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CPMI-IOSCO
cpmi@bis.org
consultation-2016-091@iosco.org

Submitted Electronically

Re: Consultative Report: *Resilience and recovery of central counterparties (CCPs): Further guidance on the PFMI*

The Futures Industry Association (FIA), the Global Financial Markets Association (GFMA), the Institute of International Finance (IIF), the International Swaps and Derivatives Association, Inc. (ISDA) and the Clearing House (TCH; and together with FIA, GFMA, IIF and ISDA, the Associations) appreciate the opportunity to comment on the *Resilience and recovery of central counterparties (CCPs): Further guidance on the PFMI* Consultative Report recently published by CPMI-IOSCO.

The role and significance of central counterparties (CCPs) has increased in recent years as over-the-counter derivatives have moved to clearing. Effective resilience, recovery and resolution mechanisms for CCPs are now more than ever critical to the efficient operation and sustainability of the global financial markets. The Associations support the Consultative Report as another important step towards enhancing the safety and soundness of CCPs and welcome the opportunity to provide comments.

Our comments below are broken out by sections of the Consultative Report.

Governance

Is the guidance provided on CCPs' governance sufficient and appropriate?

Overall, we believe the guidance on governance is helpful, and we are supportive of the approach taken by CPMI-IOSCO. We believe the additional granularity provided in this guidance will improve the governance structure of CCPs.

Below we make some initial comments on the way the guidance places a number of additional risk management responsibilities on the CCP's board. We support the approach of ensuring that the board is key to setting the risk appetite and providing overall risk management oversight of the CCP, and that board members are fully aware of, and responsible for, the actions of the CCP. While there is a limit to the extent the board can be involved in highly granular elements of a CCP's operations and risk calculation process, we are strongly supportive of the proposed approach in the guidance regarding ultimate responsibility for the CCP's board.

The introduction of the Governance section refers to the need for the CCP's board to "have explicit responsibility to ensure that the CCP's margin system and stress-testing framework, as key elements of the CCP's overall risk management framework." We believe this section should make clear that final responsibility for risk management rests with a CCP's board of directors, in its role overseeing senior management (taking into account the role of the risk committee as appropriate) in managing a CCP's material risks including[1]:

- Changes to membership criteria;
- Risk framework (*e.g.,* initial margin, sizing of the default fund);
- Sizing of loss absorbency resources;
- Default management framework;
- Default waterfall;
- New products that introduce new, material risk into the system; and
- Procedures for recovery and resolution of the CCP.

We would further note the importance of the board in having ultimate responsibility for other forms of risk (*e.g.,*. operational, legal and investment risk) at the CCP. The board must ensure that the CCP's financial resources are sufficient to cover any losses arising from any of these non-default risks. One area which is not covered in detail in the guidance relates to CCP emergency powers. We believe there should be clarity on (a) the discretionary authority available to CCPs in emergency situations, and (b) the need for transparency around the decision making process by CCPs during an emergency. A key concern for clearing participants[2] is that CCPs balance the need for clearing participants to measure and manage exposures with the CCP's discretionary authority. More importantly, even during an emergency the CCP should have a mechanism to seek consent from all clearing participants who may be materially impacted by the CCP's use of emergency powers.

An important point that we have outlined in further detail below is the role of risk committee members. The guidance should state clearly that risk committee members provide an independent, expert opinion on a CCP's risk management strategy and the impact of a CCP's actions on CCP and clearing participant stability and market integrity, rather than acting as a fiduciary on behalf of the CCP. Additionally, as detailed below, the guidance should explicitly

[1] This recommendation was outlined in more detail in TCH's September 2015 letter to CPMI-IOSCO with Recommendations on Current CCP Risk Governance & Member Consultation Processes. As outlined in that letter: "Because of the possible systemic risks that CCPs may pose, it is critical that CCPs' management and boards of directors understand fully the potential risks associated with the CCP's activities."

[2] As used herein, "clearing participants" refers to clearing members and their direct and indirect clients.

require CCPs to seek public comment on important rule changes. Even if the national rules allow for filing rule change without a public comment period, we believe the guidance should ensure that rule changes processes that do not provide for open comment periods are used on a limited basis and only for non-material risk issues. As we outline in more detail below, the ability for clearing participants to comment on changes to material risk issues is a fundamental requirement for CCPs to ensure that any such changes take account of the views of all key stakeholders.

Is the current level of public disclosure by CCPs appropriate? In particular, is there a need for further disclosure related to margin and stress testing methodologies? If so, would the disclosure of the items included in the list (or a subset of the list) suggested by an industry group and attached as an Annex be appropriate and sufficient for disclosure and feedback purposes?

Clearing members consider that the following information is required to enable the effective review of margin models:

- The provision of sufficiently detailed information on models, as described in "CCP Transparency on Margin Framework" attached hereto;
- An appropriate timescale for review/analysis of the impact of the changes, both systemic and clearing member specific (it was tentatively proposed that this should be 8 weeks);
- The ability of the clearing member to distribute the information to the relevant risk experts within the firm;
- Evidence that the feedback received has been considered by the CCP risk committee and board.

We do not believe the current level of disclosure by CCPs is appropriate and therefore think that guidance should provide greater specificity on information to be provided by CCPs. The Annex to the Cover Note to the Consultative Report speaks to stress results only, but does not address margin/stress methodology or other material risk areas. Information shared by CCPs on margin methodologies should not just enable feedback, but should allow for replication and testing by members. This means CCPs need to provide clearing members with underlying detail of the CCP's margin algorithm and all the parameters for all the inputs to the model in order for clearing members to be able to (a) replicate the model; and (b) assess the impact of changes to the model and/or any of the parameters. CCPs should be required to provide clearing members with full risk management policies and procedures they are required to have under PFMI Principle 3 or as otherwise mandated by national legislation and the independent validation reports. To provide further clarity regarding what we believe should be disclosed, please see the attached "CCP Transparency on Margin Framework."

Our comments on each individual section of the guidance are provided below.

Design and objectives of the margin system and stress-testing framework

We note that paragraph 2.2.4[3] refers to the need for the board to have explicit responsibility for a number of factors, including "the target degree of credit and *liquidity risk mutualization*" (emphasis added). The reference to liquidity risk mutualization is not mentioned elsewhere in the guidance. The definition is unclear. We therefore believe the reference to liquidity risk mutualization should be deleted.

As we noted in our response to the question above on the sufficiency and appropriateness of the guidance on governance, we believe the guidance provided and related transparency requirement should not be limited to margin and stress testing, but rather should cover all material risk issues.

Determining the amount and characteristics of a CCP's own financial resources to absorb losses

We reiterate the view made on previous occasions[4] that clearing members should not be responsible for covering any non-default losses incurred by a CCP. These are losses that exceed a CCP's financial resources above the minimum regulatory capital requirements, which are not the result of clearing member defaults (*e.g.,* CCP operational failures).[5] With respect to governance, we believe the guidance should recognize the potential moral hazard for CCP management if clearing members have responsibility for losses that are within the CCP's sole control. Clearing member contributions to a CCP's financial resources should not be available to absorb a CCP's non-default losses. We believe the guidance should be explicit that default and non-default losses should be transparently defined and segregated, and we further believe that non-default losses should accrue entirely through the CCP ownership and control structure.

We would also note that this section refers to the need for CCP boards to be involved in "determining the amount and the characteristics of the CCP's own contribution." We would note that currently not all CCPs contribute their own capital, so this guidance will not always be relevant today. We believe however this is clearly not best practice, and all CCPs should work towards providing their own financial resources, in order to ensure the interests of the CCP are aligned with its clearing participants.[6] We would note more generally that CCP boards should consult widely, particularly with the CCP risk committee, on the quantum of the CCP's own contribution.[7] This is to avoid a potential conflict of interest of the board, which has a duty to shareholders that could result in the CCP's own funds contribution not being reflective of the CCP's overall risk exposure.

