws issues in assessing risks because cross-border participation is insignificant. (Q4)
2. *Broadly observed*
- (a) 1(a), 1(b) and 1(c) are satisfied with only very minor exceptions that do not undermine the safety and soundness of the CCP. (Q1, 2, 3)
 - (b) 1(d) is not satisfied. (Q4)
3. *Partly observed*
- (a) The legal framework does not demonstrate a high degree of assurance for some aspects of the CCP's operations or risk management procedures that, while important and posing some risks, do not jeopardise the overall safety and soundness of the CCP. (Q2)
 - (b) Or: there are some limited cases where the rules, procedures and contracts of the CCP may not be fully enforceable in the event of a default or insolvency of a CCP participant but the CCP's actions cannot be stayed, avoided or reversed. (Q3)
4. *Non-observed*
- (a) Aspects of the CCP's operations or risk management procedures are not supported by the legal framework and this poses risks to the overall safety and soundness of the CCP. (Q2)

- (b) Or: there is no demonstrated assurance that the rules and contracts are enforceable in the event of the default or insolvency of a CCP participant or the CCP's actions can be stayed, avoided or reversed. (Q3)

Explanatory notes

1. In addition to supporting the core CCP activities discussed in this section, a well developed legal framework should have a well defined system of property, contract, securities, trust, bankruptcy and tax laws. Also, the legal framework should permit relatively speedy access to the court and (if applicable) arbitration systems, should produce final judgments, and should provide a relatively convenient mechanism to enforce judgments.
2. In assessing legal risk, the phrase "high degree of assurance" is used frequently. This is because statutes and rules are often untested in court, and so CCPs and participants often rely on opinions of legal counsel as to the likely outcome of possible challenges to the scope and enforceability of such provisions.

Recommendation 2: Participation requirements

A CCP should require participants to have sufficient financial resources and robust operational capacity to meet obligations arising from participation in the CCP. A CCP should have procedures in place to monitor that participation requirements are met on an ongoing basis. A CCP's participation requirements should be objective, publicly disclosed, and permit fair and open access.

4.2.1 A CCP seeks to control the risks to which it is exposed by dealing only with sound and reliable counterparties. Participation requirements established by a CCP are its primary means to ensure that participants have sufficient financial resources and robust operational capacity to meet obligations arising from participation. Requirements should be clearly stated and publicly disclosed so as to promote certainty and transparency. To avoid discriminating against classes of participants and introducing competitive distortions, participation requirements should be objective and avoid limiting competition through unnecessarily restrictive criteria, thereby permitting fair and open access within the scope of services offered by the CCP.⁷ Participation requirements that limit access on grounds other than risks should be avoided. So, for example, restrictions on access for non-resident participants are unlikely to be acceptable except when material doubts exist over whether system rules are enforceable against residents of other jurisdictions or remote access would expose a CCP to unacceptable risks which cannot reasonably be mitigated. A CCP may include other indicators of risk in its requirements, such as whether an institution is supervised, but these indicators should be related clearly to the risks the CCP is managing.

4.2.2 To reduce the likelihood of a participant's default and to ensure timely performance by the participant, a CCP should establish rigorous financial requirements for participation. Participants are typically required to meet minimum capital standards. Some CCPs impose more stringent capital requirements if exposures of or carried by a participant are large or if the participant is a clearing participant. Capital requirements for participation may also take account of the types of products cleared by a CCP. In addition to capital requirements, some CCPs impose standards such as a minimum credit rating or parental guarantees.

4.2.3 A CCP should establish requirements to ensure that participants have robust operational capacity, including appropriate procedures for managing risks, such that the participants are able to achieve timely performance of obligations owed to the CCP. The requirements should ensure that participants can process the expected volumes and values of transactions within the required time frames, including at peak times and on peak days. They should also have arrangements to effect collateral, payment, and delivery obligations to the CCP. A CCP should also ensure that its requirements are addressed through regular review of operational capacity and risk management policies by participants' senior management and by independent internal audit. Furthermore, a CCP may require its participants who are exposed to greater risks to demonstrate a higher level of

⁷ For example, a CCP offering its services only to wholesale market participants is not required to provide its services to retail market participants.

operational robustness than other participants, because the operational failure of such a participant is likely to have greater market-wide impact than that of participants with less significant exposures.

4.2.4 A CCP also needs to ensure that directors and senior management of participants meet relevant fit and proper standards, as appropriate. If participants are regulated entities, this may already have been evaluated by public authorities.

4.2.5 A CCP should have procedures and allocate sufficient resources for effective monitoring of compliance with participation requirements on an ongoing basis.⁸ A CCP should have the authority to receive timely and accurate information on participants' compliance with its standards, either through access to regulatory reports filed by the participants with regulators (if permitted by law) or directly from the participants. Participants should be required to report any developments that may affect their ability to comply with participation requirements, and a CCP should be able to impose more stringent restrictions on individual participants in situations where it determines that the participant poses heightened risk. Some CCPs also have the authority to conduct on-site visits to participants. A CCP should have in place arrangements for the suspension and orderly exit of participants that no longer meet participation requirements, and those arrangements should be publicly disclosed.

Key issues

1. To ensure timely performance by participants, a CCP should establish requirements for participation to ensure that participants have sufficient financial resources and robust operational capacity.
2. A CCP should have procedures in place to monitor that participation requirements are met on an ongoing basis, either through timely access to regulatory reports filed by participants or directly if such reports are not available or do not contain the required information.
3. Participation requirements should be objective, permitting fair and open access; requirements that limit access on grounds other than risks should be avoided. Participation requirements, including arrangements for orderly exit of participants, should be clearly stated and publicly disclosed.

Key questions

1. Does the CCP establish requirements for participants' financial resources and creditworthiness? If so, how? What factors are considered (for example, size, clearing for indirect participants, products cleared)? Does the CCP assess participants' operational capability? If so, how? What factors are considered (for example, arrangements to meet payment obligations, risk management policies, staffing, internal audit of risk controls and IT systems)?
2. Does the CCP monitor that participation requirements are met on an ongoing basis? If so, how? Through access to regulatory reports or directly? Are reports sufficiently timely to be useful for monitoring purposes? Under what conditions can the CCP suspend and terminate participants' membership? What arrangements does the system have in place to facilitate the suspension and orderly exit of participants that no longer meet the participation requirements?
3. Do participation requirements limit access on grounds other than risks? Are they objective and do they permit fair and open access? Are participation requirements, including arrangements for orderly exit of participants, clearly stated and publicly disclosed?

⁸ The requirement is for a CCP to monitor compliance with its participation requirements and should not be interpreted as mandating a regulatory role for a CCP beyond those requirements the CCP imposes as a condition for participation in the CCP. Where applicable, a CCP may rely on the supervisory activities of the participant's regulators, but this does not absolve the CCP from conducting its own due diligence.

Assignment of an assessment category

1. *Observed*
 - (a) To ensure timely performance by participants, the CCP establishes requirements for participation to ensure that participants have sufficient financial resources and robust operational capacity. (Q1)
 - (b) The CCP has procedures in place to monitor that participation requirements are met on an ongoing basis. (Q2)
 - (c) (i) Participation requirements are objective, permitting fair and open access, and requirements that limit access on grounds other than risks are avoided; and (ii) participation requirements are clearly stated and publicly disclosed. (Q3)
2. *Broadly observed*
 - (a) 1(a) and 1(b) are satisfied. (Q1, 2)
 - (b) 1(c)(i) is satisfied but 1(c)(ii) is not fully satisfied. Some requirements are not available to the public. (Q3)
3. *Partly observed*
 - (a) 1(a) and 1(b) are satisfied (Q1, 2); but 1(c) is not satisfied. (Q3)
 - (b) Or: 1(b) and 1(c) are satisfied (Q2, 3); but 1(a) is not fully satisfied as there are some weaknesses in participation requirements with respect to participants' financial and operational capacity. (Q1)
4. *Non-observed*
 - (a) 1(a) is not satisfied. (Q1)
 - (b) Or: 1(b) is not satisfied. (Q2)

Recommendation 3: Measurement and management of credit exposures

A CCP should measure its credit exposures to its participants at least once a day. Through margin requirements, other risk control mechanisms or a combination of both, a CCP should limit its exposures to potential losses from defaults by its participants in normal market conditions so that the operations of the CCP would not be disrupted and non-defaulting participants would not be exposed to losses that they cannot anticipate or control.

4.3.1 To manage its counterparty credit exposures to its participants effectively, a CCP must be able to measure those exposures. A CCP can ascertain its current credit exposure to each participant by marking each participant's outstanding contracts to current market prices and (to the extent permitted by a CCP's rules and supported by law) netting any gains against any losses. A CCP faces the risk that the participants' exposures can change as a result of changes in prices, in positions, or both. Adverse price movements can rapidly increase exposures to participants.⁹ Furthermore, participants may rapidly build their positions through new trading, although some markets impose trading limits or position limits that reduce this risk.

4.3.2 A CCP thus should recalculate its exposures to its participants frequently, based on timely information on market prices and on the size and concentration of positions, to ensure that its estimates of those exposures are accurate. How frequently a CCP must recalculate its exposures to participants depends on the volatility of prices in the markets it serves and the potential for participants to quickly build large positions in those markets. The latter depends on the liquidity of the markets and on whether the markets set and enforce trading limits or position limits. Nevertheless, a CCP should

⁹ Price limits and trading halts may delay the adjustment of market prices but there is little evidence that they can reduce the ultimate size of adjustments that occur once trading resumes.

measure its exposures at least once a day and should have the operational ability to measure its exposures on an intraday basis, either routinely or at a minimum when specified thresholds are breached (for example, when market price changes exceed prespecified thresholds or when one or more participants build up large positions during the day).

4.3.3 A CCP should be able not only to measure its exposures to its participants but also to take actions as necessary based on the results of those measurements. As discussed in Recommendation 5, a CCP should maintain sufficient financial resources to ensure that it continues to meet its obligations when due, even in the event of a default by the participant with the largest exposure in extreme but plausible market conditions. Without some mechanism to limit its potential exposures, a CCP would not be able to meet that requirement unless it were able to augment its financial resources very rapidly. But augmenting resources might well prove difficult in the circumstances that would generate a need for those additional resources. A CCP also should ensure that defaults by participants in normal market conditions would not result in losses that would disrupt the operations of the CCP or non-defaulting participants. Some CCPs mutualise losses from a default by reliance on the resources of non-defaulting participants. These non-defaulting participants could be exposed to significant risks that they themselves cannot control in the absence of some mechanism for a CCP to limit its uncollateralised credit exposures to its participants.

4.3.4 To facilitate meeting Recommendation 5 and to prevent disruption in the operation of a CCP or its non-defaulting participants, this recommendation requires a CCP to have mechanisms designed to limit its exposures to its participants so that, in closing out any participant's positions in normal market conditions, non-defaulting participants would not be exposed to losses that they cannot anticipate or control. This recommendation does not in any way limit a CCP's ability to use its financial resources, as discussed in Recommendation 5, or to implement its default procedures, as described in Recommendation 6.

4.3.5 The most common mechanism to protect against the potential losses arising from a participant default is a requirement that participants post margin commensurate with the risk of their positions;¹⁰ margin posted by a defaulter would be used prior to other financial resources in covering losses (Recommendation 6). Many CCPs also control the accumulation of exposures by requiring frequent (often daily or intraday) settlement of gains and losses through cash payments. In effect, the margin requirements seek to ensure that in normal market conditions losses from closing out a defaulting participant's positions would be covered by the margin posted by the defaulting participant. In derivatives markets and other markets where contracts have long durations or are inherently leveraged, risk-based margin requirements are an essential tool for a CCP to limit credit exposures effectively (see Recommendation 4). A CCP that employs risk-based margin requirements that observe Recommendation 4 should be considered to observe the second key issue of this recommendation requiring risk control mechanisms to limit a CCP's exposures.

4.3.6 Some CCPs in cash markets that are characterised by a relatively short, fixed-period settlement cycle (ie T+1, T+2 or T+3) employ risk control mechanisms other than margin requirements to accomplish the same ends. Trading limits or position limits may be used by the markets for which a CCP clears to control the build-up of positions.¹¹ A CCP providing counterparty services for short-dated contracts may rely on an analysis of historical price movements, its ability (or that of the market for which it clears) to limit the build-up of positions, and its rules and resources to demonstrate that its operations would not be disrupted and non-defaulting participants would not be exposed to losses they cannot anticipate or control. Non-defaulting participants' resources may be included in this analysis, provided that any allocation of losses to non-defaulting participants is subject to absolute limits or is otherwise controllable by the non-defaulting participants. Whatever the combination of risk-mitigating mechanisms used, a CCP not employing risk-based margining would need to demonstrate that its approach is robust to sudden changes in prices or increases in the size of positions in the markets for which it clears.

¹⁰ As discussed in Section 3 and Recommendation 4, some CCPs use different terminology to describe the risk management tool referred to here as margin requirements.

¹¹ In both derivatives and cash markets, a combination of measures may be used. Position limits are also used in derivatives markets as an additional risk-mitigating measure, while some cash markets may also apply margin to complement position limits or other controls.

Key issues

1. A CCP should measure its exposures to its participants at least once a day and should have the capacity to measure its exposures on an intraday basis, either routinely or at a minimum when specified thresholds are breached. The information on market prices and participants' positions that are used to calculate the exposures should be timely.
2. Through margin requirements, other risk control mechanisms, or a combination of both, a CCP should ensure that it is adequately protected against potential losses from defaults by its participants, so that closing out any participant's positions in normal market conditions would not disrupt the operations of a CCP or expose non-defaulting participants to losses that they cannot anticipate or control. For contracts that have long durations or are inherently leveraged, a CCP should use margin requirements that observe Recommendation 4.

Key questions

1. How frequently does the CCP measure its exposures to its participants? Does the CCP have the capacity to measure exposures intraday? How timely is the information on prices and positions that is used in these calculations?
2. How does the CCP limit its exposures to potential losses from defaults by its participants? If margin requirements are used, does the CCP observe Recommendation 4? If not, how does the CCP ensure that closing out any participant's positions in normal market conditions would not disrupt the operations of the CCP or expose non-defaulting participants to losses that they cannot anticipate or control?

Assignment of an assessment category

1. *Observed*
 - (a) (i) The potential exposures of participants are measured at least once a day and the information on which the calculations are based is timely. (ii) The CCP has the capacity to recalculate the exposures on an intraday basis either routinely or when prespecified thresholds are breached. (Q1)
 - (b) The CCP observes Recommendation 4 **or** the CCP has in place resources and other risk control mechanisms designed to limit its exposures to potential losses from defaults by its participants in normal market conditions so that the operations of the CCP would not be disrupted and non-defaulting participants would not be exposed to losses that they cannot anticipate or control. (Q2)
2. *Broadly observed*
 - (a) 1(a)(i) is satisfied. (Q1)
 - (b) 1(a)(ii) is not satisfied. (Q1) **or** 1(b) is not fully satisfied. The CCP broadly observes Recommendation 4 or there are minor weaknesses in other risk control mechanisms. (Q2)
3. *Partly observed*
 - (a) 1(a)(i) is satisfied. (Q1)
 - (b) 1(b) is not satisfied. The CCP does not observe or broadly observe Recommendation 4 **and** the CCP has not demonstrated that it has in place resources and other risk control mechanisms such that closing out any participant's positions in normal market conditions would not disrupt the operations of the CCP and expose non-defaulting participants to losses that they cannot anticipate or control. (Q2)
4. *Non-observed*
 - (a) 1(a)(i) is not satisfied. (Q1)

Explanatory note

1. Normal market conditions are price movements that produce changes in exposures that are expected to breach margin requirements or other risk control mechanisms only 1% of the time, that is, on average on only one trading day out of 100. For example, in the case of a contract to purchase an asset, normal market conditions are conditions that result in price movements that equal or exceed the first percentile of the distribution of potential changes in the contract's value over the interval during which exposures can accumulate. This recommendation does not prescribe how much historical data must be used in determining that standard. The appropriate amount of data to use will vary from market to market and over time. If, for example, volatility rises, a CCP may want to use a short interval that better captures the new, higher volatility prevailing in its markets.

Recommendation 4: Margin requirements

If a CCP relies on margin requirements to limit its credit exposures to participants, those requirements should be sufficient to cover potential exposures in normal market conditions. The models and parameters used in setting margin requirements should be risk-based and reviewed regularly.