[3] Unless otherwise noted, paragraph references are to paragraphs of the guidance in the Consultative Report.
[4] *See, e.g.,* FIA "CCP Risk Position Paper" (April 2015) and ISDA "CCP Loss Allocation at the End of the Waterfall" (August 2013).
[5] *See* the "CCP Contribution to Losses" and "Recovery" sections for more discussion on this issue.
[6] See the "CCP Contribution to Losses" section below for a discussion of this issue.
[7] *Id.*

Review and validation of margin system and stress-testing framework

The guidance includes the statement that "any validations and reviews of the margin system and stress-testing framework (*e.g.*, methodology, parameters, assumptions, changes, and improvements) could be provided to the CCP's risk committee (*whose membership typically includes representatives of clearing members and often also clients of clearing members*)" (emphasis added). We note two points in respect of this statement:

- The statement in parentheticals is not always the case, as some CCPs do not have representation from clearing participants. We would recommend that there be clearing participant representation on risk committees at CCPs globally to provide market expertise in connection with important risk decisions that risk committees make. Note that it is reasonable for there to be a materiality threshold for non-clearing member representatives given the range of sizes of clearing participants that are not clearing members.

- Representatives from clearing participants on the risk committee provide their own independent opinion to the risk committee on the impact of changes to risk management practices and/or rules. As noted in the next section, it should be clear that while representatives of clearing participants may sit on CCP risk committees, they provide an independent, expert opinion on a CCP's risk management strategy and the impact of a CCP's actions on CCP and clearing participant stability and market integrity.

Paragraph 3.6.18 of the PFMI states: "A CCP should regularly review and validate its margin system. A CCP's margin methodology should be reviewed and validated by a qualified and independent party at least annually or more frequently if there are material market developments." It is not clear in the PFMI if this independent review is required to be external, or whether it could be an internal team, such as internal audit. Given the importance of the margin system to the safety and resilience of CCPs, we believe the guidance should make clear that the independent review of the margin system should be done by a qualified entity external to the CCP.

The guidance includes the statement: "For example, any validations and reviews of the margin system and stress-testing framework (*e.g.*, methodology, parameters, assumptions, changes, and improvements) *could* be provided to the CCP's risk committee. The risk committee, as in other instances, *could* then discuss these validations and reviews for presentation to and final endorsement by the board" (emphasis added). Given the key role of the CCP's risk committee in the margin system and stress-testing framework, we believe that it is vital that the risk committee remain involved in any validations and reviews of the framework. Therefore the references to "could" in the above quote should be changed to "should." This reflects the risk committee's expertise in these areas, and the important role it should have in the ongoing maintenance and any reviews of the margin system and stress-testing framework. We would also note that, depending on the nature of the validation or review, other external parties may have expertise that would assist the CCP in the review, including, *e.g.*, clearing participants. The CCP's board should therefore seek feedback from any other such interested external parties in undertaking these validations and reviews.

Disclosure and feedback mechanism for reviewing the margin system and stress-testing framework

We welcome the additional guidance provided on feedback mechanisms for reviewing the margin system and stress-testing framework. We believe this is a key process for CCPs to undertake, and one they currently do not always undertake in the most effective way. While we support the additional guidance provided, we believe it should go further and detail a process CCPs should follow for seeking feedback from their members. As we noted in our response to the questions above, we also believe that the guidance should not be limited to margin and stress testing, but rather should cover all material risk issues. The additional guidance we propose covers:

- The role of the risk committee and its members;
- The process of seeking feedback from participants; and
- Risk related disclosures to general membership.

We have a number of comments about the functioning of the risk committee and the role of its members:

- It should be clarified that risk committee members provide an independent, expert opinion on a CCP's risk management strategy and the impact of a CCP's actions on CCP and clearing participant stability and market integrity. Consultation with the risk committee cannot replace consultation with clearing participants, as not all clearing participants are represented on the risk committee. This is necessary to ensure the positions of clearing participant stakeholders are taken into account prior to the implementation of changes by the CCP. This ensures a wider perspective on any rule changes than that of the risk committee and the CCP's board.

- Membership on the risk committee must not confer any commercial advantage to clearing participants who sit on the risk committee. These clearing participants must be prohibited from sharing information with commercial colleagues. However, risk committee representatives should be able to seek guidance from risk experts within their organization, and it must be clear they are doing this with the purpose of providing expertise to the CCP. However, this must not constitute a substitute for seeking member feedback.

More generally, it would be helpful for the guidance to provide detail on the desired scope/mandate, structure, composition, eligibility, duties/objectives of risk committee members. In addition to points raised elsewhere in this response, additional detail was provided in the TCH 2015 Letter on Current CCP Risk Governance & Member Consultation Processes, including recommendations in respect of:

- Minimum Eligibility Criteria. CCPs should be required to prescribe explicit minimum background and expertise requirements (*e.g.*, risk, trading, operational), as well as

seniority requirements, for risk committee representatives to ensure that the risk committee benefits from diverse perspectives and a sufficient level of expertise. The risk committee should include a minimum number of representatives with risk expertise in the asset classes overseen by the risk committee, as well as a minimum number of representatives with credit risk expertise relevant to the CCP. Risk committee representatives should be nominated by their respective institutions based on these criteria.

- Risk Committee Composition. Risk committees should be recomposed annually, and, as clearing services are added to the CCP, the risk committee representatives should be reviewed to ensure that there are appropriate market experts on the risk committee. Where CCPs have risk working groups for particular clearing services and also a risk committee that reviews risk working group recommendations, then the risk committee must have appropriate product expertise to review and potentially reject the recommendation. The details must be explicitly disclosed to the CCP's board.

- Risk Committee Confidentiality Agreements. CCPs should be required to permit risk committee representatives, clearing member working group representatives, and clearing members themselves to share materials, on a confidential basis, with internal risk personnel within their respective organizations to obtain needed input to effectively perform their duties as risk committee representatives, thereby maximizing the risk expertise the risk committee may provide to the CCP's management and boards of directors.

Paragraph 2.2.18 provides four channels for feedback from clearing participants to the CCP, in addition to the use of the risk committee. We believe the guidance should state that all four channels of feedback described in paragraph 2.2.18 should be used – it is not for the CCP to choose among them.

In addition to the four channels of feedback outlined, we believe more granular guidance would ensure CCPs follow best practice in the process of seeking feedback from clearing participants, particularly in respect of material risk issues. This more granular guidance should include:

- For material risk issues, CCPs should engage clearing participants early in the process of risk management framework development and rule development. By waiting until the last stage of a public comment period, it can be more difficult for participant feedback to be incorporated in the CCP's rules.

- All material risk changes should be subject to public comment.

- The length and form of the feedback process must depend on the importance of the issue to the CCP and clearing participants. If a rule change would result in a change in the liability of clearing participants, there should be a more thorough process, such as ballots, in order to solicit participant approval.

- Industry members have previously called for an appropriate timescale (tentatively proposed to be eight weeks) for review/analysis of the impact of the changes, both systemic and clearing member specific.

- Industry members have also noted the need for clearing participants to distribute information about material rule changes to the relevant risk experts within their firm (subject to a prohibition on the information being used for commercial purposes).

- There have been some recent examples of clearing participant feedback being sought at a late stage in the process and with too short a window to comment.

- The use of rule change mechanisms that do not directly allow for clearing participant feedback should be used on a limited basis and only for non-material risk issues. For example, there has been increasing use recently of the U.S. Commodity Futures Trading Commission's Rule 40.10 filing process, which does not provide a direct feedback mechanism for participants.

- In making final decisions on rule changes, there should be evidence that feedback from clearing participants has been considered by the risk committee or board. If such feedback is not considered, CCPs should be required to advise regulators of their rationale for not considering such feedback.

- There should be a reporting mechanism straight to the regulators to provide feedback. While most jurisdictions have a structure for clearing participant feedback to regulators, it is not always used. It is important that clearing participants have the ability to provide feedback to regulators prior to changes being implemented.