4.4.1 Many CCPs impose margin requirements to limit the build-up of credit exposures and to generate a pool of resources to cover losses in the event that a participant defaults in normal market conditions. For contracts that have long durations or are inherently leveraged, a CCP should use margin requirements. Many CCPs for cash markets that have initiated their services in recent years also employ margin requirements.¹²

4.4.2 In setting margin requirements, a CCP should use models and parameters that capture the risk characteristics of the products cleared (including historical price volatility, market liquidity, and whether the products exhibit non-linear price characteristics) and that take into account the interval between margin collections. The margin models and parameters should be reviewed and backtested regularly (at least quarterly) to assess the reliability of the methodology in achieving the desired coverage. During periods of market turbulence, these reviews should occur more frequently. The margin-setting process should be approved by a CCP's senior management responsible for risk issues.

4.4.3 Margin requirements impose opportunity costs on CCP participants. So, a CCP needs to strike a balance between greater protection for itself and higher opportunity costs for its participants. For this reason, margin requirements are not designed to cover price risk in all market conditions. Nonetheless, a CCP should estimate the interval between the last margin collection before default and the liquidation of positions in a particular product, and hold sufficient margin to cover potential losses over that interval in normal market conditions.

4.4.4 To mitigate intraday risks, a CCP should have the authority and operational capacity to make intraday margin calls, at a minimum when prespecified thresholds are breached (for example, when market price changes exceed predetermined thresholds or when one or more participants build up large positions during the day). Some CCPs provide services for markets in which exposures can change dramatically within the day, either because of participants' trading activity or price volatility. In such cases, a CCP should monitor exposures intraday (Recommendation 3) and limit the build up of potential losses from exposures through both routine and special intraday margin calls.

4.4.5 In calculating margin requirements, a CCP may allow offsets or reductions in required margins between products for which it is counterparty if the price risk of one product is significantly and reliably correlated with the price risk of another. A CCP should base such offsets on an economically meaningful methodology that reflects the degree of price correlations between the products.

4.4.6 Because of the role margin plays in a default, a CCP needs assurance of its value in the event of liquidation, and a CCP needs the capacity to draw upon it promptly. A CCP generally should

¹² Some CCPs call these requirements "clearing fund requirements". See Section 3 for a discussion of this terminology.

limit the assets accepted as margin to those with high liquidity.¹³ Margin assets should be marked to market daily. Haircuts should be applied to the market values of the assets so as to adequately reflect the potential for their value to decline over the interval between their last revaluation and the time by which they can reasonably be assumed to be liquidated; these haircut procedures should be reviewed regularly. If market prices do not fairly represent values, a CCP should have the authority to exercise discretion in valuing margin assets according to its predefined methods. If a CCP accepts assets in foreign currencies, any foreign exchange risk should also be taken into consideration. Because of potential concerns about the ability to liquidate margin assets quickly and without significant price effects, a CCP may limit the concentration of holdings of certain assets (eg securities issued by individual obligors).

Key issues

1. Margin requirements should be sufficient to cover potential losses in the interval between the last margin collection before default and the liquidation of the positions in normal market conditions. Models and parameters used in determining margin requirements are based on the risk characteristics of the products cleared and take into account the interval between margin collections. The ability of the models and parameters to achieve the desired coverage should be validated regularly.
2. A CCP should have the authority and operational capacity to make intraday margin calls to mitigate credit exposures arising from new positions or from price changes.
3. The assets that a CCP accepts to meet margin requirements should be limited to highly liquid instruments (with the exception noted in footnote 13). Haircuts should be applied to asset values that reflect the potential for their value to decline over the interval between their last revaluation and the time by which they can reasonably be assumed to be liquidated.

Key questions

1. What is the intended coverage of margin requirements? What is the time interval over which potential price movements are measured? Is the interval consistent with a reasonable assumption about how quickly a defaulting participant's positions could be closed out? How does the CCP validate the models and parameters used to determine the margin levels consistent with the intended coverage? How frequently does it review and validate the models?
2. Does the CCP have the authority and operational capacity to demand margin intraday to maintain the desired coverage? Under what circumstances?
3. What types of assets does the CCP accept as margin? What types are actually held? How frequently are the assets revalued? Are haircuts applied that adequately reflect the potential for declines in asset values between the last revaluation and liquidation?

Assignment of an assessment category

1. *Observed*
 - (a) The margin requirements set by the CCP cover its potential exposures to its participants' positions in normal market conditions. The CCP bases models and parameters used in determining margin requirements on the risk characteristics of the products cleared and that take into account the interval between margin collections. The CCP regularly validates coverage of the models and parameters used to determine margin requirements. (Q1)
 - (b) The CCP has the authority and operational capacity to make intraday margin calls. (Q2)
 - (c) The CCP limits the assets accepted to meet margin requirements to highly liquid instruments. The CCP applies appropriate haircuts that reflect the potential for their value to decline. (Q3)

¹³ In special circumstances it may be appropriate for a CCP to accept less liquid assets, for example the underlying stock might be accepted as a margin asset for an option on that stock, even though the stock might not be highly liquid.

2. *Broadly observed*
 - (a) 1(a) and 1(b) are satisfied. (Q1, 2)
 - (b) 1(c) is not fully satisfied. There are some weaknesses in the types of assets accepted to meet margin requirements or in the haircut procedures of the CCP. (Q3)
3. *Partly observed*
 - (a) 1(a) is not fully satisfied. There are weaknesses in the review and testing of the models to ensure the coverage targeted is achieved. (Q1) **or** 1(a) is satisfied but 1(c) is not satisfied. (Q3)
 - (b) 1(b) is satisfied. (Q2)
4. *Non-observed*
 - (a) 1(a) is not satisfied. (Q1)
 - (b) Or: 1(b) is not satisfied. (Q2)
5. *Not applicable*
 - (a) The CCP does not provide services for contracts that have long durations or contracts that are inherently leveraged, for which margin requirements are essential. Nor does it rely upon margin requirements to address key issue 2 of Recommendation 3.

Explanatory notes

1. Margin requirements can be collected based on either net positions or gross positions held by a participant's customers. Under a net margin system, margin requirements are charged for net long or net short positions, that is, long and short positions held in the same security or derivatives contract are offset against each other to arrive at the net long or net short positions. In contrast, margin requirements are calculated based on the aggregate of long and short positions under a gross margin system. For the purpose of this recommendation, both systems are acceptable as long as CCPs understand the risks inherent in these systems and have taken appropriate measures to minimise them. For example, a CCP using a net margin system should recognise that net positions can change substantially during a trading day and reflect this in its monitoring procedures. The CCP's frequency of net position calculations and its ability to make intraday margin calls become very important. A gross margin system, because of the relatively larger flows of cash and margin required, may create liquidity pressure. CCPs with such a system thus should be cognisant of participants' and their customers' liquidity arrangements.

2. In assessing this recommendation, focus should be on the major products cleared by a CCP. Margin requirements for new and low-volume products might be set at a lower coverage level if the potential losses resulting from such products are minimal. If the assessor is confident that there are no obvious gaps or problems with the imposition of a lower coverage level and any additional risks to the CCP are minimal, the assessor can consider that the CCP satisfies the criterion in 1(a). In evaluating this exception, the assessor can ask the CCP to provide its own risk assessment.

Recommendation 5: Financial resources

A CCP should maintain sufficient financial resources to withstand, at a minimum, a default by the participant to which it has the largest exposure in extreme but plausible market conditions.

4.5.1 Although risk management tools (notably a CCP's participation requirements) are designed to ensure that defaults are unlikely, a CCP should nonetheless plan for the possibility of a default occurring. In that event, a CCP has an obligation to continue to make payments to non-defaulting participants on time. It should maintain financial resources both to provide it with liquidity to make timely payments in the short term and to enable it to cover the losses that result from defaults.

4.5.2 Assessing the adequacy of resources can be difficult because it rests on assumptions about which participant or participants default and about market conditions at the time of the default. Many CCPs focus on a default by the participant to which the CCP has the largest exposure in the market

scenarios under consideration.¹⁴ This should be viewed as a minimum standard in a CCP's evaluation of its resources. However, market conditions that typically accompany a default put pressures on other participants (particularly related group members or affiliates), and a default itself tends to heighten market volatility, further contributing to stresses. Planning by a CCP should consider the potential for two or more participants to default in a short time frame, resulting in a combined exposure greater than the single largest exposure.

4.5.3 Stress testing is used by CCPs to assess the adequacy of their financial resources.¹⁵ A CCP assumes extreme market conditions (that is, price changes significantly larger than the normally prevailing levels of volatility), and evaluates the potential losses in individual participants' positions. Stress testing provides insights into several aspects of the financial resources the CCP may need. The largest debit from such a test helps a CCP evaluate its potential liquidity needs. Calculations taking into account the resources of the potential defaulter that are available to a CCP (margins, clearing fund contributions or other assets) provide perspective on the potential size of the losses that a CCP might face. Other stress tests may consider the distribution of positions between the participant and its customers in evaluating potential losses.

4.5.4 The relevant stress tests will differ from one CCP to another and, for a given CCP, over time. Typically, a CCP will conduct a range of stress tests. These tests should reflect a CCP's product mix and other risk management choices. Key elements of stress testing are the market conditions and default scenarios assumed and the frequency with which the tests are conducted. A CCP should make judgments about what constitutes "extreme but plausible" market conditions. The conditions evaluated should include the most volatile periods that have been experienced by the markets for which a CCP provides its services. A CCP also should evaluate the losses that would result if levels of volatility observed in related products were also experienced in its products (this is particularly relevant when a CCP begins clearing a new product) and if the usual patterns of correlations in prices among its products changed. CCPs conduct multiple types of stress tests. Tests to check the adequacy of resources in the event of a default in extreme market conditions should be performed monthly, and more frequently when markets are unusually volatile or less liquid or when the size or concentrations of positions held by its participants increase significantly. In addition, comprehensive stress tests involving a full validation of model parameters and assumptions and reconsideration of appropriate stress scenarios should be conducted at least annually.¹⁶

4.5.5 Based upon the stress testing process, a CCP should reach a judgment about the adequacy of its resources. A CCP should provide its participants and authorities specific information about its assumptions related to the number and size of participants that default and the market conditions at the time of default in coming to this judgment. A CCP should have clear policies for the actions it would take if stress testing indicates that its resources are not likely to be adequate either for meeting liquidity demands or for covering an exposure resulting from default. The actions that a CCP might take will vary, but the ultimate effect must be either to reduce the potential exposure of the CCP or to increase the resources of the CCP. These policies should be made available to a CCP's participants and its authorities.

4.5.6 The financial resources available to a CCP can take a variety of forms. For many CCPs, some assets that they require participants to post can only be used to cover losses arising from that participant's default.¹⁷ Other financial resources are available to cover losses arising from any participant's default. Many CCPs require participants to post assets in a clearing fund that can be used

¹⁴ This recommendation focuses on the largest potential exposure of a CCP, regardless of whether that exposure arises in a participant's account or in the account of a participant's customer. In assessing the adequacy of resources, however, an individual CCP's analysis will need to take into account the source of the default if that affects the financial resources available to cover losses.

¹⁵ Stress testing is also conducted to help a CCP understand the risks it is assuming and potential ways to mitigate those risks.

¹⁶ CCPs conduct different types of stress tests, some of which are conducted weekly or even daily. Such stress tests are often mechanical, evaluating positions at higher confidence intervals for price movements, for example. This standard for the monthly and the comprehensive annual stress tests is considerably more demanding than these routine risk management activities.

¹⁷ Some CCPs also enter into cross-margining agreements that enable a CCP to access a defaulting participant's assets at another CCP in certain circumstances.

in the event of a default by any participant.¹⁸ CCPs generally have their own capital and retained earnings from operations. Resources can include contingent claims on non-defaulting participants, parent organisations, or insurers. For example, a CCP's rules may require non-defaulting participants to provide additional funds to it in the event of default. The parents of some CCPs provide a guarantee, and other CCPs obtain default insurance that covers a certain amount of losses after a deductible has been met.

4.5.7 The availability of these financial resources and their liquidity vary. When margin is held, it should be readily available and liquid (Recommendation 4). A CCP's clearing funds, own capital, or retained earnings are under its immediate control, but they generally are invested and may not be immediately available. Insurance contracts, parental guarantees or rights to call for funds from non-defaulting participants are often available only after specific conditions are met. In assessing the adequacy of its financial resources, a CCP should consider the availability and liquidity of the assets it holds, as well as possible concentration risk.

4.5.8 A CCP should include only those resources that it can reliably draw on in the event of a default in evaluating the adequacy of its resources. For example, possible payouts from insurance contracts should be counted only if there is high degree of certainty that the terms of the contracts would be payable in the event of a default. The precise circumstances under which a CCP can draw upon any resources that require conditions to be met should be carefully evaluated in judging their contribution to the overall adequacy of resources.

4.5.9 Even if there is assurance that a CCP can draw on resources in a default, some types of financial resources are subject to potential losses in value. Haircuts should be applied to these resources to reflect potential volatility in their market values resulting from price, credit and liquidity risk. Only the value subject to the appropriate haircuts should be counted as part of the financial resources of a CCP.

4.5.10 Rules of a CCP should expressly set out the situations in which specific resources can be used. For purposes of assessing observance of this recommendation, financial resources should be counted only if a CCP's rules do not permit them to be used to cover its normal operating losses or to cover losses from other activities in which it is engaged. If a CCP serves multiple markets (either in the same jurisdiction or multiple jurisdictions), the CCP's ability to use resources supplied by participants in one market to cover losses from a default in another market should be clear to all participants. (A CCP's design of its stress tests also should take into account the extent to which resources are pooled across markets.)

4.5.11 Because a function of the financial resources of a CCP is to enable it to face immediate liquidity demands, a CCP should obtain credit lines that allow it to borrow against resources that are not immediately available. These credit lines should be committed and subject only to presentment.¹⁹ The presence of such credit lines is an important consideration in assessing the adequacy of a CCP's resources from a liquidity perspective.

4.5.12 A CCP should have a clear and transparent method for determining participants' contributions to its financial resources that reinforces incentives for participants to manage the risk that they pose for the CCP. Generally such incentives involve a system in which contributions are linked to the riskiness of participants' activity as measured by margin posted, by size of positions or sometimes by stress testing results. A CCP also should establish rules that address replenishing resources following a default. These rules typically set out responsibilities and expected contributions before a participant can cease participation.

Key issues

1. A CCP should assess its observance of this recommendation through stress tests that estimate its potential credit exposures on its current contracts in extreme but plausible market conditions. The market conditions evaluated should include the most volatile periods that have been experienced by the markets for which a CCP provides its services. While the recommendation focuses

¹⁸ See Section 3 for a discussion of the differing terminology with respect to financial resources used by CCPs.

¹⁹ The credit lines should not contain material adverse change clauses.

on a default by the participant to which a CCP has the largest exposure in a specific scenario, the potential for defaults by two or more participants should be evaluated (particularly related group members or affiliates). Stress tests to check the adequacy of resources in the event of a default in extreme market conditions should be performed monthly, or more frequently when markets are unusually volatile, become less liquid, or when the size or concentration of positions held by a CCP's participants increases significantly. In addition, comprehensive stress tests, involving a full validation of models, parameters and assumptions and reconsideration of appropriate stress scenarios, should be conducted at least annually. The stress testing assumptions that a CCP uses in reaching a judgment about the adequacy of its resources should be disclosed to participants and authorities. A CCP should have a clear policy on the actions it would take in the event that tests indicate resources are not likely to be adequate; either its exposure should be reduced or its resources should be enhanced. The policy should be made available to its participants and authorities.

2. Although a CCP's financial resources can take a variety of forms, for purposes of assessing observance of this recommendation, resources should be counted only if there is a high degree of assurance that a CCP can draw on them for the anticipated value and a CCP's rules do not permit them to be used to cover its normal operating losses or losses from other activities in which it is engaged.

3. If any of the resources that are being relied upon are not immediately available to a CCP, it should obtain credit lines that are committed and subject only to presentment in order that it can borrow against those assets to meet its liquidity needs.