CCPs should report to all members at least on an annual basis, the adequacy and performance of stress and margin back tests. The level of detail provided should in no way expose commercial or individual member details, but it should provide members with the overall performance and any weaknesses identified or potential remediation. Details should include the assumed scenarios and shocks, material inputs and results in an anonymized manner as detailed in the Annex to the Cover Note to the Consultative Report that would ensure such information would not disclose risk or commercial concerns of individual clearing participants.

Stress Testing

Is the guidance provided on stress testing sufficient and appropriate?

We strongly support the guidance on stress testing and note that it incorporates a number of recommendations from the industry. We commend CPMI-IOSCO for recognizing the importance of establishing standards that a CCP should follow in choosing stresses to model and constructing stress scenarios.

Below we point out a number of aspects of the guidance that we strongly support and also raise a limited number of issues for CPMI-IOSCO to consider before issuing final guidance, particularly with respect to liquidity stress testing, the interactions between liquidity and credit stress testing and disclosure of information about stress testing. We have broken out our comments below by sections of the guidance.

Structure of credit and liquidity stress-testing frameworks

We strongly agree with the statement in paragraph 3.2.2 that a CCP should conduct distinct but consistent stress tests for credit risk and liquidity risk and cover resulting exposures with prefunded available financial resources and qualifying liquid resources, respectively. We also agree that in ensuring coverage of credit and liquidity exposures, CCPs must account for the likely value of available collateral in stressed market conditions. We think that final guidance should require CCPs to stress the value of collateral in extreme but plausible market conditions.

We support the statement in paragraph 3.2.5, which provides that a CCP should ensure that its credit and liquidity stress tests are structured in a way that is consistent with the rules and procedures that govern, respectively, how credit and liquidity risk is managed day to day following a participant default. We believe that final guidance should require CCPs to conduct fire drills across asset classes to justify using the same stress scenarios across all asset classes and verify the adequacy of assumptions used to set the applicable stressed period of risk for each asset class.

Identification of all sources of credit risk

We agree with paragraph 3.2.11, which provides that a CCP should identify all sources of credit risk to which it could be exposed in extreme but plausible market conditions and ensure that each source of risk is appropriately captured in credit stress tests. We support application of credit risk stress scenarios to the market values of both portfolios and collateral but note that few CCPs do this currently. We believe that these scenarios should be applied to portfolios and collateral simultaneously to determine the overall impact on the portfolio.

Identification of all liquidity risks

We agree with the statement in paragraph 3.2.15 that liquidity exposures can arise even in the absence of a participant default or when there is no uncovered credit exposure. We therefore believe that CCPs should account for liquidity risks from settlement banks, custodians, investment counterparties and any relevant liquidity providers. On the other hand, we believe that final guidance should emphasize that liquidity stresses may be caused by credit stresses. CCPs should also account for these potential interactions in developing hypothetical scenarios for liquidity stress testing. In addition, liquidity stress testing should account for other scenarios specific to liquidity risk, including, *inter alia*, higher haircuts required to finance collateral.

We also agree with the statements paragraphs 3.2.15-3.2.21 generally that liquidity stress testing should identify liquidity risks for all currencies in which a CCP could have payment obligations

individually. It would not be sufficient for a liquidity stress testing to focus on only major currencies.

We generally agree with the sources of liquidity risk related to liquidity exposures in paragraph 3.2.17. However, we think that final guidance should require CCPs to analyze their liquidity exposures consistently with how they manage credit exposures and therefore, if they manage credit exposures by services lines, they should analyze each of the identified liquidity risks by service lines as well. For liquidity risks that are managed across service levels, CCPs should still be required to account for any challenges that could arise in modelling risks across service levels.

Further, in jurisdictions where CCPs have the ability to borrow cash collateral posted by non-defaulting members. CCPs should be required to return cash collateral to the non-defaulting clearing members and should be liable for any market risk that results from transforming non-cash collateral into cash. Some members also believe that CCPs should be required to replace these with non-cash collateral. Members therefore think that final guidance should require CCPs to account for these scenarios and potential risks as well as require that rulebooks clearly specify any rights of the CCP to use cash collateral posted by clients for liquidity purposes.

We believe that final guidance should require a CCP to account for the risks it could impose on the financial system if it relies too heavily on clearing members and their bank affiliates for liquidity in times of market stress. It is conceivable that these facilities may not be available and, even if they are, overreliance on them could be procyclical. We believe that final guidance should account for the systemic contagion risk introduced by over-reliance on clearing members and their bank affiliates, as well as other clearing participants. Some members also believe that any reliance on clearing participants for liquidity should be limited.

Finally, we strongly support CCP access to liquidity from central banks on standard market terms (including the requirement for high quality liquidity collateral). To facilitate such access, we believe that CCPs should be required to ensure that they hold an adequate amount of such collateral.

Development of extreme but plausible scenarios, comprehensiveness of scenarios, development of forward-looking scenarios, changes in relationships between different products or asset classes

We generally think that the guidance on what constitutes “extreme but plausible market conditions” and “risk tolerance” are still vague. We urge CPMI-IOSCO to provide clarity beyond the guidance in paragraph3.2.23, which merely suggests that stress testing account for interactions between a member default and potential market scenarios. We also believe that guidance should require regulators to consider consistency of stress scenarios across CCPs to ensure that similar asset classes at different CCPs utilize similarly severe stress assumptions.

We strongly agree with the statement in paragraph 3.2.25 that historical stress scenarios alone are not sufficient. We also agree with guidance in paragraphs 3.2.26-3.2.29 and 3.2.36-3.2.41 regarding the expertise and knowledge required to derive forward-looking stress scenarios that are specifically tailored to the products cleared by each individual CCP. Accordingly, we think

that paragraph 3.2.26 should more clearly distinguish between historical, hypothetical (forward looking) and theoretical (statistical) scenarios and mandate the use of all three.

We also strongly agree with the statement in paragraph 3.2.51 that for the purposes of reflecting the extreme but plausible market conditions appropriate for stress testing, a CCP should assume that it will be unable to port client positions because porting requires a willing and able transferee. Consistent with this, we believe that final guidance should require CCPs to use conservative assumptions regarding the period of time during which it would need to manage client positions.[8]

Stressed period of risk

Paragraph 3.2.43 requires the stressed period of risk to be at least as long as the margin period of risk. Some members think that CPMI-IOSCO should reconsider whether the margin period of risk is the correct benchmark. Stressed markets are characterized not only by increased volatility but potentially could also be characterized by reduced market liquidity, which would impact the time required to liquidate defaulted portfolios. A CCP's default management strategy typically involves entering into hedges. We believe that CCPs employing this strategy should demonstrate consideration for illiquid markets when estimating the stressed period of risk. A longer stressed period of risk than margin period of risk may also be appropriate for certain products that are inherently illiquid. We urge CPMI-IOSCO to provide additional guidance regarding when stressed period of risk should be longer than margin period of risk.

Additionally, with regard to liquidity risk, we believe that upon one or more default events, liquidity strains may persist over multiple days. We therefore think that liquidity stress scenarios should be based on multi-day coverage to ensure that a CCP has sufficient liquidity to return to a matched book.

Analysis of the risk management framework

Final guidance should require CCPs to ensure a thorough understanding of the complexity of stress test results to avoid unilateral application of these results. In particular, CCPs should analyze whether the drivers and relationships within different data sets are reasonable to ensure that coverage of risks is appropriately conservative.

We also urge CPMI-IOSCO to require additional disclosures regarding results of stress testing to CCP members and other clearing participants. Disclosures should cover the results of stress testing (as detailed in the Annex to the Cover Note to the Consultative Report), scenarios used, assumptions used to develop hypothetical (forward looking) and theoretical (statistical) scenarios, rationale for sizing resources held based on relevant stress testing, sensitivity results and the results of reverse stress tests. With regard to liquidity in particular, we believe that CCPs should establish liquidity waterfalls that identify sources and uses of liquidity. These waterfalls should be well documented, subject to stress testing (including from an operational perspective) and disclosed to clearing participants. For scenarios, disclosures should cover the actual basis points, or other relevant measure, that the market is assumed to move so that industry

[8] See the "Margin" section below for a discussion of this period of time.

participants fully understand the magnitude of relevant market events covered by the stress testing.