Key questions

1. Has the CCP established procedures to stress test its exposures in extreme but plausible market conditions? What scenarios are evaluated? Do the scenarios include the most volatile periods that have been experienced by the markets for which the CCP provides services? Does the CCP have sufficient resources in the event of default by the participant with the largest exposure? Has the potential for multiple simultaneous defaults been evaluated? Are stress tests performed at least monthly, with a comprehensive reconsideration of models, parameters and scenarios occurring at least annually? Does the CCP have a clear policy on actions to be taken in the event that stress testing results indicate resources are not likely to be adequate to meet its obligations resulting from a default? Has it adhered to that policy? Is the policy made available to participants and authorities?

2. What are the types and values of resources that the CCP has available to cover losses from participants' defaults? Is there a high degree of assurance that the CCP will be able to draw on those resources for the anticipated value in the event of a participant's default? Do the CCP's rules prohibit them from being used to cover operating losses or losses from other CCP activities?

3. Are any of the resources that the CCP is relying upon to cover losses from defaults not immediately available to meet the CCP's obligations? If so, has the CCP obtained committed credit lines subject only to presentment that allow it to borrow against those assets? If so, can those lines be drawn upon sufficiently quickly to ensure that the CCP can meet its obligations when due?

Assignment of an assessment category

1. *Observed*

(a) Based upon its stress test procedures, the CCP has sufficient financial resources to withstand, at a minimum, a default by the participant to which it has the largest exposure in extreme but plausible market conditions. There is a high degree of assurance that the CCP can draw on the anticipated value of its financial resources in the event of a default. (Q1, 2)

(b) The CCP uses an appropriate stress test procedure to evaluate the adequacy of its resources. The procedure:

(i) assesses the adequacy of resources in the event of a default in extreme conditions at least monthly, and more frequently when markets are unusually volatile or become less liquid or the size or concentration of positions held by its participants increases significantly; comprehensive tests (including full model and parameter validations and consideration of scenario choices) are performed at least annually;

- (ii) scenarios include the default of the participant with the largest potential obligation as well as defaults by two or more participants (particularly related group members or affiliates); the most volatile periods that have been experienced by the markets for which the CCP provides services as well as appropriate theoretical scenarios;
 - (iii) assumptions are disclosed to participants and authorities; stress testing procedures include a clear and transparent policy on actions to be taken in the event that resources potentially are not adequate. (Q1)
- (c) The CCP has appropriate credit lines that allow it to borrow against assets not immediately available. (Q3)
2. *Broadly observed*
- (a) 1(a) and 1(b) are satisfied. (Q1, 2)
 - (b) But: 1(c) is not fully satisfied. (Q3) There are some limited circumstances in which the financial resources on which the CCP depends would not be immediately available and the liquidity facilities of the CCP are not adequate.
3. *Partly observed*
- (a) 1(b) is not fully satisfied. There are some weaknesses in the CCP's stress testing procedures. (Q1)
4. *Non-observed*
- (a) 1(a) or 1(b) is not satisfied. Financial resources fall short of the amount that the CCP's stress tests show is needed to meet the standard or there are serious weaknesses in the CCP's stress testing procedures. (Q1, 2)

Explanatory notes

1. The effect on market values if the collateral held by a CCP is relatively concentrated should be taken into account. In case a CCP uses an insurance policy, letter of credit or parental guarantee as part of its financial resources, the precise circumstances under which it can draw on them and the speed of payout should be carefully evaluated in judging the overall adequacy of the resources.

2. A CCP should not rely primarily on contingent obligations such as insurance, parental guarantees or letters of credit. A CCP also should carefully consider its reliance on letters of credit, guarantees or securities of a participant or the affiliate of a participant. In case of a default of the participant itself, financial resources that were obligations of the participant could not be used and the availability of those provided by an affiliate could be questionable. The aggregate value of different types of guarantees from the same organisation should be monitored and limited.

Recommendation 6: Default procedures

A CCP's default procedures should be clearly stated, and they should ensure that the CCP can take timely action to contain losses and liquidity pressures and to continue meeting its obligations. Key aspects of the default procedures should be publicly available.

4.6.1 The purpose of default procedures is to protect the continuing functioning of a CCP by limiting the potential for the effects of a default to spread beyond the defaulting participant. Key objectives of default procedures include minimising further losses at the defaulting participant, winding down its positions in an orderly way, and enabling a CCP to continue performing its obligations. To the extent consistent with these key objectives, a CCP should seek to preserve other participants' ability to manage their portfolios.

4.6.2 A priority, of course, should be to avoid defaults. As noted above, a CCP's participation requirements should include financial requirements that reduce the likelihood of defaults. Furthermore, a CCP should identify situations that it determines may pose a threat of default and develop early warning pre-default plans and procedures, such as increasing monitoring or imposing restrictions on a participant. These procedures should provide an incentive to participants for early notification of potential financial, liquidity or systems problems that could lead to a default.

4.6.3 A CCP's default procedures should clearly define an event of default and the method for identifying a default. The procedures should specify whether the default event is automatic or whether a specific decision must be taken to declare the default, and who is authorised to make such decisions. The procedures should set out broadly the measures a CCP can take when a default is declared; the extent to which the actions are automatic or whether a decision is necessary; changes to normal settlement practices; how contracts in the process of delivery will be handled; the expected treatment of the proprietary account, and of the customers' accounts; the probable sequencing of actions; the information that will be needed; the roles, obligations and responsibilities of the various parties (such as clearing participants, authorities, any exchanges and the CCP itself); and the existence of mechanisms other than those of the CCP itself that may be activated to contain the impact of a default.

4.6.4 In the event of default, a CCP should have arrangements or mechanisms to facilitate the transfer, closeout or hedging of a defaulting participant's proprietary positions promptly. The longer these positions remain open, the larger are the potential credit exposures from them. A CCP should have the ability to apply the proceeds of liquidation, as well as all other funds and assets of the defaulting participant, to meet the defaulting participant's obligations to it. Typically a CCP will attempt to liquidate positions quickly, but in some instances a CCP may determine that its exposure would be minimised by hedging positions and managing the liquidation over time. What is critical is that a CCP has the authority to act promptly in the manner it thinks best to contain its exposure and to mitigate overall market effects.

4.6.5 The default procedures or mechanisms other than those of a CCP should provide for the handling of positions and collateral (including margin) of customers of the defaulting participant. The rules should identify the circumstances under which positions may be liquidated or transferred, which positions are eligible for liquidation or transfer, who may exercise this authority, and what are the applicable time frames within which actions would be taken. At a minimum, a liquidation of positions or application of previously posted collateral should not be prevented, stayed or reversed.

4.6.6 A CCP's procedures should permit it to use promptly any financial resources that it maintains for covering losses and liquidity pressures resulting from defaults, including use of liquidity facilities. The rules of a CCP should specify the order in which different types of resources will be used. This information enables participants to assess their potential exposures from using a CCP's services. Typically, a CCP will look first to assets posted by the defaulting participant to provide incentives for participants to manage prudently the risks they pose for a CCP.

4.6.7 Relevant national law should provide certainty that actions taken by a CCP as part of its default procedures are enforceable and that actions taken under such procedures may not later be stayed, avoided, or reversed. To facilitate the transfer or liquidation of positions and assets, national insolvency law should permit the identification and separate treatment of customer and proprietary assets.

4.6.8 A CCP's management should be well prepared and have sufficient discretion to implement default procedures in a flexible manner. The exercise of this discretion needs to be subject to appropriate arrangements to minimise any conflicts of interest issues that may arise. Management should have internal plans that clearly delineate the roles and responsibilities for addressing a default, and provide guidance to its staff on how the default procedures should be implemented, in particular for promptly closing out or hedging a defaulting participant's contracts and for closing out or transferring customers' contracts, for liquidating a defaulting participant's collateral and other assets (such as any contributions to a clearing fund) and for drawing on financial resources other than margin. Management should also ensure that it has the operational capabilities needed to implement its default procedures in a timely manner. The internal plan should also address documentation, the CCP's information needs and coordination when more than one CCP or authority is involved. Timely communication with regulators, exchanges that use the CCP, other affected CCPs and payment and settlement systems are of critical importance. The CCP, to the extent permitted, should clearly convey information which helps those affected manage their own risks. The internal plan should be reviewed at least once a year.

4.6.9 To provide certainty and predictability to all market participants about the measures that may be taken by a CCP and other relevant entities in the event of a default, a CCP should make available key aspects of its default procedures: (i) the circumstances in which action may be taken; (ii) who may take those actions; (iii) the scope of the actions which may be taken, including the treatment of both proprietary and customer positions, funds and assets; (iv) the mechanisms to

address a CCP's obligations to non-defaulting participants; and (v) the mechanisms to address the defaulting participant's obligations to its customers.²⁰ This transparency helps the orderly handling of defaults, enables non-defaulting participants to understand their obligations to a CCP and to their customers, and gives market participants the information they need to make an informed assessment about whether to trade in a given market and how best to structure their customer account agreements. The widespread availability and understanding of default procedures may also help to foster confidence in the market should a major default occur and help to sustain market liquidity by avoiding or minimising withdrawals by other market participants.

Key issues

1. A CCP's default procedures should clearly state what constitutes a default and permit a CCP to promptly close out or effectively manage a defaulting participant's positions and to apply collateral or other resources. There should be clear procedures, or mechanisms other than those of the CCP, for handling customers' positions and margin. Default procedures should also permit a CCP to utilise promptly any financial resources that it maintains for covering losses and liquidity pressures resulting from the defaults.
2. The legal framework applicable to a CCP should provide a high degree of assurance that its default procedures are enforceable, despite the insolvency of a participant. The national insolvency law should permit the identification and separate treatment of customer and proprietary assets.
3. A CCP's management should be well prepared to implement its default procedures in a flexible manner, and management should have internal plans for such an event, including communication with the operator of the market the CCP serves if that operator is a separate entity. The plans should be reviewed at least once a year.
4. Key aspects of the default procedures should be publicly available.

Key questions

1. Do the CCP's default procedures state clearly what constitutes a default? If a default occurs, do the CCP's default procedures provide it with authority to promptly close out or manage the positions of a defaulting participant and to apply the defaulting participant's collateral or other resources? Do the CCP's procedures, or mechanisms other than those of the CCP, permit the transfer or (as an alternative) liquidation of the positions and margin of customers of the defaulting participant? Do the procedures empower the CCP to draw promptly on any financial resources?
2. Does the legal framework provide a high degree of assurance that the decisions to liquidate or transfer a position, to apply margin or to draw down liquidity resources in the event of the insolvency of a participant would not be stayed or reversed? Does national insolvency law permit identification and separate treatment of customer and proprietary assets?
3. Does the CCP's management have internal plans for implementing its default procedures? Does the plan maintain a measure of flexibility for the CCP in deciding how best to implement its default procedures? Does the plan address the need for coordination in cases where more than one CCP, authority or a separate market operator is involved? How frequently is the plan reviewed?
4. Are the key aspects of the default procedures (specified in paragraph 4.6.9) publicly available?

Assignment of an assessment category

1. *Observed*
 - (a) Default procedures state clearly what constitutes a default and explicitly permit the CCP to close out or manage the positions of a defaulting participant. The CCP's procedures, or

²⁰ For more details on the key aspects under each of the headings, see *Report on cooperation between market authorities and default procedures* (IOSCO (1996)).

mechanisms other than those of the CCP, permit the liquidation or transfer of the customers' positions and assets. The procedures allow the CCP to promptly draw on any financial resources, including liquidity facilities. (Q1)

- (b) (i) The legal framework provides a high degree of assurance that decisions to liquidate or transfer a position, to apply collateral or to draw down liquidity resources would not be reversed; and (ii) national insolvency law permits the identification and separate treatment of customer and proprietary assets. (Q2)
- (c) (i) The CCP has an internal plan for implementing its default procedures that clearly delineates roles and responsibilities for addressing a default, including plans to draw on any financial resources. (ii) The plan addresses the CCP's information needs as well as any coordination issues and is reviewed at least once a year. (Q3)
- (d) Key aspects of the default procedures are readily available (i) to the CCP participants and (ii) to the public. (Q4)

2. *Broadly observed*

- (a) 1(a) and 1(b) are satisfied. (Q1, 2)
- (b) 1(c)(i) and 1(d)(i) are satisfied. (Q3, 4)
- (c) But: 1(c)(ii) or 1(d)(ii) is not satisfied. (Q3, 4)

3. *Partly observed*

- (a) 1(a) and 1(b) are satisfied. (Q1, 2)
- (b) 1(c)(i) is not satisfied. (Q3) Or: 1(d)(i) is not satisfied. (Q4)

4. *Non-observed*

- (a) 1(a) is not satisfied. (Q1)
- (b) Or: default actions are reversible or can be interfered with by a legal or administrative proceeding; or liquidation of positions can be stayed or reversed; or open positions can be frozen; or customer and proprietary assets and positions cannot be distinguished. (Q2)

Explanatory notes

1. In order to avoid disrupting the market and to preserve portfolio relationships in the account being liquidated to the extent possible, a special auction may be necessary to obtain a liquidation price or to liquidate positions in some cases. Procedures should be appropriate to the types of market and product cleared.

2. The recommendation for written procedures does not imply rigidity in approaching a default. It is essential that a CCP be permitted some degree of flexibility in addressing a default because it is difficult to predict with certainty the best approach to contain risk. When discretion is provided, the procedures should be transparent as to the general framework for the exercise of this discretion. Transparency should not be interpreted in a way that would compromise a CCP's effectiveness in implementing its default procedures; for example, in liquidating a defaulting participant's positions, a CCP would not necessarily want to disclose its strategy.

3. A delay in settlement caused by a participant's systems or other operational problem might require the CCP to (i) call on a participant to guarantee its customers' positions or request a parent to guarantee proprietary positions, (ii) draw down funds from the CCP's capital, (iii) liquidate clearing fund contributions, or (iv) draw on lines of credit in order to make settlement. Procedures should be structured to provide enough flexibility to take the least disruptive approach (for example, the procedures should not precipitate a default if it appears that steps are available to permit settlement to occur).

4. In some jurisdictions, even without a supportive insolvency regime, it may be possible to transfer funds and accounts pursuant to a CCP's rules and subject to indemnification of the transferee by the transferor against any claim against transferred funds in bankruptcy. In the absence of an

appropriate insolvency regime, this type of interim solution provides some mechanisms for a CCP to be able to manage its risks in a default.

5. A participant's default may be caused by losses in its proprietary account or by a customer default which exceeds the participant's financial resources. Where customers' margin is held on an omnibus basis at a CCP, it may be used to cover losses arising from any customer within the account, but should not be used to cover losses in the proprietary account, unless other customer protections are available.

Recommendation 7: Custody and investment risks

A CCP should hold assets in a manner whereby risk of loss or of delay in its access to them is minimised. Assets invested by a CCP should be held in instruments with minimal credit, market and liquidity risks.

4.7.1 A CCP has the responsibility of safeguarding assets that secure participants' obligations to it. These assets can be cash or securities, and they should be held in such a manner that their timely availability is assured if a CCP needs to draw on them. Further, assets that are invested should be placed in instruments with minimal credit, market and liquidity risks so that a CCP knows the amount of resources at its disposal and can realise that value promptly.

4.7.2 If a participant has posted securities as margin, a CCP needs a custodian, which may be a central securities depository (CSD) or a financial institution, to hold those securities. Entities providing custodial services should employ procedures that protect the securities, as described in Recommendation 12 of RSSS. In this regard, a CCP should ascertain that its custodian's accounting practices, safekeeping procedures, and internal controls protect the securities against the custodian's insolvency, negligence, misuse of assets, fraud, poor administration, or inadequate record keeping. Of particular concern is that assets held in custody be protected against claims of a custodian's creditors. Generally, this is accomplished through a legal framework supporting segregation of customer assets and through supervisory enforcement of effective segregation. Failures in any of these areas could jeopardise a CCP's ability to retrieve the securities promptly. The custodian should also have a strong financial position to be able to sustain losses from operational problems or non-custodial activities. A CCP should confirm that its interest in the securities can be enforced and that it can have prompt access to the securities when required; such issues are particularly challenging when securities are held at custodians in different time zones or jurisdictions. A CCP should monitor the financial condition of its custodians on an ongoing basis. In meeting the requirements of this paragraph, a CCP may rely, where reasonable and prudent, on the relevant regulatory frameworks for the custodians and CSDs it chooses to use.