Granular information about scenarios should also be disclosed publicly. These disclosures would facilitate the conversations amongst industry participants and regulators that are necessary to determine the adequacy of stress testing. We fully support the disclosures in the Annex to the Cover Note to the Consultative Report.

We note that pursuant to the recently published *Progress Report on the CCP Workplan*, a joint BCBS, CPMI, FSB and IOSCO study group on CCP interdependencies is expected to publish a report in early 2017. We encourage CPMI-IOSCO to consider the results of this report when issuing final guidance on stress testing. Final guidance should require stress testing to cover interdependencies with custodians, letter of credit providers, liquidity providers, investment counterparties, settlement banks and obligors on credit-sensitive collateral (*e.g.*, corporate bonds). Final guidance should also address the interplay between credit and liquidity stresses across these interconnections, including in a cross-border context.

In light of the potential for member positions and market prices to change significantly during the day, is the proposed guidance on capturing intraday positions and price movements in stress tests appropriate and sufficient?

We support guidance on intraday stress testing as default events may be driven by intraday movements of prices and positions. We particularly support intraday stress testing as necessary to prevent procyclical collateral calls. However, we think that the final guidance should provide additional clarity regarding what intraday stress testing should cover. We interpret paragraphs 3.2.4 and 3.2.5 to require intraday stress testing to address (1) the risk that initial margin is not sufficient to cover intraday fluctuations, which could be procyclical if calls for additional collateral occur in a time of market stress, (2) trading behavior that causes position fluctuations throughout the day but that is not picked up by end-of-day data and (3) the potential for having to liquidate mid-day as opposed to at the end of a day and related liquidity constraints for positions that vary greatly throughout the day. We support these objectives and suggest that CPMI-IOSCO articulate them more clearly in final guidance.

Coverage

Is the guidance provided on coverage sufficient and appropriate?

Overall, we support the guidance provided. However, we think that the final guidance should provide additional granularity in certain areas. We also strongly believe that final guidance should emphasize a CCP's ability to cover potential default losses as opposed to satisfaction of a minimum "cover 1" or "cover 2" standard. Separately, we maintain the importance of clearly articulating on an ex ante basis, and protecting, the liability of clearing members. As discussed in more detail below, we urge CPMI-IOSCO to address this point in final guidance.

Below we point out a number of aspects of the guidance that we strongly support and also raise a number of issues for CPMI-IOSCO to consider before issuing final guidance (broken out by each section of the guidance).

Cover 1 or Cover 2 as a minimum

We strongly support the guidance in paragraph 4.2.1 providing that a CCP's assessment of relevant extreme but plausible scenarios and market conditions should include an analysis of the number of simultaneous clearing member defaults that are extreme but plausible given the composition of its particular base of clearing members and their distribution of risk across a particular clearing service. Please see the response to the question below for the remainder of our comments on this section.

Determining the largest exposures

We strongly agree with the guidance in paragraph 4.2.2, which provides that CCPs should monitor the distribution of projected stress-testing losses across clearing members. However, we believe that the guidance should be more prescriptive regarding situations in which composition of the membership base and distribution of projected losses across participants could require higher coverage. We also believe that CCPs should provide disclosure on this distribution as part of its membership feedback and governance process. In particular, we believe that CCPs should be required to demonstrate to their stakeholders that their prefunded resources are appropriate based on their projected loss distribution, taking into account distribution risk across the CCP's membership. It is important to understand how relatively equal loss distributions would affect required resources. As noted above and discussed below, we believe that the focus should be on a CCP's ability to cover potential default losses as opposed to satisfaction of a minimum "cover 1" or "cover 2" standard and we believe that an understanding of these issues is crucial to achieving such coverage.

We also agree with the statement in paragraph 4.2.2 that a CCP should assume simultaneous default of a participant and all of its affiliates. On principle, we agree that a CCP should only allow for offsetting to the extent the rules of the CCP and the applicable legal framework allow for such offsetting in the event of default. However, we think that guidance should further recommend that CCPs take a conservative approach in determining whether any such offsetting would be permitted. It may be most appropriate to not apply offsetting between affiliates for stress-testing purposes given legal restrictions on such offsetting.

We strongly support the guidance in paragraph 4.2.3 providing that a CCP consider using unsynchronized stress-testing results to better reflect the potential sequential default. This is particularly important for CCPs that clear different assets classes or uncorrelated products within a single clearing service or within the same default "waterfall." Unsynchronized stress tests are appropriately conservative as they provide an additional buffer in the event that stress-testing frameworks are not appropriately comprehensive or robust. Additionally, we again believe that the criteria for such stress testing and the results should be disclosed to a CCP's stakeholders.

Ignoring voluntary, excess contributions

We agree that a CCP should ignore any voluntary, excess contributions from clearing members because they could be withdrawn, particularly in a period of stress. We believe that this is particularly true in the context of liquidity coverage as we think it is very likely that clearing members would withdraw excess cash in a period of distress.

Maintaining resources on an ongoing basis

As an overarching principle, liability of clearing members should be clearly articulated on an ex ante basis and protected. Unlimited assessment rights on clearing members may be unreliable and could lead to procyclicality and liquidity or funding issues for clearing members, thereby perpetuating systemic risk at a time of market distress.[9] We therefore support the guidance in paragraph 4.2.7 requiring CCPs to clearly articulate the circumstances in which they will call for additional financial or liquidity resources from clearing members, the nature of the resources it will call (*e.g.*, additional margin or additional contributions to the default fund), how the allocation of additional contributions will be determined and the payment deadline. We strongly believe that potential obligations of clearing members and the circumstances in which they would arise should be clearly communicated to clearing members on an ex ante basis.

Clearing members must have a full understanding of when and how they could be assessed. We agree with the requirement that CCPs maintain a sufficient minimum amount of resources at all times relative to targeted coverage and have procedures to call for additional resources to address any breaches. However, we do not believe that CCPs should have the ability to call for default fund replenishments on a continual basis. Requiring members to replenish the default fund immediately after its usage would mean that in the case of multiple defaults, members would have to keep replenishing the default fund after each default. The process would be iterative depending on the number of defaults that occur. As such, clearing members would have no means of determining the number and amount of replenishments that they would have to make over a given period making it challenging to estimate their liabilities and measure or risk manage their exposure. Even where CCPs do not resize the default fund immediately following each default, continual replenishments can still lead to very high default fund liability, potentially conflicting with bank regulatory limits. Continual default fund replenishments are also procyclical and multiple calls increase probability that a member would fail to pay in the call.

To address our concerns about membership risk, we suggest that CCP rules provide for a standard capped liability framework which limits the amount of resources that they can use across single and multiple defaults during the latter of a 30 calendar-day period or the end of the default management process. This is in line with the time provided to CCPs in certain jurisdictions to replenish their "skin-in-the-game" contributions. There is no rationale why the CCP would be provided a longer window to replenish its first tranche contribution. CCPs should be required to size their funded default fund appropriately to ensure they have access to sufficient resources in the event of a member default. And once the default fund has been used,

[9] We note that, at present, insured depository institutions in the United States are restricted from taking on membership obligations in a CCP (or entering into a transaction) whereby the institution is exposed both legally and practically to unlimited liability. 12 C.F.R. § 225.28(b)(7)(iv).

the number of assessments should be capped to one times the default fund irrespective of the number of defaults that occur during the 30-day period to ensure a clear and consistent cap on member liability. This cap should consistently be applied for both withdrawing and continuing members to ensure there are no incentives to exit the market, which could potentially cause a run on CCP that could then lead to market instability.