4.7.3 A CCP's investment strategy should be consistent with its overall risk management strategy. In some instances, a CCP may invest cash that participants have posted. Also, it must make decisions about investing its own resources. A CCP has the responsibility to ensure that such investments do not compromise its ability to use the funds for their intended purpose. Cash posted by a participant represents a resource a CCP may need to call upon in the event of a default. Similarly, some CCPs may plan to use their own resources as a means for covering losses exceeding a defaulting participant's resources. If a CCP intends for its own resources to be used to cover losses and liquidity pressures from a default, its investment of those resources should comply with this recommendation so that the resources are readily available if it needs to draw on them. (Some CCP resources will be invested in physical assets such as computers and buildings, which are not the subject of this recommendation.) Investments should be secured or they should be claims on high-quality obligors to mitigate the credit risk to which a CCP is exposed. Because the value of these investments may need to be realised quickly, they should be of a type that would enable a CCP to liquidate them with little if any adverse price effect. Investments in illiquid or volatile instruments are not appropriate. If a CCP is itself a listed company, investment in its own securities should be prohibited.

4.7.4 Often a CCP has several types of relationship with major financial institutions. For example, an institution might offer a CCP settlement bank services, custodial services, and a liquidity facility; it might be a participant itself, and offer clearing services to other participants, as well as being a place where a CCP deposits cash. A CCP should carefully consider its multiple relationships with institutions in evaluating its exposure to obligors. In making investments, a CCP should take into account its overall credit risk exposures to individual obligors, whether from cash investments or other

relationships, and ensure that its overall credit risk exposure to any individual obligor remains within acceptable concentration limits.

Key issues

1. As described in the RSSS, a CCP should hold securities in custody at entities that employ accounting practices, safekeeping procedures and internal controls that fully protect these securities; the legal framework also should be such that the securities are protected against the claims of a custodian's creditors. A CCP should have prompt access to securities when required. A CCP should monitor its custodians' financial condition on an ongoing basis.
2. Investments should be secured or they should be claims on high-quality obligors. Investments should be capable of being liquidated quickly with little if any adverse price effect.
3. In making investment decisions, a CCP should take into account its overall credit risk exposures to individual obligors, whether from cash investments or other relationships, and ensure that its overall credit risk exposure to any individual obligor remains within acceptable concentration limits.

Key questions

1. At what types of entities is collateral held? Does the CCP verify that these entities' procedures and practices conform to Recommendation 12 of the RSSS? If so, how? Does the CCP confirm that its interest in the securities can be enforced and that it can have prompt access to the securities in the event of a participant's default, even if these securities are held in another time zone or jurisdiction? Does it monitor the financial condition of its custodians on an ongoing basis?
2. How is cash invested? Are investments secured? What standard does the CCP use to ensure that obligors are highly creditworthy? What standard does the CCP use to ensure that investments have minimal market and liquidity risks?
3. Does the CCP consider its overall exposure to an obligor in choosing investments? Are investments limited to avoid concentration of credit risk exposures? If so, how?

Assignment of an assessment category

1. *Observed*
 - (a) Custodians for the CCP (in compliance with Recommendation 12 of the RSSS) should employ accounting practices, safekeeping procedures and internal controls to fully protect securities; the legal framework protects securities against the claims of a custodian's creditors; there is little risk of delay in the CCP's access to securities held with the custodians. (Q1)
 - (b) Investments are secured or are claims on high-quality obligors; investments can be liquidated quickly with little if any adverse price effect. (Q2)
 - (c) The CCP takes into account its overall exposure to an obligor in setting concentration limits for investments with these obligors. (Q3)
2. *Broadly observed*
 - (a) 1(a) and 1(b) are satisfied. (Q1, 2)
 - (b) 1(c) is not satisfied. (Q3)
3. *Partly observed*
 - (a) 1(a) is satisfied or 1(b) is satisfied. (Q1, 2)
4. *Non-observed*
 - (a) Neither 1(a) nor 1(b) is satisfied. (Q1, 2)

Recommendation 8: Operational risk

A CCP should identify sources of operational risk and minimise them through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Business continuity plans should allow for timely recovery of operations and fulfilment of a CCP's obligations.

4.8.1 Operational risk is the risk of deficiencies in information systems or internal controls, human errors, management failures, or disruptions from external events such as natural disasters resulting in unexpected losses. The importance of operational risk lies in its capacity to impede the effectiveness of measures adopted to address other risks and to cause participants to incur unforeseen losses, which, if sizeable, could have systemic implications. Operational failures can also lead to legal liability, reputation loss and business loss.

4.8.2 Sources of operational risk to a CCP include inadequate control of systems and processes; inadequate management more generally (lack of expertise, poor supervision or training, inadequate resources); inadequate identification or understanding of risks and the controls and procedures needed to limit and manage them; and inadequate attention to compliance procedures. External events of terrorism or health crises, as well as natural disasters, are also sources of operational risk that a CCP should manage.

4.8.3 Potential operational failures include errors or delays in message handling, transaction processing, system deficiencies or interruption, fraudulent activities by staff and disclosure of confidential information. Errors or delays in transaction processing may result from miscommunication, incomplete or inaccurate information or documentation, failure to follow instructions, or errors in transmitting information. These problems are particularly common in manual processes, but automation brings its own risks of system deficiencies, interruptions and computer crime that may arise from factors such as inadequate security, capacity, testing of software or resilience of backup systems.

4.8.4 To minimise operational risk, CCPs should actively identify and analyse sources of risk, whether arising from the arrangements of the CCP itself, from those of its participants, or from external factors, and establish clear policies and procedures to address those risks. Sound internal controls are essential to a CCP's management of operational risk. There should be adequate management controls and sufficient (and sufficiently well qualified) personnel to ensure that procedures are implemented appropriately. Operational policies and procedures should be reviewed periodically and after modifications to systems. Information systems should be subject to periodic internal audit, and external audits should be seriously considered.

4.8.5 All key systems should be secure (that is, have access controls, be equipped with adequate safeguards to prevent external intrusions, and provide audit trails), reliable, scalable and able to handle volume under stress conditions. CCPs are dependent on electronic communications and need to ensure the integrity of messages by using reliable networks and procedures (such as cryptographic techniques) to transmit data accurately, promptly and without material interruption. Core Principle VII of the Core Principles for Systemically Important Payment Systems provides more details on operational issues.²¹

4.8.6 Before a CCP embarks on other activities that are not directly related to its CCP functions, for example developing software, processing transactions for which it is not counterparty or operating a trading system, it should be satisfied that these activities do not divert resources required to support its CCP functions. Where such a concern exists for current operations, it should either reduce its activities or increase its resources to a level that supports all of its activities adequately.

4.8.7 A CCP should have a business continuity plan that addresses events posing a significant risk of disrupting operations. Responsibility for business continuity planning within the CCP should be explicit, adequate resources should be devoted to this planning, and the commitment to planning should come from the highest levels of management. Business continuity plans should have clearly stated objectives, policies, and procedures that allow for rapid recovery and timely resumption of critical operations and that allow a CCP to continue to monitor the risks of its participants. Ideally,

²¹ See CPSS, *Core Principles for Systemically Important Payment Systems* (BIS, 2001).

backup systems should commence processing immediately. While it may be possible to recommence operations following a system disruption with some data loss, contingency plans should, as a minimum, provide for the recovery of all transactions at the time of the disruption to allow systems to continue to operate with certainty. Several key jurisdictions regard two hours as the time by which critical systems should recommence operations. But depending upon the nature of problems, the recovery time may take longer. At a minimum, the recovery of operations and data should occur in a manner and time period that enable a CCP to meet its obligations on time. Business continuity plans should be regularly reviewed and tested with participants, and appropriate adjustments should be made to plans based on the results of such exercises.

4.8.8 Some CCP operations may be outsourced to third parties. In these circumstances, operational failures by the outside service providers can create operational risk for a CCP. CCPs that outsource operations should ensure that those operations meet the same standards as if they were provided directly. In so doing, a CCP should have the information and controls to ensure that it can meet the elements of this requirement. Further, a CCP should evaluate its vulnerability arising from reliance on one or a small number of outside providers for utility and similar services. If such a service provider stops operating, a CCP's ability to operate could be compromised, possibly causing uncertainty in financial markets if it occurred with little or no warning. A CCP should seek to achieve diversity in key systems such as electricity and telecommunications to the extent possible or make backup arrangements.

Key issues

1. A CCP should actively identify and analyse sources of operational risk and should establish clear policies and procedures to address those risks, including risks from those operations that are outsourced to third parties, or from its other activities.
2. A CCP should have a business continuity plan that addresses events posing a significant risk of disrupting operations and the plan should allow for timely resumption of critical operations. This means that the CCP can meet its obligations on time. Contingency plans should, as a minimum, provide for the recovery of all transactions at the time of the disruption to allow systems to continue to operate with certainty. Business continuity plans should be regularly reviewed and tested with participants, and appropriate adjustments should be made to plans based on the results of such exercises.
3. There should be adequate management controls and sufficient (and sufficiently well qualified) personnel to ensure that procedures are implemented appropriately. Information systems should be subject to periodic internal audit.
4. All key systems should be reliable, secure, and able to handle volume under stress conditions.

Key questions

1. Does the CCP have a process for actively identifying, analysing and addressing its operational risk, including risks arising from its outsourced operations and its other activities?
2. Does the CCP have a business continuity plan that addresses events posing a significant risk of disrupting operations? Do plans ensure that critical information can be recovered in a timely manner? Do plans provide, at a minimum, for the recovery of all transactions at the time of the disruption to allow systems to continue to operate with certainty? Is the business continuity plan regularly reviewed and tested with participants? Have appropriate adjustments to operations been made based on the results of such exercises?
3. Are there adequate management controls and sufficient (and sufficiently well qualified) personnel to ensure that procedures are implemented appropriately? Are operational reliability issues reviewed regularly by senior management, including review by persons not responsible for the relevant operations? Is there an internal audit function and does it review operational risk controls?
4. How many times during the last year has a key system failed? What is the most common cause of failures? How long did it take to resume processing? How much transaction data, if any, were lost? How does the CCP ensure the integrity of messages? Does the CCP have capacity plans for key systems and are key systems tested periodically to determine if they can handle stress volume?

Assignment of an assessment category

1. *Observed*
 - (a) The CCP actively identifies and analyses sources of operational risk and establishes policies related to it, including those operations that are outsourced to third parties, or from its other activities. (Q1)
 - (b) All key systems have appropriate business continuity plans for timely resumption of critical operations, and plans are tested regularly with participants. (Q2)
 - (c) There are adequate management controls and sufficient personnel to ensure that procedures are implemented accordingly and operational risk controls are subject to periodic internal audit. (Q3)
 - (d) There are no or few key system failures and recovery of operations is adequate where there is failure, and all key systems are able to handle volume under stress conditions. (Q4)
2. *Broadly observed*
 - (a) 1(a), 1(b) and 1(c) are satisfied. (Q1, 2, 3)
 - (b) But: more than a few key system failures of limited scope or duration occur, though recovery of operations is adequate. (Q4)
3. *Partly observed*
 - (a) 1(a) is satisfied. (Q1)
 - (b) But: few or occasional key system failures occur and difficulties in the recovery of operations indicate that business continuity plans need to be upgraded. (Q2, 4)
 - (c) Or: 1(c) is not satisfied. (Q3)
4. *Non-observed*
 - (a) 1(a) is not satisfied. (Q1)
 - (b) Or: there are frequent key system failures, business continuity plans are not appropriate, or there is an unacceptable level of uncertainty about data recovery. (Q2, 4)

Recommendation 9: Money settlements

A CCP should employ money settlement arrangements that eliminate or strictly limit its settlement bank risks, that is, its credit and liquidity risks from the use of banks to effect money settlements with its participants. Funds transfers to a CCP should be final when effected.

4.9.1 CCPs need to make money settlements with their participants for a variety of purposes, including the collection and payment of cash used to meet margin requirements.²² (Payments against delivery of securities or commodities are covered by Recommendation 10 on Physical Deliveries rather than this recommendation.) To make such money settlements, a CCP should make arrangements with its participants and one or more banks (its settlement banks).

4.9.2 The details of the money settlement arrangements used by CCPs vary considerably. Nonetheless, two basic models can be identified: a central bank model and a private settlement bank model. In the central bank model, the central bank of issue (the central bank that issues the currency in which the payments are being made) is the sole settlement bank used by a CCP, and all money settlements between a CCP and its participants are effected in central bank money. A CCP's participants may have accounts with the central bank or may effect settlements with the CCP through

²² This recommendation covers money settlements arising from the CCP function. In instances in which a CCP is also the CSD, money settlements arising from the CSD function should be assessed against Recommendation 10 of the RSSS (Cash Settlement Assets) rather than against this recommendation.

banks with accounts at the central bank (a tiered settlement arrangement). In the private settlement bank model a CCP selects a group of private banks as its settlement banks, establishes an account with each of these settlement banks, and requires each of its participants to establish an account with one of them. Money settlements between a CCP and its participants are effected in private bank money through their accounts at the settlement banks. To the extent necessary, a CCP's accounts at the settlement banks can then be balanced by transfers between the settlement banks, which typically are effected in central bank money through the national payment system.

4.9.3 Use of the central bank model eliminates a CCP's settlement bank risks and therefore unambiguously meets this recommendation.²³ However, use of the central bank model may not always be practicable because it requires a CCP to have access to an account with the central bank of issue. Even in a single currency system, a CCP may not have such access. In a multicurrency system, a CCP seldom (if ever) has remote access to accounts at all the central banks of issue. Even if a CCP had such access, the relevant central banks' payment systems often do not operate (or provide finality) at the times when a CCP needs to make money settlements.

4.9.4 Use of the private settlement bank model exposes a CCP to the risk of a settlement bank's failure. Nonetheless, a CCP that uses the private settlement bank model can satisfy this recommendation by taking steps to limit the probability of being exposed to a settlement bank's failure and limiting the potential losses and liquidity pressures to which it would be exposed in the event of such a failure. These steps should include: (1) the establishment and ongoing monitoring of strict criteria for use of a private bank as a settlement bank; and (2) where practicable, the use of multiple settlement banks and the ongoing monitoring of concentration of payment activities among those banks.

4.9.5 A CCP should establish strict criteria for private banks used as settlement banks that address their creditworthiness, access to liquidity, and operational reliability. Settlement banks should be subject to effective banking supervision and regulation and should be well capitalised. They should have access to ample liquidity in the marketplace or from the central bank of issue. They should have the technical capacity to provide reliable payment services at the times and on the terms required by the CCP. A CCP should monitor adherence of its settlement banks to its criteria on an ongoing basis. Where it is reasonable and prudent to do so, a CCP may take account of the supervisory activities of the relevant banking regulators with respect to monitoring of the settlement banks' adherence to some or all of those criteria.

4.9.6 Credit judgments inevitably are fallible and a CCP using the private settlement bank model should take further steps to limit its exposures in the event of settlement bank failures. Ideally, a CCP should use multiple settlement banks to diversify the risks of settlement bank failure. In some jurisdictions, however, only a single private bank may meet appropriate criteria for creditworthiness and operational reliability. In any event, even with multiple settlement banks, the extent to which risks are actually diversified depends upon the number of settlement banks and the distribution among the different banks of participants and of amounts owed by those participants. Despite the use of multiple settlement banks, a CCP's exposures to its settlement banks may remain concentrated if many participants (or even a few of its largest participants) choose to use the same settlement bank. Concentration of exposures to a CCP may be exacerbated if a settlement bank is also a clearing participant, or if a CCP has invested all or a part of the resources it maintains to cover participants' defaults with this settlement bank. Therefore, a CCP should closely monitor the distribution of exposures among settlement banks and assess its potential losses and liquidity pressures in the event that the bank with the largest share of settlements were to fail.