Assuming that a CCP holds "cover 2" resources, additional resources equal to one times the default fund would cover defaults of members that would cause the four largest losses. Based on CPMI-IOSCO public quantitative disclosures for CCPs that clear listed products, the largest member loss is actually two to three times the size of the second largest member loss. In these situations, additional resources equal to one time the default fund would actually cover losses from four additional members (*i.e.*, six members in total). Also based on the quantitative disclosures, losses from the top five members account for 50% of total potential losses. Losses beyond these would suggest extreme market moves and/or members failing at a rapid and unprecedented rate. Additionally, we believe that recent reforms to address G-SIB resolution, including requirements to hold "bail-in-able debt," should significantly reduce the likelihood of a large number of member failures within a 30-day period. Finally, we note that losses from additional defaults would likely be lower in magnitude because the larger number of defaulting positions would result in more potential offsets for the CCP to realize in liquidation.

Additionally, we strongly support the guidance in paragraph 7.2.5 (and also in the previously published Recovery Report), which provides that a CCP's rules and procedures should avoid automatic triggers but instead provide the CCP with the capacity to effect a replenishment as soon as practicable, including by the following business day when that would be the case, along with the capacity and responsibility to determine the most appropriate pace for replenishment in the light of prevailing circumstances (with the CCP bearing the burden of proof to demonstrate why it would be impracticable to replenish its resources by the following business day). We suggest adding consistent language to paragraphs 4.2.6-4.2.7 and re-evaluating the language in paragraph 4.2.6 regarding automatic triggers and same-day contributions to re-establish compliance with coverage requirements.

We also believe that anything paid in by clearing members to replenish resources should count towards caps on clearing member assessments so that continual replenishments across multiple defaults do not raise the cap on membership liability. Instead, CCPs should ensure availability of adequate margins to cover losses. To clarify, the CCP would only have the authority to call for additional resources to replenish the default fund once (regardless of whether it referred to such cash calls as an assessment or replenishment) during the longer of a 30-day period or the end of default management process. Beyond this amount, additional initial margin, CCP capital and/or funding from a CCP's parent could be used to meet coverage requirements and any new default losses in the continuing default management process/30-day period.[10] This would ensure that the

[10] In adopting this approach, we noted that such initial margin requirements could be quite high in a time of stress. CCPs should strongly consider alternative means to meet coverage requirements, including CCP capital and funding from a parent company of the CCP as an interim measure.

CCP has funded resources to replenish the default fund at all times, while also providing members with clarity on their assessment liability over a fixed period.[11]

Is the current two-tiered Cover 1/Cover 2 minimum standard still appropriate in relation to the guidance in the report?

Many of our members strongly support "cover 2" for all CCPs and not only for CCPs that are involved in a more complex risk profile or are systemically important in multiple jurisdictions. However a few members believe that a "cover 1" minimum standard would be appropriate for some CCPs. These members believe that for CCPs that do not have a more-complex risk profile and that are not systemically important in multiple jurisdictions, "cover 1" is an appropriate measure. Cover standards should be determined by the local supervisor with consideration given to, among other things, the systemic importance of the CCP, the risk profile of the CCP's membership, market depth, liquidity, and the cleared financial instruments' risk profile, performance under stressed events, and acceptability as collateral at the governing central bank. In the event that a CCP determines that "cover 1" is the appropriate standard, we believe that CCP should have to publicly disclose why "cover 1" is sufficient. In addition, members would support additional guidance regarding what constitutes "activities with a more complex risk profile" to ensure that the "cover 1" standard is applied appropriately and consistently.

We also believe that the "cover 2" standard should be used consistently for both credit and liquidity. We note that the European Market Infrastructure Regulation (EMIR) already requires "cover 2" for both credit and liquidity. We do not envision many circumstances in which it would be appropriate or sufficient for a CCP to plan credit resources for the default of two clearing members and their affiliates but only ensure liquidity resources to cover one such default. Moreover, we think that a CCP is potentially more likely to face liquidity shortfalls than credit shortfalls. We believe this further supports liquidity coverage requirements that are at least as robust as credit coverage requirements. However, while we think that a globally consistent "cover 2" standard is necessary for both credit and liquidity, we think it would be appropriate for guidance to allow regulators to grant exceptions to CCPs in appropriate circumstances based on, *e.g.*, composition of membership.

In addition to the foregoing, we believe that final guidance should emphasize that the technical coverage standards are minimums. CCPs should be required to justify their coverage holistically based on the products they clear and their membership base. CCPs should also share the analysis associated with this justification with their membership to provide members with comfort that the CCP has sufficient resources to cover its unique risk distribution under extreme but plausible conditions.

[11] This approach appears to be in line with regulatory expectation as seen from Sec. 5.6.2.5 of the Level 3 assessment report which acknowledges that some CCPs cap replenishment and rely on additional initial margin as measures to limit mutualized resources and provide cap on liability and takes exception with only those CCPs that do not employ an interim measure to provide full coverage.

Margin

Is the guidance provided on margin sufficient and appropriate?

We generally agree with the margin system design guidance set forth in paragraphs 5.2.1-5.2.3., indicating that a CCP should design its margin system (including margin and pricing models) so that it appropriately captures the characteristics and complexity of the products it clears. We suggest providing additional guidance indicating that CCPs should ensure their margining models are both sufficiently proactive and adequately responsive to developments in the market and to implied volatilities, while retaining appropriate anti-procyclicality features.

Concerning model assumptions discussed in paragraphs 5.2.9 – 5.2.11, we note that the lack of granular guidance concerning look-back periods has contributed to widespread variation among CCPs. Although a short look-back period tends to reflect current market conditions effectively, responsivity to the market also encourages procycliality. In addition, shorter look-back periods may fail to account for highly-relevant stress events in the recent past. We would recommend that, regardless of the length of the look-back period CCPs choose to use, CCPs should ensure that the scenarios underlying margin determinations are sufficiently diverse and always include relevant stress events (but could, where appropriate, scale historical prices to reflect current market conditions, prices, and volatility). We would also note, however, that, while we do not believe that look-back periods should be uniform across all products, we do believe they should be as consistent as possible for the same type of product across CCPs.

In addition, a CCP's margin model should take account of maximum price changes within a given margin period of risk (MPOR). As the guidance mentions in paragraph 3.2.35, the largest price movement during any two points of an MPOR cannot be accounted for if the model only considers the price movement from the beginning to the end of such MPOR. The margin parameters therefore should reflect peak historical price changes and should also capture maximum variation, calibrated by the distribution of price movement during a single day, and continuing for the duration of distribution of price movement during a given MPOR.

With respect to paragraphs 5.2.17 – 5.2.21, we note that the guidance should clarify that all CCPs, even those clearing listed and/or the most liquid products, should have policies and procedures for identifying when such prices are unavailable, obviously stale or fail to accurately reflect current market prices. Such policies and procedures should also be shared with clearing members. We believe that the guidance should specifically indicate that CCP rulebooks and procedures should disclose the fallback methods for establishing settlement prices, including for listed contracts for which the pricing is drawn directly from an exchange in the normal course.

We believe that the guidance concerning the monitoring of intraday exposure under paragraphs 5.2.22 – 5.2.24 should be expanded to address member concerns that certain CCPs are too frequently making intraday margin calls. We acknowledge that the ability to make intraday margin calls is an important tool necessary for the prudent management of CCP risk, but it should never be a substitute tool for a weak initial margin model and should be leveraged only in times of extreme market dislocation, and in coordination with other CCPs, as well as other FMIs, so as to manage the procyclical implications of a sudden spike in the demand on intraday

liquidity. CCPs should strive to minimize *ad hoc* intraday calls, as these can create liquidity strains in times of stress. In addition to the direct effect on clearing member liquidity, intraday margin calls often increase the credit risk that a clearing member absorbs from its clients wherever a client cannot meet intraday calls for operational or liquidity reasons, normally leaving the clearing member to fund both the intraday and overnight calls. Such strains are exacerbated if the MPOR is short.