4.9.7 In both the central bank model and the private settlement bank model a critical issue is the timing of the finality of funds transfers to a CCP's account or accounts. In the central bank model participants' obligations to a CCP are not discharged (and therefore a CCP's counterparty exposures are not reduced) until the transfers are final, that is, irrevocable and unconditional. In the private settlement bank model participants' obligations are not discharged until transfers to a CCP's accounts

²³ It is the CCP's settlement bank risks that are the focus of this recommendation. Although use of the central bank model eliminates settlement bank risks to the CCP, the CCP's participants face settlement bank risks if they effect settlements with the CCP through accounts at private banks (in a tiered settlement arrangement) rather than through their own accounts at the central bank.

at its settlement banks are final, and a CCP's exposures to its settlement banks cannot be reduced or eliminated until a CCP can make final transfers of funds from its accounts at the settlement banks. Thus, such transfers (both on the books of individual settlement banks, including the central bank of issue, and between settlement banks) should be final when effected (that is, at the time that credits are first posted to the CCP's accounts). To this end, a CCP's legal agreements with its settlement banks should state clearly when transfers on the books of individual settlement banks are to occur and that they are to be final when effected and should permit immediate retransfer of funds received. If a CCP is to have the capacity to make intraday margin calls (Recommendation 4), the payment systems for the currencies used will need to provide real-time finality or intraday finality at the times at which a CCP wishes to make such intraday calls. The laws of the relevant jurisdictions should support the provisions of a CCP's legal agreements with its settlement banks relating to finality. Finally, a CCP should confirm that funds transfers are effected as and when required.

Key issues

1. A CCP uses the central bank model or it uses the private settlement bank model and takes additional steps (see key issues 3 and 4) to limit the probability of a settlement bank's failure and limit the potential losses in the event of such a failure.
2. Funds transfers to a CCP should be final when effected. A CCP should routinely confirm that funds transfers have been effected as and when required by its agreements with its settlement banks.
3. A CCP should establish and monitor adherence to strict criteria for private banks used as settlement banks that address their creditworthiness, access to liquidity, and operational reliability.
4. A CCP should closely monitor the distribution of its exposures among its settlement banks, and assess its potential losses and liquidity pressures in the event that the private bank with the largest share of settlements were to fail.

Key questions

1. Does the CCP use the central bank model or the private settlement bank model?
2. Do the CCP's legal agreements with its settlement bank or banks provide that funds transfers to its accounts are final when effected? Do the laws of the relevant jurisdictions support these provisions? Do the payment systems for the currencies used support intraday finality? Does the CCP routinely confirm that funds transfers have been effected as and when required by those agreements?
3. If the private settlement bank model is used, does the CCP establish and monitor strict criteria for the banks used that address their creditworthiness, access to liquidity, and operational reliability?
4. If the private settlement bank model is used, does the CCP actively monitor the concentration of exposures among the settlement banks, and routinely assess its potential losses and liquidity pressures from a settlement bank's failure?

Assignment of an assessment category

1. *Observed*
 - (a) The CCP uses the central bank model and funds transfers to the CCP's accounts are final when effected. (Q1, 2)
 - (b) Or: the CCP uses the private settlement bank model and (i) funds transfers to the CCP's accounts are final when effected (Q2); (ii) the CCP establishes and monitors strict criteria for the banks used that address their creditworthiness, access to liquidity, and operational reliability (Q3); and (iii) the CCP actively monitors the concentration of exposures among the settlement banks, and routinely assesses its potential losses and liquidity pressures (Q4).
2. *Broadly observed*
 - (a) 1(b)(i) and 1(b)(ii) are satisfied. (Q2, 3)

(b) But: 1(b)(iii) is not fully satisfied. The CCP monitors the concentration of exposures among the settlement banks but this is not done actively, or its potential losses and liquidity pressures are not assessed routinely. (Q4)

3. *Partly observed*

(a) 1(b)(i) is satisfied. (Q2)

(b) But: 1(b)(ii) is not fully satisfied. There are weaknesses in the CCP's procedures for monitoring adherence to its criteria for its settlement banks; or 1(b)(iii) is not satisfied. (Q4)

4. *Non-observed*

(a) The CCP uses the central bank model but funds transfers to the CCP's accounts are not final when effected. (Q1, 2)

(b) Or: 1(b)(i) or 1(b)(ii) is not satisfied. (Q2, 3)

Explanatory note

1. In the RSSS the term "cash settlement" was used to refer to the settlement of payment obligations arising from deliveries of securities within a CSD. The term cash settlement is avoided here because of its alternative use to describe a method for settling derivatives contracts through payment of cash rather than delivery of the underlying asset.

Recommendation 10: Physical deliveries

A CCP should clearly state its obligations with respect to physical deliveries. The risks from these obligations should be identified and managed.

4.10.1 The obligations that CCPs assume vary, and this is particularly true with respect to obligations arising at delivery.²⁴ Settlement of many contracts cleared by CCPs requires (or permits) physical settlement, that is, delivery by the seller to the buyer of the deliverable assets against payment of cash - for example, equities, bonds, foreign currency, or non-financial commodities. These contracts include cash market trades and derivatives trades that do not require cash settlement on the delivery date or expiration date. At settlement or exercise, a CCP might assume an obligation to make and to receive delivery of a physical instrument. Alternatively, a CCP might assign deliver and receive obligations to specific participants but, in the event that one fails to perform, indemnify the non-defaulting participant for any loss incurred. In this latter arrangement, a CCP would not guarantee receipt or delivery of the physical instrument itself nor the associated payment. Many other variations of a CCP's delivery obligations are possible. Regardless of the obligation assumed, a CCP should clearly state to its participants the obligations that it assumes with respect to deliveries of physical instruments.

4.10.2 A CCP faces both credit and liquidity risks from the delivery process that it must manage. At delivery, the entire principal value of a transaction may be at risk, thus this form of credit risk is often termed principal risk. Both the buyer (receiver of the physical instrument) and seller (deliverer of the physical instrument) are exposed to principal risk. Liquidity risk arises because, if the buyer defaults, a CCP must still make payment to the (non-defaulting) seller. If a CCP guarantees delivery of a physical instrument, it faces a form of liquidity risk associated with acquiring that instrument should the seller default. A CCP should identify and mitigate the credit and liquidity risks to which it is exposed in the delivery process. The steps necessary to mitigate risks depend on the obligations a CCP assumes, the mechanisms available for settlement of the physical instrument being delivered and the importance of the risks from physical settlement to the operations of the CCP and any related market as a whole. For some CCPs, these may be a relatively minor source of risk.

4.10.3 Principal risk can be eliminated through use of a delivery versus payment (DVP) mechanism. A DVP mechanism links a system for transferring funds (payment) to a system for transferring the

²⁴ This recommendation does not cover free movements of collateral to satisfy margin requirements.

physical instrument (delivery) in a way that ensures that payment occurs if and only if delivery occurs. If a CCP has an obligation to make a delivery, it should eliminate principal risk through the use of the available DVP mechanism.

4.10.4 In some instances, a CCP may assume obligations related to deliveries of physical instruments for which there is no DVP mechanism for settlements, and a CCP should take other steps to mitigate principal risk. Often, a CCP holds margin to mitigate the pre-settlement price risk of a position. These margin deposits should be held until delivery is complete. But their value is generally less than the principal value at risk in delivery, so a CCP should build additional protections into the delivery process. Some CCPs require participants to pre-fund payments associated with deliveries or to provide some form of guarantee of payment through an agent bank. (The latter instrument might be an irrevocable commitment on the part of a participant's bank to guarantee payment to a CCP's bank.) For the physical instrument, a CCP might designate an approved entity to which delivery must be made. Only when proper evidence of delivery to this entity exists are funds released to the seller. The physical instrument is released to the buyer only if he has pre-funded his payment obligation or provided an acceptable guarantee of payment.

4.10.5 Liquidity risk should be managed by a CCP even when DVP mechanisms are available for delivery of the physical instrument. A CCP should have a liquidity facility in order to guarantee the availability of funds to pay a seller in the event that a buyer defaults on delivery. Typically this facility would be collateralised by the physical instrument delivered by the seller. In addition, a CCP should have arrangements for selling the instrument delivered. When a CCP assumes the obligation of delivering a physical instrument to buyers, it should have a facility that allows it to acquire that instrument in the event that the seller defaults on delivery. In such circumstances, it should also set out clear requirements regarding late delivery on the part of the seller (for example, pricing for late settlements or mandatory securities borrowing and lending) to facilitate a high settlement rate leading to a reduction in risk.

4.10.6 Apart from credit and liquidity risks, a CCP may also have to manage the risks associated with storage and delivery obligations of the physical instruments for settlement. If a CCP is responsible for warehousing and transportation of the instruments, it should make arrangements taking into account the particular characteristics of these instruments (eg storage under specific conditions of temperature and humidity for perishables). A CCP should also consider other measures (eg physical security measures and insurance coverage) to mitigate its storage and delivery risks (other than principal risk). In some instances, a CCP may match participants with delivery obligations with those who are due to receive the instruments, thereby removing itself from direct involvement in the storage and delivery process. In such instances, the legal obligations for delivery of the instruments should be clearly expressed in the rules, including default rules, and any related agreements. In particular, it should be clear whether the receiving participant should seek compensation from a CCP or the delivering participant should there be any losses. A CCP should also have the powers to check that its participants have the necessary systems and resources to be able to competently fulfil their delivery obligations.

Key issues

1. A CCP's rules should clearly state its obligations with respect to deliveries of physical instruments, including whether it has an obligation to make or receive delivery of a physical instrument or whether it indemnifies participants for losses incurred in the delivery process.
2. If a CCP has an obligation to make or receive deliveries of physical instruments, it should eliminate principal risk through the use of a DVP mechanism. If no DVP mechanism is available, a CCP should take other steps to mitigate principal risk.
3. If a CCP has obligations to make or receive deliveries of physical instruments, it should take steps to identify and mitigate all the liquidity, storage and delivery (other than principal) risks to which it is exposed in the delivery process for the physical instruments.

Key questions

1. Does the CCP have rules that clearly state its obligations with respect to deliveries of physical instruments?

2. Does the CCP have obligations to make or receive deliveries of physical instruments? If yes, does the CCP use DVP mechanisms that eliminate principal risk? If no DVP mechanism is available, does the CCP take other steps to mitigate principal risk?

3. Has the CCP identified the liquidity, storage and delivery (other than principal) risks to which it is exposed because of the delivery obligations that it assumes? Does the CCP take steps to mitigate these risks? What steps does it take?

Assignment of an assessment category

1. *Observed*

(a) The CCP clearly states its obligations with respect to deliveries of physical instruments. (Q1)

(b) The CCP uses DVP mechanisms for deliveries of physical instruments or takes other steps to mitigate principal risk if no DVP mechanism is available. (Q2)

(c) The CCP identifies the liquidity, storage and delivery (other than principal) risks to which it is exposed and takes effective steps to mitigate these risks. (Q3)

2. *Broadly observed*

(a) 1(a) and 1(b) are satisfied. (Q1, 2)

(b) But: 1(c) is not fully satisfied. There are weaknesses in the CCP's arrangements for managing liquidity, storage and delivery (other than principal) risks associated with settlements involving physical instruments. (Q3)

3. *Partly observed*

(a) 1(a) is satisfied. (Q1)

(b) But: 1(b) is not satisfied. (Q2)

4. *Non-observed*

(a) 1(a) is not satisfied. (Q1)

Explanatory notes

1. A CCP's obligation with respect to delivery will differ from product to product. In assessing compliance with this recommendation, focus should be on the delivery mechanism for the most actively traded products.

2. If a CCP does not have any obligation to make physical deliveries and clearly states this, an assessor should consider the CCP as having observed this recommendation.

Recommendation 11: Risks in links between CCPs

CCPs that establish links either cross-border or domestically to clear trades should evaluate the potential sources of risks that can arise, and ensure that the risks are managed prudently on an ongoing basis. There should be a framework for cooperation and coordination between the relevant regulators and overseers.

4.11.1 CCPs engage in links to facilitate more efficient clearing. A link enables the participants of a CCP for one market to trade in another market while clearing that trade through their existing arrangements. By broadening trading opportunities for market participants without imposing all of the costs normally associated with establishing clearing relationships, links can deepen the liquidity in markets. A link may also reduce the costs of systems development and operation faced by CCPs because it enables them to share these expenses.

4.11.2 Links between CCPs may take a variety of forms. The different types of links can be distinguished according to the degree to which the systems of the linked CCPs are integrated and whether the obligations of the CCPs to their clearing participants are shifted. In the most straightforward type of link, one CCP becomes a clearing participant of another CCP without any

further integration of systems, but links may also take a form in which the CCPs effectively merge their systems to offer a single clearing platform. Cross-margining arrangements have some of the same implications for CCPs as links because the CCPs rely on each other's risk management systems when viewing a participant's positions and supporting margin as a single portfolio. These arrangements should also be assessed as part of this recommendation. A brief description of the different types of links is contained in the explanatory notes following this subsection.

4.11.3 The type and level of risks presented by a link will depend on the degree of integration. For example, a cross-participation link with only limited system interdependencies may not entail major changes to the way the linked CCPs manage risks. Nonetheless, the default of such a linked CCP may have more complex and wider implications than the default of an ordinary participant or even another large clearing participant. Although each link will present a unique risk profile, a number of generic risks can be identified relating to legal, operational, credit and liquidity risks, as well as generic challenges to effective regulation and oversight. Before entering into a link, CCPs should evaluate the potential sources of risks arising from the link. The resulting arrangements should be designed so as to manage these risks effectively, such that a CCP is still able to observe these recommendations. A CCP participating in a link should be able to meet in a timely manner all of its obligations to its linked CCP partner and to its participants that use the link. Furthermore, a CCP's participation in a link should not compromise its ability to meet in a timely manner its obligations to its participants that are not using the link.

4.11.4 Links may present legal risk arising from differences between the laws and contractual rules governing the linked systems and their participants, including those relating to novation or open offer, netting, collateral arrangements and settlement finality as well as conflict of laws. Differences in laws or rules may create uncertainties regarding the enforceability of CCP obligations assumed by novation or open offer in jurisdictions where these concepts are not recognised. Also, differences in laws or rules may unintentionally give the participants of one CCP a claim vis-à-vis the linked CCP in the event of the first mentioned CCP's default. Further, differences between the criteria and timing of finality also create risks as transfers regarded as final in one system are not necessarily final in the linked CCP. To limit these uncertainties, the respective obligations and rights of the linked CCPs should be clearly defined in the link agreement, which should also set out an unambiguous choice of law. Thus, the laws and contractual rules governing the linked systems, and governing the link itself, should support the design of the link and provide adequate protection to both CCPs and their participants in the operation of the link.

4.11.5 Links may present operational risk due to inefficiencies associated with the operation of the link. Such inefficiencies may arise because of differences in time zones and operating days and hours, particularly as these affect staff availability and the operations of other connected systems or institutions such as CSDs. Systems and communications arrangements between the CCPs should be reliable and secure so that the operation of the link does not pose significant operational risks to the linked CCPs.

4.11.6 Links may also create significant credit and liquidity interdependencies between systems. If a CCP becomes a participant of another CCP through a link, the two CCPs have direct credit and liquidity exposures to each other, and the terms of the link agreement should set forth how these exposures will be managed. Additional exposures may arise through participant concentrations, cross-margining arrangements and pooled financial resources (if applicable) so that a default in one system may precipitate losses and liquidity pressures in the linked system. These interdependencies may lower the probability of a default, but enhance the impact should one occur. Potential sources of credit and liquidity risks to the CCP arising from the operation of the link, and in particular from cross-margining arrangements, should be identified, monitored and effectively managed.

4.11.7 Cross-border CCP links may also create uncertainties about the respective responsibilities of the relevant regulatory and oversight authorities. It may be uncertain which authority regulates a particular aspect of a link, or the CCPs may be subject to duplicative and possibly conflicting regulation. To limit some of these uncertainties, a link should be subject to prior notification to the relevant regulatory and oversight authorities so that they can satisfy the authorities that the link does not undermine the effectiveness of regulation and oversight. There should also be a framework for cooperation and coordination between the relevant authorities, including provisions on appropriate information sharing and the division of responsibilities in the event of any need for joint regulatory action.

Key issues

1. Before entering into a link relationship with another CCP, a CCP should evaluate the potential sources of risks arising from the link. The resulting arrangements should be designed such that the CCP remains able to observe the other recommendations contained in this report.
2. The national laws and contractual rules governing the linked systems, and governing the link itself, should support the design of the link and provide adequate protection to both CCPs in the operation of the link.
3. Potential sources of operational, credit and liquidity risks to a CCP arising from a link should be effectively monitored and managed on an ongoing basis.
4. For the purposes of regulation and oversight of the link, there should be a framework for cooperation and coordination between the relevant regulatory and oversight authorities, including provisions on information sharing and the division of responsibilities in the event of any need for regulatory action.