The guidance should stress that, in light of the strain intraday calls can have on liquidity, CCPs should not view intraday calls as replacements or mitigants for appropriate end of day margining and should note that the occurrence of frequent intraday margin calls may indicate that the current margin framework is not performing adequately. Margin calculations should be sufficient to ensure that intraday calls occur relatively infrequently—either when prompted by new positions or in highly unusual market situations where unforeseen market movements and volatility make them necessary.[12] To balance the stress intraday calls can have on market liquidity, such calls should flow equally in both directions and with respect to all currencies. In other words, CCPs should not solely call margin to cover losses but should also pay out gains. The guidance should also encourage CCPs to coordinate and communicate with each other during times of stress to establish common thresholds because otherwise small losses may be called at one CCP, while large gains are not paid out at another.

We also believe that CCPs should provide full transparency for triggers of intraday margin calls. This will assist clearing participants in actively tracking and monitoring liquidity demands, encouraging the collection of greater amounts of initial margin. Likewise, the variation margin component of the intraday call should be made on a net basis within client accounts in order to ensure that intraday margin calls do not cause unnecessary liquidity burdens on members resulting from offsetting positions across clients.

We generally agree with the discussion of backtesting in paragraphs 5.2.25-5.2.30. We believe, however, that the guidance could be more prescriptive. Some CCP backtesting amounts only to "margin performance monitoring," in which CCPs test the actual margin levied on clearing members' cleared portfolios against the profit and loss of those portfolios over the targeted MPOR. CCPs should be required to conduct regular and representative backtesting on a static portfolio, which evaluates whether margin requirements on a given day's portfolio would be sufficient over the economic conditions that existed in the past. Margins and hypothetical profit and loss should be compared on these portfolios over a significant backtest period (so-called static portfolio backtesting). CCPs should conduct backtesting daily.

Testing should be sufficiently robust to cover all potential correlations, even when such correlations do not exist in current clearing member portfolios. Note that if the backtesting period does not include periods of market stress (which is possible, especially when rolling stress

[12] We note that as far back as 1988, the United States Report of the Presidential Task Force on Market Mechanisms (commonly known as the "Brady Commission Report") identified excessive intraday margin calls as creating substantial risk. *See generall*y, Report of the Presidential Task Force on Market Mechanisms, submitted to the president of the United States, the secretary of the Treasury, and the chairman of the Federal Reserve Board (1988), available at https://openlibrary.org/books/OL2148247M/Report_of_the_Presidential_Task_Force_on_Market_Mechanisms.

periods are used), then such backtesting is unlikely to be stringent enough to identify weaknesses in margin models. CCPs should create a wide variety of portfolios, including current clearing member portfolios, historic member portfolios, and hypothetical portfolios. To the extent that information about specific clients is available, CCPs should also model stresses to specific clients.

Additionally, CCPs should regularly report backtesting results to clearing participants. Currently, little transparency exists with respect to CCP coverage results. CCPs often share coverage results only with risk committees and boards, but seldom with the clearing participants generally. While some clearing members may supply representatives to the risk committees, these individuals serve only as market experts, not as representatives of their firms and are not permitted to share coverage results within their firms for internal risk management, due diligence or any other purpose.

Finally, we also believe the guidance should require CCPs to undertake both portfolio and product-level backtesting and disclose the results to clearing members on a regular basis. Relying on portfolio-level backtesting only may allow conservatively-margined products to mask under-margined products. Product-level backtesting should capture spreads and butterflies in addition to forward outrights, as margin offsets can be overstated for these strategies.

We support the guidance contained in paragraphs 5.2.31-5.2.32, providing that a CCP should conduct a sensitivity analysis at least monthly in order to assess the responsiveness of margin system parameters and to determine which parameters and assumptions have the largest impact on margin outputs. We believe, however, that the guidance should do more to prescribe which aspects of the margin system parameters should be subject to sensitivity analysis. For example, analysis with respect to correlation offsets and look-back periods are particularly helpful for determining the appropriate framework for measuring margin, and for determining the right level of margin. As we noted with respect to backtesting, the guidance should require CCPs to share their sensitivity analysis with members and generally encourage greater transparency on the part of CCPs in respect of sensitivity analysis.

We strongly support the guidance concerning procyclicality provided in paragraphs 5.2.38-5.2.44. Please see our responses to the question about procyclicality below for additional considerations on this subject.

We agree with the guidance in paragraphs 5.2.45-5.2.47, indicating that a CCP should have clear rules, policies and procedures in place to identify, assess and mitigate specific wrong-way risk.

We agree with the guidance in paragraphs 5.2.48-5.2.52, indicating that a CCP using portfolio margining should identify and apply clear criteria when determining which products are correlated and therefore potentially eligible for portfolio margining, including criteria to evaluate whether portfolios may be reliably liquidated and risk-managed in the event of a participant

default. The guidance should also clarify that correlations should be based on strong economic relationships that do not break, even during a crisis.[13]

We also agree with the guidance in paragraphs 5.2.53-5.2.54, indicating that a CCP should monitor the performance of its portfolio margining system on an ongoing basis in order to ensure that the margin system of the CCP performs appropriately under both current market conditions and during periods of market volatility.

Additional guidance would be helpful in respect of CCP model documentation requirements. Specifically, we believe that CCPs should be required to fully document models and provide their rationale and justification for the choice of elements included in their margin models. Sufficient transparency should be provided to clearing members in order to allow them to replicate accurately margin models and add-ons of the CCP. Current CPMI-IOSCO public quantitative disclosures, while helpful, are insufficient to enable the level of due diligence that is required to be undertaken by participants to meet their own internal risk management standards.[14]

Application of the guidance is particularly important with respect to new products. We recognize that CCPs are continually introducing new products and believe that regulators should stress the need for caution in reviewing the liquidity of such products and setting their margin requirements accordingly. Commercial needs must be balanced with market demands, close out assumptions, and the relevant MPOR applied new products that may not initially have much liquidity. The guidance should clarify that CCPs should only clear products that they can adequately margin and default-manage. CCPs should not justify clearing complex products that lack sufficient standardization or liquidity, or for which CCPs would need to rely on various types of add-ons to ensure sufficiency of resources, among others model risks.

We also believe the guidance should make clear that similar products cleared by different CCPs should have consistent margin standards.

Additional guidance should also be provided with respect to concentration margin. In particular, CCPs should be required to estimate the market capacity to absorb trades for each product they clear without leading to significant widening of bid-ask spreads. For trades that exceed the market capacity, the CCP should levy additional margin to ensure that the margin it levies is sufficient to cover close-out costs. Best practice is to estimate market capacity and the impact of trade size on bid-ask spreads through trader surveys in stress periods, checked against historical experience. Member default fire-drills also can helpfully supplement this approach. The guidance should also clarify that CCPs should appropriately allocate concentration margin add-ons across all clearing participants by including such add-ons in initial margin specific to products and/or contracts.

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[13] See, *e.g.*, LCH.Clearnet "Stress This House: A Framework for the Standardised Stress Testing of CCPs" *available at* http://www.lch.com/documents/731485/762444/Stress+Testing+Final+Paper+1.pdf/dd0d30c3-2012-41bd-8df6-cc98da39de59.

[14] For a specific list of detailed documentation that should be provided to clearing members in order to replicate margin calculations, see "CCP Transparency on Margin Framework", attached hereto].

CCPs that have entered into interoperability arrangements should collect at least the amount of inter-CCP margin that would normally be collected from a clearing member with the same open positions and risk. Interoperating CCPs should not be exempt from concentration margin, particularly where the open positions of the interoperating CCPs have an assumed liquidation period that is greater than that which is assumed by the CCP's models. Moreover, a CCP should be required to include its exposure to an interoperating CCP when calibrating the size of its default fund. Greater transparency concerning margin held between interoperating CCPs is necessary to determine the appropriateness and size of liquidity or concentration add-ons. Clearing members possess limited visibility into the total amount and proportional responsibility of each clearing member associated with interoperable margin.

Is the guidance provided on procyclicality appropriate and sufficient?

We agree with the guidance provided in paragraphs 5.2.33-5.2.37, indicating that a CCP should assess the appropriateness of procyclicality in its margin system and develop clearly articulated frameworks for addressing and disclosing this particular risk. We recommend that the guidance take a more stringent and quantitative approach, and should indicate that regulators should play a larger role in mandating and approving each CCP's approach to procyclicality. While some jurisdictions (*e.g.*, EMIR) have a prescriptive approach, and we believe that some degree of prescription is helpful, such an approach may not be effective due to interpretational issues or differences in implementation. We believe that a principles-based approach to this issue at the level of international standards is more likely to be effective. In particular, we believe that procyclicality should be defined by way of a standard set of metrics so as to enable CCPs to determine targets to be achieved; and that CCPs should adopt appropriate and conservative anti-procyclicality measures, taking into account the specific characteristics of cleared contracts and at least ten years of history of patterns in changes in volatility regimes.

We also believe it is crucial that the governance and transparency procedures applicable to the development and design of anti-procyclicality measures be robust. CCPs should be required to provide transparency to members and participants on these features of their margin models. The onus should then be on the governance process to ensure that the CCP utilizes the appropriate framework (depending on product or portfolio) for addressing procyclicality. CCPs should disclose overall tolerance for procyclicality in sufficient detail to allow clearing members to use such measures in the management of their own positions. This will ensure that market participants can model the impact of these tools, and ensure a more even playing field across CCPs and products, as well as ensuring that there is an appropriate brake on the procyclical tendencies of the rest of the margin framework.

We believe that each CCP's policy should make clear how the different components of a CCPs risk management system (*e.g.*, base initial margins, add-ons, stress margin, intraday margin, default fund increases and collateral haircuts, add-ons) interact with each other to affect procyclicality. To the extent that a CCP may select one framework to address procyclicality over another, the CCP should justify to its governing bodies and its regulators the suitability of the framework proposed and the rationale for its choice.

We also believe that it is critical that the CCP seeks and receives feedback through its member governance/consultation process[15] and that the risk committee approves such procyclical measures. Clearing participants need to be able to plan for potential margin calls as part of their broader liquidity needs. Large margin calls also can trigger internal approval requirements for clearing participants, potentially causing delays in margin posting. The more insight the market possesses into this process, the more reasonable and substantiated assumptions regarding liquidity can be made, thereby, preventing operational payment delays and making the system safer. Predictability and availability of buffers provided by clearing participants is critical.

The PFMI do not explicitly address margin add-ons. Is the guidance provided on margin add-ons adequate to ensure sufficient coverage by the margin system and other prefunded financial resources in line with the PFMI?

We completely agree with the guidance that CCPs must use margin add-ons to capture risks that may not be captured in price histories and believe that the list of add-ons contemplated in the guidance is comprehensive. We also agree with the statement that add-ons are not substitutes for a robust margin framework and where risk can be addressed by the margin systems, CCPs should avoid using add-ons. Therefore, we believe that the only add-ons that should apply are those external to the margin model and that impose the greatest risk for a CCP, such as liquidity or concentration add-ons. We also believe that it is vital for there to be increased transparency to ensure participants fully understand and are able to replicate, evaluate and review margin models and add-ons.[16] Currently, specific requirements for CCPs to disclose their add-ons or to indicate the way add-ons are calculated do not exist. CCPs should be required to fully document margin add-ons as well as their rationale and justification for the choice of elements in their margin models.

In addition, we believe that CCPs should transparently convey to clearing members the portion of initial margin resulting from add-ons. Currently, most CCPs calculate margin add-ons separately from initial margin amounts, making it difficult for clearing members to conduct holistic risk management of margin models and to identify margin associated with individual client accounts. Where possible (*e.g.*, for liquidity add-ons) the add-on should form a portion of the per lot initial margin amount, as in the case of listed derivative contracts. CCPs should provide sufficient reporting to allow clearing members to map margin add-ons to individual client accounts so that clearing members can appropriately apportion such add-ons to each of their clients. In addition, the guidance should highlight that add-ons impact the wider market, and that CCPs should clearly indicate which portions of initial margin result from add-ons so that all market participants, not just clearing participants, can better understand their effect.

The PFMI do not prescribe a minimum margin period of risk or closeout period. Is further guidance in this area needed?

We believe that the calculation of appropriate margin levels at a CCP must take into account several factors in order to ensure that the amount of margin the CCP collects is consistent with its default management objectives, taking into account the legal, regulatory and contractual

[15] See "Governance" section above.
[16] See "CCP Transparency on Margin Framework" attached hereto.

framework in which it operates and, for client accounts, the practical realities of its ability to port, and, if necessary, to liquidate positions and collateral. The MPOR is merely one component of the margin framework, and must be considered in conjunction with other margin variables, the look-back period used, the confidence interval used and add-ons and, for client accounts, whether margin requirements are calculated on a net or gross basis. Considering the goal of porting positions and collateral, the CCP realistically will not have the information readily available to it necessary to port positions and assets to alternative clearing members immediately upon a clearing member's default. The MPOR should be aligned with the time needed to either (i) port client positions to a new clearing member or (ii) otherwise liquidate the positions in the market. CCPs should be required to demonstrate that they can complete all of these steps within the MPOR they employ. It is unlikely that each of these steps will be completed within one day and therefore, for most products and most CCPs, we believe the MPOR should reflect that a longer time period is needed.

In many regimes, gross margining would improve the likelihood of porting individual client positions and assets, to the extent that the identity of the client is known to the CCP post default. Under a net margin methodology (such as the net omnibus accounts in the European Union) porting all clients of a clearing member requires the consent of the clients in order to port from one specific clearing member to a single receiving clearing member. Consequently, we do not take a view on whether there should be a preference between gross or net margining. The ability to easily and quickly port clients is the top priority of clearing members. Whether net or gross margin is better for porting depends on the account structure and underlying legal regime. While ease of porting would be better achieved under a gross structure, net margining would be more consistent with certain specific legal and regulatory environments.

CCP Contribution to Losses

Is the guidance provided on a CCP's contributions to financial resources to cover losses sufficient and appropriate?

We do not think that the guidance provided on these issues is sufficient. We believe that final guidance should address the appropriate quantum of CCP contributions to losses and the losses to which such contributions should be applied. As discussed below, we believe that CCP resources should be appropriately sized to cover all potential non-default losses. For default losses, we urge CPMI-IOSCO to provide additional guidance regarding the specific quantum of resources to be placed ahead of non-defaulting clearing member's mutualized resources. Currently this CCP "skin-in-the-game" amount varies greatly across different CCPs. Many of our members support requiring an amount equal to a percentage of the default fund (*e.g.,* ten percent), an amount equal to the largest default fund from a group of affiliated clearing members, or the higher of these amounts.[17] As noted below, we also urge CPMI-IOSCO to require a second

[17] *See e.g.,* JPMorgan Chase & Co. "Perspectives: What is the Resolution Plan for CCPs (September 2014) *available at* https://www.brookings.edu/wp-content/uploads/2015/02/jpmc_packet.pdf; BlackRock "Viewpoint: Central Clearing Counterparties and Too Big to Fail" (April 2014) *available at* http://www.blackrock.com/corporate/en-sg/literature/whitepaper/viewpoint-ccp-tbtf-april-2014.pdf; PIMCO "Viewpoints: Setting Global Standards for Central Clearinghouses" (October 2014) *available at* https://www.pimco.com/insights/viewpoints/viewpoints/setting-global-standards-for-central-clearinghouses;

tranche of appropriately sized "skin-in-the-game" after assessments in a CCP's default "waterfall."

We also generally believe that changes are necessary to better align risk management incentives between CCP shareholders and clearing participants. Currently, clearing members and their clients bear the majority of losses, which is particularly problematic now that many CCPs are publicly owned (as opposed to "utilities" owned by their clearing members). We believe that CCPs and their shareholders should be financially accountable for any failure in the CCP's duties to manage credit, market, legal and operational risk both internally and externally. We also believe that a CCP's contributions should be risk-based and scaled up as its clearing activity increases. Among other things, CCPs should have to demonstrate that their contributions are commensurate with the risks that they bring to the system (*e.g.*, model-failure risk).