Key questions

1. What kinds of link are in operation? Has the CCP carried out a risk analysis of the potential sources of risks arising from the link? Are the resultant risk management arrangements designed to minimise or contain these risks such that the CCP remains able to observe the other recommendations contained in this report?
2. Which laws and contractual rules govern the link? What steps have the CCPs taken to satisfy themselves that these laws and rules support the design of the link and provide adequate protection to both CCPs in the operation of the link?
3. What are the potential sources of operational, credit and liquidity risks arising from the link? Are effective mechanisms in place, including arrangements between the linked CCPs, to monitor and manage the risks identified?
4. For the purposes of regulation and oversight of the link, is there a framework for cooperation and coordination between the relevant regulatory and oversight authorities, including provisions on information sharing and the division of responsibilities in the event of any need for coordinated regulatory action?

Assignment of an assessment category

1. *Observed*
 - (a) A risk analysis of the design of the link has been undertaken. (Q1)
 - (b) Laws and contractual rules support the design of the link and provide adequate protection to both CCPs in the operation of the link. (Q2)
 - (c) The operational, credit and liquidity risks to the CCP arising from the link have been identified, and arrangements between the CCPs have been put in place to ensure that these risks are monitored and effectively managed. (Q3)
 - (d) There is an appropriate framework for cooperation and coordination between the relevant regulatory and oversight authorities. (Q4)
2. *Broadly observed*
 - (a) 1(a), 1(b) and 1(c) are satisfied. (Q1, 2, 3)
 - (b) But: 1(d) is not fully satisfied. The framework for cooperation between the relevant regulatory and oversight authorities is not in place or does not work well. (Q4)
3. *Partly observed*
 - (a) 1(a) and 1(b) are satisfied. (Q1, 2)
 - (b) But: 1(c) is not fully satisfied. There are weaknesses in the monitoring and managing of the risks identified. (Q3)

4. *Non-observed*
- (a) 1(a) or 1(b) is not satisfied. (Q1, 2)

Explanatory notes

1. In the most straightforward type of link arrangement, the clearing participants of a linked CCP continue to look to that CCP for performance on obligations. The CCPs have exposures to each other that must be managed. The “participant” CCP typically posts margin to support its obligations arising from the link just as other clearing participants. If both CCPs become participants of the other, the link operates in both directions. An implication of links organised in this manner is that exposures exist between the CCPs as long as any positions remain open.

2. Other links have been designed to facilitate the transfer of positions between CCPs. In such links, market participants may open positions in a product cleared by one CCP (the “host” CCP) but subsequently all these positions are transferred to the “home” CCP for that product. The “host” CCP takes on the counterparty risk of its participants until the positions are transferred to the “home” CCP, generally at the end of the trading day. After the transfer, the “home” CCP becomes the counterparty to the participant of the “host” CCP for the positions that are transferred. Consequently, the “home” CCP takes on the counterparty risk of that participant.

3. Another type of link is where transactions between participants of the linked CCPs are jointly managed by the linked CCPs. In this type of link, the opening of a position in one CCP automatically leads to the immediate creation of an equal and opposite position at the linked CCP. The participant of a linked CCP retains counterparty risk vis-à-vis its CCP. The linked CCPs participate in each other’s systems as equals, necessitating agreement on a common risk management methodology on a product by product basis.

4. In the most integrated form of link, the CCPs effectively merge their systems to offer a single clearing platform. The participant of one CCP will continue its relationship with that CCP, but all risk management is effected by the wholly integrated systems of the linked CCPs. The participation, default, margin requirements, financial resources and operational requirements to which CCP participants are subject become harmonised and may thus differ from the requirements in place at one or both of the CCPs prior to the link.

Recommendation 12: Efficiency

While maintaining safe and secure operations, CCPs should be cost-effective in meeting the requirements of participants.

4.12.1 In assessing the efficiency of CCPs, the needs of participants and the costs imposed on them should be carefully balanced with the requirement that the CCPs meet appropriate standards of safety and security. If CCPs are inefficient, financial activity may be distorted. However, the first priority of a CCP is to assure market participants that its obligations will be met in a timely fashion, notwithstanding the default of a participant.

4.12.2 Efficiency has several aspects, and it is difficult to assess the efficiency of a particular CCP in any definitive manner. Accordingly, the focus of any assessment should largely be on whether a CCP has in place the mechanisms to periodically review service levels, costs, pricing and operational reliability. Where there is effective competition and participants have meaningful choices among CCPs, such competition may be relied upon to ensure that CCPs are efficient, but because of economic (and sometimes regulatory) barriers to entry, many CCPs are not subject to effective competition. While the promotion of competition may be the responsibility of authorities other than securities regulators and central banks, the latter authorities share the objective of promoting efficiency in payment and settlement systems and, consistent with that objective and the RSSS, have included this recommendation for CCPs.

4.12.3 CCPs should seek to meet the service requirements of participants in a cost-effective manner. This includes meeting the needs of its participants, operating reliably and having adequate system capacity to handle both current and potential activity. When looking at the overall costs of CCPs, it is important to include both the direct costs of operating any facilities, such as costs to participants, and indirect costs, such as liquidity costs.

4.12.4 The primary responsibility for promoting the efficiency and controlling the costs of a CCP lies with the designers, owners and operators. In some jurisdictions, regulatory or competition authorities may have a responsibility to review the direct costs imposed on participants, particularly where a CCP enjoys some form of monopoly over the service it provides. Antitrust and competition law principles may also be relevant. In the case of a CCP that faces effective competition, market forces are likely to provide incentives to control costs.

4.12.5 CCPs may use a variety of mechanisms to improve efficiency. For example, developing technical capabilities to meet operational service requirements of participants; where relevant, reducing the requirements for market participants to maintain multiple interfaces through the creation of consistent communication standards and system interface arrangements across different systems for market participants; and establishing communication procedures and standards that support straight through processing of transactions, wherever appropriate.

Key issues

1. A CCP should have in place the mechanisms to regularly review its costs and pricing.
2. A CCP should have in place the mechanisms to regularly review its service levels and operational reliability.

Key questions

1. Does the CCP have in place procedures to control costs (for example, by benchmarking its costs and charges against other CCPs that provide a similar service and by analysing the reasons for significant differences)? Does the CCP have in place procedures to regularly review its pricing levels against its costs of operation?
2. Does the CCP regularly review its service levels (for example, by surveying its participants)? Does the CCP have in place procedures to regularly review operational reliability, including its capacity levels against projected demand?

Assignment of an assessment category

1. *Observed*
 - (a) The CCP has in place various procedures to review pricing and costs, and does so regularly. (Q1)
 - (b) And the CCP regularly reviews its operational reliability and service levels. (Q2)
2. *Broadly observed*
 - (a) Either 1(a) or 1(b) is not fully satisfied. The CCP does not regularly review pricing and costs, or operational reliability and service levels. (Q1, 2)
3. *Partly observed*
 - (a) Either 1(a) or 1(b) is not satisfied. (Q1, 2)
4. *Non-observed*
 - (a) The CCP does not have in place procedures to review capacity, pricing and costs, nor does it have procedures to review service levels. (Q1, 2)

Explanatory notes

1. In assessing the efficiency of CCPs, the needs of participants and costs imposed on them should be carefully balanced with the requirement that the CCP meets appropriate standards of safety and security.
2. Efficiency in CCPs is very difficult to assess. Assessors should base their assessment on an understanding of the environment in which a CCP operates. Where a CCP faces effective competition, market forces are likely to have some control over the cost structure. If barriers to entry preclude

effective competition in the services provided by a CCP, assessors may solicit the views of market participants and relevant regulatory/competition authorities about the CCP's efficiency and on whether the CCP meets the needs of its participants.

Recommendation 13: Governance

Governance arrangements for a CCP should be clear and transparent to fulfil public interest requirements and to support the objectives of owners and participants. In particular, they should promote the effectiveness of a CCP's risk management procedures.

4.13.1 Governance arrangements encompass the relationships between owners, managers and other interested parties, including participants and authorities representing the public interest. The key components of governance include the ownership structure; the composition and role of the board; the structure and role of audit, nominating and other key board committees; the reporting lines between management and the board, and the processes for ensuring that management is accountable for its performance.

4.13.2 CCPs, with CSDs, are at the heart of the settlement process. Moreover, because their activities are subject to significant economies of scale, many are sole providers of services to the market they serve. Therefore, their performance is a critical determinant of the safety and efficiency of those markets, which is a matter of public interest. This recommendation is intended to be consistent with each jurisdiction's codes of corporate governance, and to emphasise the need for a CCP's governance arrangements to support robust risk management.

4.13.3 No single set of governance arrangements is appropriate for all institutions within the various securities markets and regulatory schemes. However, an effectively governed institution should meet certain requirements. Governance arrangements should be clearly specified and publicly available. Objectives, those principally responsible for achieving them and the extent to which they have been met should be disclosed to owners, participants (including applicants for participation) and public authorities. These objectives for all CCPs should include delivering sound risk management and meeting related public interest requirements. A key part of governance mechanisms is the composition of the board and the objectives that the board sets for management. The board should contain suitable expertise and take account of all relevant interests. One means for the board to take account of the objectives of participants is through their representation on the board or through participant committees. Management and board should have the appropriate skills and incentives to achieve a CCP's objectives and to fulfil public interest requirements, and should be accountable to owners and participants for their performance. Reporting lines between management and the board should be clear and direct. The board should be responsible for selecting, evaluating and, if necessary, removing the senior managers.

4.13.4 Governance arrangements are particularly important because the interests in relation to risk management of a CCP's owners, its managers, its participants, the exchanges and trading platform it serves, and the public are different and may conflict. To ensure that such conflicts do not undermine the effectiveness of a CCP's risk management, it is essential that those responsible for this aspect of a CCP's business have sufficient independence to perform their role effectively. There should therefore be a clear separation between the reporting lines for risk management and those for other operations of a CCP. In many cases, this may involve the creation of an independent risk committee. The mandate and operational procedures of any risk committee or other groups established to manage risks should be clearly spelled out and disclosed.

4.13.5 A CCP has access to sensitive information on participants' positions, and this could be exploited for its other business activities. A CCP should take steps to prevent such misuse (eg Chinese walls between the different functions).

4.13.6 The basic governance requirements of this recommendation should be met regardless of whether a CCP is a mutual or for-profit entity.

Key issues

1. Governance arrangements should be clearly specified and publicly available.
2. There should be a clear separation between the reporting lines for risk management and those for other operations of a CCP.

3. Management and the board should have the appropriate skills and incentives to achieve a CCP's objectives, particularly delivering sound risk management and meeting related public interest requirements. Management and the board should be fully accountable for the CCP's performance. The board should contain suitable expertise and take into account all relevant interests.

4. Objectives, those principally responsible for achieving them and the extent to which they have been met should be disclosed to owners, participants (including applicants for participation) and public authorities.

Key questions

1. What are the governance arrangements for the CCP? What information is publicly available about the CCP, its ownership and its board and management structure?

2. Is there a clear separation in the reporting lines between risk management and other operations of the CCP? How is this separation achieved? Is there an independent risk management committee?

3. What steps are taken to ensure that management and the board have the adequate skills and incentives to achieve the CCP's objectives of delivering sound and effective services and to meet related public interest requirements? What are the mechanisms the board has in place to ensure that the objectives include delivering sound risk management and meeting related public interest requirements? How are management and the board made accountable for their performance? How is the composition of the board determined? Are there mechanisms to ensure that the board contains suitable expertise and takes account of all relevant interests? Are reporting lines between management and the board clear and direct? Is the board responsible for selecting, evaluating and if necessary, removing senior management?

4. Are the CCP's objectives, those responsible for meeting them and the extent to which they have been met disclosed to owners, participants and public authorities? If so, what/who are they?

Assignment of an assessment category

1. Observed

- (a) Governance arrangements are clearly specified and information about them is publicly available. (Q1)
- (b) There is a separate reporting line between risk management and other operations of the CCP. (Q2)
- (c) The board and management have the expertise and skills needed to achieve objectives and are fully accountable for the CCP's performance. Objectives include delivering sound risk management and meeting related public interest requirements. (Q3)
- (d) Objectives, those responsible for meeting them, and the extent to which they have been met are disclosed to owners, participants and public authorities. (Q4)

2. Broadly observed

- (a) 1(a) and 1(b) are satisfied. (Q1, 2)
- (b) But: 1(c) or 1(d) is not satisfied. (Q3, 4)

3. Partly observed

- (a) 1(a) and 1(b) are satisfied. (Q1, 2)
- (b) But: 1(c) and 1(d) are not satisfied. (Q3, 4)

4. Non-observed

- (a) 1(a) or 1(b) is not satisfied. (Q1, 2)

Explanatory notes

1. If the CCP is wholly owned by another entity, the governance arrangements of that entity should also be examined to see that it does not have adverse effects on the CCP's observance of this recommendation.
2. Governance arrangements are likely to be effective when decision-makers have the skills and information to make decisions that promote the objectives of owners and participants and fulfil public interest requirements, but these aspects are difficult to observe directly. The assessment categories are based on indirect, but more measurable, aspects of governance such as whether the decision-making processes are transparent. If, however, there was clear evidence of the lack of effectiveness of the governance arrangements, an assessor could take that into account in assigning an assessment category if the evidence was set out in the explanation of the assessment.

Recommendation 14: Transparency

A CCP should provide market participants with sufficient information for them to identify and evaluate accurately the risks and costs associated with using its services.

4.14.1 Informed market participants are able to identify and evaluate the risks and costs to which they are exposed as a result of participation in a CCP and, therefore, can take actions to manage their risks and costs. A CCP should disclose to market participants its rules and regulations, relevant laws, governance procedures, risks, steps taken to mitigate risks, the rights and obligations of participants and the costs of using its services. It should make clear when and in what circumstances it assumes counterparty exposure and any restriction or limitations on its fulfilment of its obligations. A CCP should also disclose appropriate quantitative information on its clearing, netting and settlement activities and risk management performance. Types of information that are particularly useful in assessing the risks and costs of participating in a CCP include the coverage realised by margin requirements, the "extreme but plausible" market conditions used in evaluating the adequacy of financial resources and other stress testing information.²⁵ The effort by a CCP to improve transparency fosters confidence of market participants in its safety and efficiency. The information should be publicly available and clear enough for market participants to understand the steps to be taken by a CCP and other relevant entities in the event of a default.

4.14.2 Information should be readily accessible, for example through the internet. It should also be current, accurate and available in a language commonly used in financial markets and at least one of the domestic language(s) of the jurisdiction in which a CCP is located.

4.14.3 Completion of the answers to the key questions set out in this report will serve not only as a basis for assessment of the implementation of the recommendations but also as a basis for public disclosure to provide market participants with the complete and accurate information they need. The accuracy and completeness of disclosures should be reviewed periodically by a CCP.

Key issues

1. A CCP should provide market participants with sufficient information to evaluate the risks and costs of using its services.
2. Information should be accessible, for example through the internet. Information should be available in a language commonly used in financial markets and at least one of the domestic language(s) of the jurisdiction in which it is located.
3. The answers to the key questions of this report should be completed and disclosed. The accuracy and completeness of disclosures should be reviewed periodically by a CCP.

²⁵ In disclosing stress test information, care must be taken to avoid revealing information regarding the positions of individual participants.

Key questions

1. Does the CCP disclose to market participants its rules and regulations, relevant laws, governance procedures, risks, steps taken to mitigate risks, the rights and obligations of participants and the costs of using the CCP services? Does the CCP make clear when and in what circumstances it assumes counterparty exposure and any restriction or limitations on its fulfilment of its obligations? Does the CCP disclose appropriate quantitative information on its clearing, netting and settlement activities? Does the CCP provide market participants with sufficient information on default procedures and stress testing?
2. How is information made available? In what language or languages? In what form?
3. Has the CCP completed and disclosed the answers to the key questions set out in this report? Are there regular reviews to ensure that the information contained in the disclosures remains current, complete and accurate?

Assignment of an assessment category

1. *Observed*
 - (a) The CCP provides market participants with sufficient information necessary to evaluate the risks and costs of using its services. (Q1)
 - (b) Information is easily accessible, for example through the internet. Information is available in a language commonly used in financial markets as well as at least one of the domestic language(s) of the jurisdiction in which the CCP is located. (Q2)
 - (c) The answers to the key questions in this report are completed and disclosed. The accuracy and completeness of disclosures are regularly reviewed by the CCP. (Q3)
2. *Broadly observed*
 - (a) 1(a) and 1(c) are satisfied. (Q1, 3)
 - (b) But: 1(b) is not fully satisfied. Information is available in at least one of the domestic languages, but is not easily accessible. (Q2)
3. *Partly observed*
 - (a) 1(a) is satisfied. (Q1)
 - (b) But: 1(b) or 1(c) is not satisfied. (Q3)
4. *Non-observed*
 - (a) 1(a) is not satisfied. (Q1)

Recommendation 15: Regulation and oversight

A CCP should be subject to transparent and effective regulation and oversight. In both a domestic and an international context, central banks and securities regulators should cooperate with each other and with other relevant authorities.

4.15.1 Securities regulators (including, in this context, banking supervisors where they have similar responsibilities and regulatory authority for CCPs) and central banks share the objective of enhancing the safety and efficiency of CCPs. The division of responsibilities for regulation and oversight of CCPs among public authorities varies from country to country depending on the legal and institutional framework.

4.15.2 While the primary responsibility for ensuring a CCP's observance of the recommendations lies with its designers, owners and operators, regulation and oversight are needed to ensure that designers, owners and operators fulfil their responsibilities. The objectives, responsibilities, roles and major policies of securities regulators and central banks should be clearly defined and publicly disclosed, so that designers, owners, operators and participants of a CCP are able to operate in a predictable environment and to act in a manner that is consistent with those policies.

4.15.3 Securities regulators and central banks should have the ability and the resources to carry out their regulation and oversight responsibilities effectively. Regulation and oversight should have a sound basis, which may or may not be based on statute, depending on a country's legal and institutional framework. The authorities should have adequate resources to carry out their regulatory and oversight functions, such as gathering information on a CCP, assessing its operation and design, acting to promote its observance of the recommendations and conducting on-site visits or inspections if necessary. To enable them to carry out their activities, securities regulators and central banks should require CCPs to provide them with the information necessary for regulation and oversight in a timely manner, including information on operations that have been outsourced to third parties or where a CCP proposes to undertake new activities. Information on stress tests provided to authorities should contain the scenarios and methodology employed to estimate exposures and results of the stress tests. Access to information is particularly important if the authorities need to take extraordinary actions in relation to a default.

4.15.4 Securities regulators and central banks should cooperate with each other and with other relevant authorities to achieve the safe and efficient operation of CCPs and links between CCPs and to achieve the implementation of risk management practices and procedures consistent with these recommendations. Cross-border regulatory issues, especially those that arise when cross-border links between CCPs are established, should be addressed in a way that delivers regulation/oversight consistent with each relevant authority's responsibilities and avoids imposing unnecessary cost on CCPs. Regulators/overseers can consider a variety of approaches including: (1) information sharing arrangements; (2) coordination of regulatory/oversight responsibilities for specific matters; and (3) other cooperation arrangements.²⁶ Cooperation could include coordination of crisis management plans as well as, to the extent permitted, early, confidential flow of information between regulators and CCPs about cross-border participants who might be in trouble. The approach selected may vary, depending on such issues as the law and regulatory approach in each jurisdiction. The approach set out in (2) above might entail a cooperative agreement for allocating regulatory/oversight responsibility in line with the recommendation in the 1990 Lamfalussy Report. The principles governing these cooperative arrangements should be set out in a formal framework, which, in the interests of transparency, should be publicly disclosed.

Key issues

1. The CCP should be subject to effective regulation and oversight. Securities regulators and central banks should have the ability and the resources to carry out their regulation and oversight responsibilities effectively.
2. Securities regulators and central banks should clearly define and publicly disclose their objectives, their roles and key aspects of major policies for CCPs.
3. Securities regulators and central banks should require CCPs to provide information necessary for regulation and oversight in a timely manner, including information on operations that have been outsourced to third parties or where the CCP proposes to undertake new activities.
4. Securities regulators, central banks and other relevant authorities should cooperate with one another, both domestically and internationally, to achieve the safe and efficient operation of CCPs and links between CCPs.

²⁶ Where a CCP provides services in more than one jurisdiction, consultation and cooperation among relevant regulators/overseers will be essential to avoid duplicative (or conflicting) requirements, regulatory/oversight gaps and unnecessary costs. Within the context of the requirements of individual national laws and a firm foundation for the sharing of information, this process could include an allocation of regulatory/oversight roles to satisfy the responsibilities and objectives of each relevant authority. See the *Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of Ten Countries* (BIS, November 1990) (known as the Lamfalussy Report), pp 53-56. See also *Principles for the Oversight of Screen-based Trading Systems for Derivative Products - Review and Additions* (Technical Committee of the IOSCO, October 2000).

Key questions

1. How is the CCP regulated/overseen? Describe the laws that authorise and govern the CCP's operation, the applicable regulatory bodies and their respective authority for the CCP's operation. Do the securities regulator and central bank have sufficient legal capacity and resources (including experienced staff and funding) to carry out effective regulation and oversight?
2. Are the objectives, responsibilities and main policies of the securities regulator, central bank and, where relevant, banking supervisor clearly defined and publicly disclosed? Are the regulations, roles and policies written in plain language so that they may be fully understood by CCPs and their participants?
3. What information is the CCP required to provide, including information on operations that have been outsourced? How frequently is this information provided? Are there specific information requirements for participants' defaults and CCPs' financial difficulties? Is the CCP required to report significant events, such as rule changes, outages, and changes in risk management procedures?
4. Is there a framework for cooperation between relevant authorities for the CCP, including domestic and non-domestic authorities? If so, describe the principles underlying this (these) framework(s) and their main contents, including any information sharing arrangements and decision-making procedures.

Assignment of an assessment category

1. *Observed*
 - (a) The CCP is subject to effective regulation and oversight. The securities regulator and central bank have the ability and the resources to carry out regulation and oversight activities effectively. (Q1)
 - (b) The responsibilities as well as roles and major policies of the securities regulator and central bank are clearly defined and publicly disclosed. (Q2)
 - (c) The securities regulator and central bank require the CCP to provide information necessary for regulation and oversight in a timely manner, including information on operations that have been outsourced to third parties. (Q3)
 - (d) The securities regulator and central bank cooperate with each other and with other relevant authorities. (Q4)
2. *Broadly observed*
 - (a) 1(a), 1(b) and 1(c) are satisfied. (Q1, 2, 3)
 - (b) But: 1(d) is not fully satisfied. The framework for cooperation between the securities regulator and central bank and with other relevant authorities is not in place or does not work well. (Q4)
3. *Partly observed*
 - (a) 1(a) is satisfied. (Q1)
 - (b) 1(b) or 1(c) is satisfied, but not both. (Q2, 3)
4. *Non-observed*
 - (a) 1(a) is not satisfied. (Q1)
 - (b) Or: 1(b) and 1(c) are not satisfied. (Q2, 3)

5. Checklist for guarantee funds

5.1 As discussed in Section 2, the Task Force has concluded that regulators and overseers should evaluate the robustness of guarantee funds, particularly those that support trading on critical markets such as national stock exchanges. While use of the above assessment methodology for CCPs for this purpose is problematic, this section provides a checklist of relevant issues, most of which are drawn from (or parallel) issues addressed in the CCP assessment methodology.

Basic information

An evaluation must be based on a clear understanding of the arrangement, the details of which vary significantly across markets. The following questions are intended to draw out the key features of any arrangement.

1. What entity has organised and administers the fund?
2. What markets are covered? Are all trades in the market covered or only a subset of trades? If the latter, which instruments are covered? For which market participants?
3. What is an event of default? Who determines whether a default has occurred?
4. How are losses determined in the event of a default? Who determines the resulting claims against the fund? Are gains and losses netted across securities or defaulting participants? How are the claims validated?
5. Under what circumstances would the assets held in the fund be available? Are the assets available automatically to cover losses in the event of a default? Or is coverage at the discretion of the organiser of the fund or some other party? If discretion is provided for, on what basis would the decision whether to provide coverage be made?
6. What types of assets are held in the fund? Who has contributed the assets? What is the aggregate current market value of the assets?

Legal risk

7. What is the legal framework governing the guarantee fund? Does the legal framework provide a high degree of assurance that the assets in the fund can be used to meet claims arising from a participant default (including bankruptcy of a participant)? Is it clear when and subject to what conditions, if any, trades become covered by the guarantee?

Participation requirements

8. What are the requirements for a market participant's trades to be covered? Must participants whose trades are covered meet requirements with respect to their financial resources or creditworthiness? What are the requirements? How are the requirements determined? By whom? [Note: If all members of a stock exchange or a CSD are permitted to participate, it is the stock exchange's or the CSD's participation requirements that are relevant.]
9. Do participation requirements limit access on grounds other than risks? Are they objective and do they permit fair and open access? Are participation requirements, including arrangements for orderly exit of participants, clearly stated and publicly disclosed?

Measurement of credit exposures

10. How frequently are potential claims on the fund quantified? How and by whom? How timely is the information on market prices and participants' positions that is used in these calculations?

Size of the fund and coverage of potential claims

11. Is there an explicit policy with respect to the desired size of the fund? What is the policy? Who has established the policy?
12. Have potential claims on the fund from defaults by participants in extreme market conditions been estimated? What types of stress scenarios have been evaluated? Do scenarios include the most volatile periods that have been experienced by the markets covered by the guarantee? What has been assumed about the number and size of participants defaulting? What percentage of the total claims generated in these stress scenarios could be covered by the value of the assets held by the fund?
13. Are there mechanisms to increase the size of the fund if it is depleted by the payment of claims or because estimates of potential claims have increased?

Default procedures

14. Is the scope of the guarantee (the markets and the participants covered) clear? Is it clear what constitutes a default? Are the procedures for determining and making claims clear?
15. Is it clear that the funds would be available automatically to cover losses? If not, is it clear who would decide whether to make the funds available and on what basis?
16. Is it clear how claims would be treated if total claims exceeded the value of the assets held in the fund? Is it clear whether the fund would be replenished following the payment of claims? If so, who would be responsible for replenishing the fund?

Custody and investment risks

17. If the assets held by the fund are securities, who is the custodian for the securities? Does the custodian employ accounting practices, safekeeping procedures, and internal controls that conform to Recommendation 12 of the RSSS?
18. If the assets held by the fund are cash assets, how are they invested? Are the investments secured? Are the obligors highly creditworthy? Do the investments have minimal market and liquidity risks?

Operational risk

Ordinarily a guarantee fund has no day-to-day operations.

Money settlements

A guarantee fund does not effect money settlements on a day-to-day basis.

Physical deliveries

A guarantee fund does not make or receive physical deliveries.

Risks in links between guarantee funds

There do not seem to be any such links between guarantee funds.

Efficiency

This issue is not relevant.

Governance

Because a guarantee fund ordinarily does not engage in risk management, the issue of whether governance arrangements support effective risk management procedures is not germane.

Transparency

19. Does the guarantee fund disclose to participants the current market value of the fund and estimates (see question 12 regarding the size of the fund) of the coverage of potential losses from defaults?²⁷

Regulation and oversight

20. How is the guarantee fund regulated/overseen?

21. What information does the operator of the guarantee fund provide to regulators/overseers? How frequently is this information provided?

²⁷ Other transparency issues are raised in questions 7, 9 and 14 above.

Annex 1: Template for assessing observance of the Recommendations for Central Counterparties

(This is a template for a self-assessment report by a CCP or national authorities. For disclosure purposes, the template in Annex 2 may be used.)

I. Introduction

Assessor and objective

1. Identify the entity conducting the self-assessment, and the objective and context of the assessment.

Scope of the assessment

2. Identify the CCPs being assessed.

3. Identify any CCPs, guarantors or multilateral netting facilitators in the jurisdiction that are not covered by the assessment. State why these entities were excluded from the scope of the assessment. Indicate if the checklist for guarantee funds is being completed.

Scope of coverage of the CCP

4. Identify the CCP's scope of coverage, ie markets (exchange-traded and/or OTC transactions) and products (securities, derivatives and/or other products).

Institutional and market structure

5. Provide a general description of the securities/derivatives markets and the structure of trade execution, clearing and settlement of the products cleared by the CCP. The description should include sufficient transaction data to understand the scope of the CCP's activities.

Regulatory structure

6. Provide a description of the regulatory framework relating to the CCPs in the jurisdiction.

Information and methodology used for assessment

7. Identify the main sources of information used in making the assessment, eg written documentation (other self-assessments, third-party assessments, surveys, questionnaires, reports, studies, and other public or non-public documents, including relevant laws, regulations, or regulatory or industry guidance) or oral discussions with regulatory or supervisory bodies (eg the central bank, securities regulator, banking supervisor or other domestic authorities) and relevant industry associations (eg central securities depository, stock exchange, custodian, securities broker or end user associations).

8. Discuss the process followed in conducting the assessment. Mention any practical difficulties in applying the assessment methodology, such as lack of information or cooperation and any factors limiting the assessment process or its scope.

II. Assessment of observance

Executive summary of the recommendation by recommendation assessment

9. Provide an executive summary of the detailed assessment report reflected in Tables 2 and 3 below. In this executive summary:

- summarise the principal conclusions of the assessment regarding the major topics covered by the recommendations;
- summarise any actions proposed or ongoing in the assessed jurisdiction to achieve full observance of the recommendations, and the manner in which the level of observance would be improved if those actions were completed; and
- summarise the steps recommended by the assessor to achieve full observance of the recommendations, and the manner in which the level of observance would be improved if those steps were completed.

10. Conclude the executive summary with a table collating the results of the recommendation by recommendation assessment of observance by reference to the assessment categories:

Table 1

Collation of assessment results by assessment category

Assessment category	Recommendations
Observed	eg Recommendations 1, 3, 6, 8
Broadly observed	
Partly observed	
Non-observed	
Not applicable	

Recommendation by recommendation assessment of observance

11. Provide a table with a detailed recommendation by recommendation assessment of the observance of each of the recommendations. The detailed assessment of each recommendation should comprise three parts:

- **Answers to key questions:** In this part, provide answers to the key questions relating to the recommendation as set out in Section 4. Include other factual information relevant to the assignment of assessment categories for that recommendation. Responses should reflect the actual practices followed by CCPs and participants, and by the competent domestic authorities in their oversight, regulation or supervision of CCPs or their participants. The answers to the key questions should indicate how the assessor arrived at the response to the question. Accordingly, “yes” or “no” responses to the key questions will rarely (if ever) be sufficient. Additionally, the information or material used to support the answer should be described in reasonable detail so that a party not involved in the assessment can understand the response.
- **Assessment:** In this part, assign each recommendation to one of five assessment categories: *Observed*, *Broadly observed*, *Partly observed*, *Non-observed* or *Not applicable*. All explanations relating to the assignment of the assessment category should appear in this part. Guidance on the assignment of these assessment categories has been provided in Section 4, where assessment categories have been linked to the answers to the key questions. The guidance also includes explanatory notes to clarify certain issues that seem likely to arise in the course of an assessment. The assignment of an assessment category

with respect to a recommendation should be based on the current situation existing in the jurisdiction without regard to any proposed or ongoing actions.

- **Comments:** In this part, describe the actions that CCPs, participants or domestic authorities have proposed or that are ongoing in the jurisdiction to improve observance of the recommendations, and the proposed timetable for their completion. Explain how the proposed action would lead to an improvement in the observance of the recommendation and whether completion of the proposed action would prompt the assignment of a higher assessment category relating to the recommendation.

Table 2

**Recommendation by recommendation
assessment of observance**

Recommendation 1: Legal risk

A CCP should have a well founded, transparent and enforceable legal framework for each aspect of its activities in all relevant jurisdictions.

Answers to key questions	
Assessment	
Comments	

Recommendation 2: Participation requirements

A CCP should require participants to have sufficient financial resources and robust operational capacity to meet obligations arising from participation in the CCP. A CCP should have procedures in place to monitor that participation requirements are met on an ongoing basis. A CCP's participation requirements should be objective, publicly disclosed, and permit fair and open access.

Answers to key questions	
Assessment	
Comments	

Recommendation 3: Measurement and management of credit exposures

A CCP should measure its credit exposures to its participants at least once a day. Through margin requirements, other risk control mechanisms or a combination of both, a CCP should limit its exposures to potential losses from defaults by its participants in normal market conditions so that the operations of the CCP would not be disrupted and non-defaulting participants would not be exposed to losses that they cannot anticipate or control.

Answers to key questions	
Assessment	
Comments	

Recommendation 4: Margin requirements

If a CCP relies on margin requirements to limit its credit exposures to participants, those requirements should be sufficient to cover potential exposures in normal market conditions. The models and parameters used in setting margin requirements should be risk-based and reviewed regularly.

Answers to key questions	
Assessment	
Comments	

Recommendation 5: Financial resources

A CCP should maintain sufficient financial resources to withstand, at a minimum, a default by the participant to which it has the largest exposure in extreme but plausible market conditions.

Answers to key questions	
Assessment	
Comments	

Recommendation 6: Default procedures

A CCP's default procedures should be clearly stated, and they should ensure that the CCP can take timely action to contain losses and liquidity pressures and to continue meeting its obligations. Key aspects of the default procedures should be publicly available.

Answers to key questions	
Assessment	
Comments	

Recommendation 7: Custody and investment risks

A CCP should hold assets in a manner whereby risk of loss or of delay in its access to them is minimised. Assets invested by a CCP should be held in instruments with minimal credit, market and liquidity risks.

Answers to key questions	
Assessment	
Comments	

Recommendation 8: Operational risk

A CCP should identify sources of operational risk and minimise them through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Business continuity plans should allow for timely recovery of operations and fulfilment of a CCP's obligations.

Answers to key questions	
Assessment	
Comments	

Recommendation 9: Money settlements

A CCP should employ money settlement arrangements that eliminate or strictly limit its settlement bank risks, that is, its credit and liquidity risks from the use of banks to effect money settlements with its participants. Funds transfers to a CCP should be final when effected.

Answers to key questions	
Assessment	
Comments	

Recommendation 10: Physical deliveries

A CCP should clearly state its obligations with respect to physical deliveries. The risks from these obligations should be identified and managed.

Answers to key questions	
Assessment	
Comments	

Recommendation 11: Risks in links between CCPs

CCPs that establish links either cross-border or domestically to clear trades should evaluate the potential sources of risks that can arise, and ensure that the risks are managed prudently on an ongoing basis. There should be a framework for cooperation and coordination between the relevant regulators and overseers.

Answers to key questions	
Assessment	
Comments	

Recommendation 12: Efficiency

While maintaining safe and secure operations, CCPs should be cost-effective in meeting the requirements of participants.

Answers to key questions	
Assessment	
Comments	

Recommendation 13: Governance

Governance arrangements for a CCP should be clear and transparent to fulfil public interest requirements and to support the objectives of owners and participants. In particular, they should promote the effectiveness of a CCP's risk management procedures.

Answers to key questions	
Assessment	
Comments	

Recommendation 14: Transparency

A CCP should provide market participants with sufficient information for them to identify and evaluate accurately the risks and costs associated with using its services.

Answers to key questions	
Assessment	
Comments	

Recommendation 15: Regulation and oversight

A CCP should be subject to transparent and effective regulation and oversight. In both a domestic and an international context, central banks and securities regulators should cooperate with each other and with other relevant authorities.

Answers to key questions	
Assessment	
Comments	

Actions to achieve observance

12. In Table 3, list the actions the assessor recommends to achieve full observance of the recommendations. If a system has plans for improvements under way and implementation of those plans would be sufficient to achieve observance, this should be noted (although those plans will not be reflected in the current assignment of assessment category). Any specific obstacles to observance should be noted. Explain the manner in which the recommended action would lead to an improvement in the level of observance of the recommendation. Identify the domestic institution competent to take each recommended action. Only list recommendations for which specific steps are being recommended.

Table 3

Actions to achieve observance

Reference recommendation	Actions to achieve observance
eg Recommendation 1	

Annex 2: Template for disclosure based on key questions

(This is a template for disclosure based on the answers to the key questions of the recommendations.)

1. A CCP should provide market participants with sufficient information to identify and evaluate the risks and costs associated with using its services (see Recommendation 14). Completion of the answers to the key questions in Section 4 will serve not only as a basis for assessment of implementation of the recommendations but also as a basis for public disclosure to provide market participants with the complete and accurate information they need. The CPSS and the IOSCO Technical Committee encourage CCPs to complete the answers to the key questions and make their responses available to market participants, regulators and other interested parties.

2. In addition to CCPs, national authorities which conduct an assessment and complete an assessment report as set out in Annex 1 may choose to publicly disclose their answers to the key questions. Authorities might think it appropriate to disclose their answers if they believe the answers to the key questions by CCPs are not totally accurate, complete or correct.

3. Information should be complete, accurate and regularly reviewed. It should be readily accessible to market participants. Responding institutions are strongly encouraged to post their answers on their website, so that information is accessible and can be updated easily and in a timely manner.

4. A brief introduction to the CCP should be inserted ahead of the answers to the key questions of the recommendations in order to aid the reader. This does not necessarily mean that there should be detailed explanations of each function of the CCP. The basic facts should be described in a concise manner. The items below should be included in the brief introduction in order to provide a context for and supplement to the answers for the key questions:

- Scope of coverage: markets and products
- Ownership
- Institutional and market structure
- Basic transaction data
- Participants
- Activities other than central counterparty function, if any

5. Below is a template for disclosure based on the key questions. In preparing the answers, the following should be noted.

- (a) Indicate the date when the answers are completed and make sure that the information provided in the answers is current when completed.
- (b) Answer all the questions in the order presented and restate the questions themselves when providing the answers. If a question is not applicable, indicate that this is the case and explain why it is not applicable. If necessary, cross-reference information given elsewhere if this is helpful in avoiding duplication.
- (c) The glossary included in Annex 3 defines the terms as used in the questions. Make sure that the use of terminology in the answers is consistent with these definitions. If a term used in the answers is specific to the CCP or used in a way that could be misunderstood, provide a clear explanation of how the term is used.
- (d) Include charts and diagrams wherever they would be helpful. All charts and diagrams should be accompanied by a description that enables them to be understood.
- (e) In cases where multiple responses to a question are possible, for example if the CCP offers multiple types of service, provide a response covering each of the alternatives and indicate the extent to which each alternative response is relevant.

- (f) Do not simply refer to or quote rules or regulations as a response to the questions. As a supplement to a response, however, feel free to indicate where relevant rules or regulations may be found.
- (g) Where questions ask about the timing of events, provide responses relative to the local time zone(s) where the CCP is located.
- (h) Update the answers as soon as possible after significant changes occur so that the information provided continues to be complete and accurate. Review the answers periodically (at least annually) so as to ensure that they are up to date.
- (i) Indicate contact details in case market participants or other relevant parties have enquiries concerning the answers.

Answers to the key questions of Recommendations for Central Counterparties (CCPs)

[Jurisdiction]

Responding institution: [name] as [CCP/ national authority/ ...]

Name of the entity assessed: [name of the CCP]

The information provided in the answers is accurate as of [date].

This response can be found at [website address].

Any enquiries should be sent to [contact details].

1. *Brief introduction to the CCP*

- Scope of coverage: markets and products
- Ownership
- Institutional and market structure
- Basic transaction data
- Participants
- Activities other than central counterparty function, if any

2. *Answers to the key questions of the recommendations*

Recommendation 1: Legal risk

A CCP should have a well founded, transparent and enforceable legal framework for each aspect of its activities in all relevant jurisdictions.

Key questions

1. Are the laws and regulations governing the operation of a CCP and the rules, procedures and contractual provisions for its participants clearly stated, internally coherent and readily accessible to participants and the public?

[Provide answers here]

2. Does the legal framework demonstrate a high degree of assurance that there is a clear and effective legal basis for:

- The CCP to act as counterparty, including the legal basis for novation or open offer.
- The timing of assumption of liability as CCP.

- Netting arrangements.
- The CCP's interest in collateral (including margin) that a participant pledges or transfers to the CCP.
- Default procedures.
- Finality of transfers of funds and financial instruments.
- Other significant aspects of the CCP's operations, risk management procedures and related rules.

[Provide answers here]

:
:
:

Annex 3: Glossary

backtesting	An ex post comparison of observed outcomes with expected outcomes derived from use of models for the purpose of judging the accuracy of the models.
central counterparty (CCP)	An entity that interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer.
central securities depository (CSD)	An institution for holding securities that enables securities transactions to be processed by means of book entries. Physical securities may be immobilised by the depository or securities may be dematerialised (so that they exist only as electronic records).
choice of law	A contractual provision by which parties choose the law that will govern their contract or relationship. Choice of law may also refer to the question of what law should govern in the case of a conflict of laws. See conflict of laws.
clearing fund	A fund composed of assets contributed by a CCP's participants that may be used by the CCP in certain circumstances to cover losses and liquidity pressures resulting from defaults by the CCP's participants.
clearing participant	A participant in a CCP that serves as an intermediary through which other market participants access the CCP's services.
collateral	An asset or third-party commitment that is accepted by the collateral taker to secure an obligation of the collateral provider to the collateral taker.
conflict of laws	An inconsistency or difference in the laws of jurisdictions that have a potential interest in a transaction. Each jurisdiction's conflict of laws rules specify the criteria that determine the law applicable in such a case.
correlation	A statistical measure of the relationship between two variables, measuring the extent of their mutual variation.
counterparty	A party to a trade.
counterparty credit risk	The risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter. Counterparty credit risk includes replacement cost risk and principal risk.
cross-margining agreement	An agreement between CCPs to consider positions and supporting collateral at their respective organisations as a portfolio for participants that are members of both organisations. Positions held in cross-margined accounts are subject to lower margin requirements if the portfolio of positions held at the two CCPs is less risky than the positions held at either CCP. In the event of default by a participant whose account is cross-margined, the agreement allows either CCP to use any excess collateral in the cross-margined account at the other CCP to cover losses.
custody risk	The risk of loss on securities in safekeeping (custody) as a result of the custodian's insolvency, negligence, misuse of assets, fraud, poor administration or inadequate record keeping.

default	Failure to satisfy an obligation on time. A CCP may specify certain other events, for example insolvency, that constitute default for purposes of triggering its default procedures.
delivery versus payment (DVP)	A link between transfer systems that ensures delivery occurs if, and only if, payment occurs.
final transfer	An irrevocable and unconditional transfer that effects a discharge of the obligation to make the transfer.
financial resources	The combination of resources that a CCP maintains for use in the event of a default by a participant. Financial resources generally comprise collateral (including margin) posted by participants to meet various CCP requirements, as well as a CCP's capital and retained earnings or a CCP's contingent claims on non-defaulting participants, parent organisations or insurers.
gross margin system	A system in which the margin posted at a CCP by a participant for its customers' positions is the sum of the requirements for individual customers.
guarantee fund	A fund to compensate non-defaulting participants from losses they may suffer in the event that one or more participants default on their obligations as counterparties. This arrangement does not involve a CCP, although it concentrates responsibility for risk management in the entity that establishes the fund (the guarantor).
guarantor	An entity that establishes a guarantee fund used to compensate non-defaulting participants from losses they may suffer in the event that a participant defaults on its obligation as counterparty.
haircut	The difference between the market value of a security and its value when used as collateral.
insolvency	A condition in which a firm's assets, at fair valuation, are not sufficient to discharge its debts.
investment risk	The risk of loss faced by a CCP when it invests its own resources or cash margin posted by its participants in obligations with market, credit and liquidity risks.
legal risk	The risk that a party will suffer a loss because laws or regulations do not support the rules of the CCP or the property rights and other interests held through the CCP. Legal risk also arises if the application of laws and regulations is unclear.
liquidity risk	The risk that a counterparty will not settle an obligation for full value when due, but on some unspecified date thereafter.
margin	An asset (or third-party commitment) that is accepted by a CCP to ensure performance on potential obligations to it or cover market movements on unsettled transactions.
market participant	A participant in the markets served by a CCP, including end investors.
market risk	The risk of losses from movements in market prices.
marking to market	The practice of revaluing securities and financial instruments using current market prices.
net margin system	A system in which the margin posted at a CCP by a participant for its customers' positions is the net of the requirements for the individual customers, that is, in determining how much collateral must be passed through to a CCP by a participant, its customers' positions can offset each other.

netting	An agreed offsetting of obligations by participants in a CCP.
normal market conditions	Normal market conditions are price movements that produce changes in exposures that are expected to breach margin requirements or other risk control mechanisms only 1% of the time, that is, on average on only one trading day out of 100. For example, in the case of a contract to purchase an asset, normal market conditions are those that result in price movements that equal or exceed the first percentile of the distribution of potential changes in the contract's value over the interval during which exposures can accumulate.
novation	A process through which the original obligation between a buyer and seller is discharged through the substitution of the CCP as seller to buyer and buyer to seller, creating two new contracts.
open offer	A process through which a CCP extends an "open offer" to act as counterparty to market participants and thereby is interposed between participants at the time a trade is executed.
operational risk	The risk that deficiencies in information systems or internal controls, human errors or management failures will result in unexpected losses.
pre-settlement risk	The risk that a counterparty to a transaction for completion at a future date will default before final settlement. The resulting exposure is the cost of replacing the original transaction at current market prices and is also known as replacement cost risk.
principal risk	The risk that the seller of an asset delivers it but does not receive payment or that the buyer of an asset makes payment but does not receive delivery. In such an event, the full principal value of the asset or funds transferred is at risk.
replacement cost risk	The risk that a counterparty to a transaction for completion at a future date will default before final settlement. The resulting exposure is the cost of replacing the original transaction at current market prices.
repurchase agreement	A contract to sell and subsequently repurchase securities at a specified date and price.
securities settlement system	The full set of institutional arrangements for confirmation, clearance and settlement of securities trades and safekeeping of securities.
settlement bank	A bank that is used to effect money settlements between a CCP and its participants.
settlement bank risk	The risk that a settlement bank could fail, creating credit losses and liquidity pressures for a CCP and its participants.
settlement risk	The general term used to designate the risk that settlement in a funds or securities transfer system will not take place as expected. This risk may comprise both credit and liquidity risk.
stakeholders	Entities that have an interest in the viability of a concern such as a CCP. Stakeholders may include CCP owners, participants, customers, trading systems for which a CCP provides counterparty services, and the public.
stress testing	The estimation of credit and liquidity exposures that would result from the realisation of extreme price changes.

systemic risk

The risk that the inability of one institution to meet its obligations when due will cause other institutions to be unable to meet their obligations when due. Such a failure may cause significant liquidity or credit problems and, as a result, might threaten the stability of, or confidence in, markets.

variation margin

Funds that are paid by (or received by) a counterparty to settle any losses (gains) resulting from marking open positions to market. In some markets the term is also used to describe the posting of collateral by a counterparty to cover a margin deficit.

Annex 4: Members of the CPSS-IOSCO Task Force on Securities Settlement Systems

Co-Chairmen

Board of Governors of the Federal Reserve System	Patrick Parkinson
Monetary Authority of Singapore	Shane Tregillis

Members

National Bank of Belgium	Steven Van Cauwenberge Benoît Bourtembourg (until June 2003)
Comissão de Valores Mobiliários, Brazil	Fabio Menkes
The People's Bank of China	Song Pan
Czech National Bank	Tomáš Hládek
European Central Bank	Daniela Russo
Autorité des Marchés Financiers, France	Bénédicte Doumayrou
Bank of France	Yvon Lucas
Deutsche Bundesbank	Roland Neuschwander
BaFin (German Financial Supervisory Authority)	Christoph von Busekist
Securities and Futures Commission, Hong Kong	Rico Leung Stella Leung (until October 2003)
Reserve Bank of India	Jasbir Singh H R Khan (until August 2004)
Securities and Exchange Board of India	Pratip Kar
Commissione Nazionale per le Società e la Borsa, Italy	Luca Amadei David Sabatini (until November 2003) Salvatore Lo Giudice (until July 2003)
Bank of Japan	Tomoyuki Shimoda
Financial Services Agency, Japan	Teruhiro Ozaki Jun Hitotsumatsu (until August 2003)
Malaysian Securities Commission	Ranjit Ajit Singh
Bank of Mexico	Francisco Solis
Netherlands Authority for the Financial Markets	Joost Wensveen
Saudi Arabian Monetary Agency	Ali Al Homidan Abdullah Al Suweilmy (until March 2004)
Comisión Nacional del Mercado de Valores, Spain	José Manuel Portero
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