Below we point out a number of aspects of the guidance that we strongly support and also raise a number of issues for CPMI-IOSCO to consider before issuing final guidance (broken out by each section of the guidance).

Custody and investment losses

We support the statements in the guidance that CCP contributions to both losses causes by a clearing member default as well as custody and investment losses enhance confidence that the CCP's design, rules, overall strategy and major decisions reflect appropriately the legitimate interest of its clearing participants and other relevant stakeholders. We would add that in order to enhance such confidence to the maximum degree, such contributions should be appropriately robust and based on fully disclosed stress testing. Both the size of such resources and the rationale for that size should be clearly articulated to clearing participants and other relevant stakeholders to demonstrate that a CCP is well-capitalized to cover potential losses. Today clearing participants have almost no transparency into how CCPs would cover non-default losses such as custody and investment losses.

With regard to investment losses in particular, we also believe that additional guidance is necessary regarding risks of specific types of investments, including, *e.g.*, investment in government securities issued by the CCP's home jurisdiction.

We partially disagree with the statement in paragraph 6.2.3 that a CCP should identify the amount of its own resources to be applied towards losses arising from custody and investment risk. To align incentives in instances, particularly when a CCP derives profit from investments or custodial arrangements, we believe that CCPs should cover all related losses and should therefore hold funded and appropriately segregated resources to do so.[18]

Risk.net "CCPs Need Thicker Skins – Citi Analysis" (April 2015) *available at* http://www.risk.net/risk-magazine/feature/2419321/ccps-need-thicker-skins-citi-analysis.

[18] One exception would be if a clearing member has an active right to direct specific investments of funds held by the CCP, and the CCP does not profit from any such investments. Under these circumstances, it would be appropriate for the clearing member to bear losses from the relevant investments. For clarity, the right to allocate investments of assets generally is not an active right to direct specific investments and therefore would not trigger this exception.

We note that the guidance is silent on a CCP's contributions to non-default losses other than custody and investment losses. We strongly believe that CCPs should account for all non-default losses and therefore should hold resources to do so and we urge CPMI-IOSCO to provide specific guidance to this effect. In doing so we believe that guidance should require CCP capital to be sized based on potential default and non-default losses (including from credit, liquidity, market, operational, legal, general business and cyber risks) rather than a six-month period of wind-down expenses.

Seniority of the CCP's own financial resources

We generally support the guidance provided in paragraph 6.2.4, which provides that a CCP may also choose to expose a separate amount of its own resources to remaining losses concurrently or after allocating a portion of such losses to its clearing members. We urge CPMI-IOSCO to take a stronger position on this point in final guidance and provide that a CCP should expose a "second tranche" of its own resources immediately following assessments in the CCP's default "waterfall." The second tranche of CCP "skin-in-the-game" further incentivizes the CCP and its shareholders to engage in prudent risk management both prior to and during a stress event as they would share in any resulting losses. It therefore better aligns the motivations of clearing participants on the one hand and the CCP and its shareholders on the other.

Form of a CCP's own resources exposed to losses

We also recommend that final guidance require CCP contributions to losses to be in the form of clearly identified, pre-funded and segregated liquid assets that are readily available for use if necessary.

In addition, we recommend that guidance specifically require a CCP to replenish its contributions promptly to ensure that it could cover subsequent defaults. A CCP should be required to replenish resources at least as quickly as clearing members are required to replenish their resources. In no event should clearing members be required to satisfy assessments or replenish their mutualized resources if the CCP is not required to do the same. In order to meet this standard, it may be appropriate for a CCP to have arrangements for contributions from its parent. We urge CPMI-IOSCO to consider guidance on such arrangements.

Recovery

Is the guidance already provided on recovery planning in the Recovery Report sufficient and appropriate?

We strongly support the statement in the guidance that a CCP's ability to recover its viability and financial strength following a stress event is critical to financial stability. However, we are very concerned about the statements in paragraph 1.5.2, which indicate that a number of CCPs have not yet put in place the full set of recovery rules and procedures as required under the PFMI. We strongly support efforts by CPMI-IOSCO and national regulators to require CCPs to fully implement recovery measures as soon as practicable without sacrificing opportunities for meaningful member comments to proposed CCP rules.

We agree that it is imperative that each CCP subject to the PFMI have a recovery plan in place and the ability to operationalize that plan. We would add, however, that the plan should be transparent to clearing participants, as well as domestic and certain foreign regulators, including resolution authorities. We believe that clearing members and their clients must have maximum visibility into CCP recovery plans to allow them to properly risk manage their exposures to the CCPs. This is of utmost important in a time of stress. An understanding of the steps that a CCP will take in a recovery scenario also reduces incentives for clearing members and their clients to take "self-help" measures that could impede the CCP's recovery. At a minimum, CCPs should disclose the default and non-default scenarios in which recovery tools would be used, which tools would be used in these scenarios, how recovery would proceed and the governance around determining which tools to use and when. We also believe that CPMI-IOSCO should provide guidance regarding regulator endorsement or approval of recovery plans.

We note that paragraph 3.4.7 of the Recovery Report contemplates compensation for clearing members and clients of clearing members who incur losses in recovery. We fully support such compensation and we specifically support the example in paragraph 3.4.7 of the Recovery Report, which provides that a CCP could provide an instrument that has a degree of seniority in terms of being paid back from future profits of the CCP and money recovered from the defaulting clearing member.[19] We believe that it is crucial for the claim be senior to existing equity in the CCP and for those who suffer losses to have full recourse against the CCP and, if applicable, its parent for satisfaction of their claims. Recourse against only the estate of the defaulting clearing member is not sufficient. We also think that the claim should be a senior debt claim that could, if necessary, subsequently be bailed-in for equity or otherwise converted to equity.[20] Despite this guidance, however, we are not aware of any CCPs that have implemented adequate mechanisms for compensation. We urge CPMI-IOSCO and national regulators to require CCPs to comply with this aspect of the Recovery Report.

We generally support the guidance provided on recovery and agree that it addresses many of the material aspects of CCP recovery planning. However we do think that certain aspects of the guidance may not be appropriate. Specifically:

- Section 4 of the Recovery Report provides a range of tools that may be appropriate for a CCP to use in recovery. While we appreciate the breadth of this guidance and realize that different tools may be appropriate for different CCPs based on the products they clear,

[19] One member believes that such compensation may also impact incentives for clearing participants to bid in auctions. Accordingly, this member believes that when structuring the terms of compensation (including type, amount, priority, repayment terms and maturity of any claims), careful consideration should be given resulting incentives for both a CCP's shareholders and its clearing participants.

[20] It is very important to note that currently, clearing members are not creditors of the CCP entitled to protections such as "no creditor worse off" except with respect to return of their initial margin and, subject to non-recourse provisions, any net amounts that the CCP owes them. Non-recourse provisions at CCPs today generally limit clearing members' recoveries to assets at the CCP. In the event that the CCP is in liquidation or resolution, it is likely that these assets are minimal and that therefore clearing members' claims for net amounts they are owed are worth pennies on the dollar. Without a more meaningful status as creditors, "no creditor worse off" does not protect clearing members and other clearing participants in the way that it protects other creditors of the CCP or creditors of other types of financial entities that could be in resolution. These issues further underscore the importance of including rights to compensation in CCP rulebooks.

their regulatory landscape and their legal structure, we think that more granular and specific guidance would be appropriate at this time.

- Paragraph 4.2.9 of the Recovery Report contemplates uncapped cash calls, which we do not support. Uncapped cash calls prevent clearing members from risk managing their exposure to a CCP on an *ex ante* basis, as well as in a time of distress, and significantly increase the capital that clearing members must hold for their cleared positions with some CCPs. Additionally, regulatory regimes in some jurisdictions such as the European Union and the United States do not permit uncapped cash calls. As a result of these points, we note that CCPs in most jurisdictions have capped cash calls and we believe that the guidance should reflect this position. We also urge CPMI-IOSCO and national regulators to require all CCPs to implement caps on cash calls and member liability generally.

- Paragraphs 4.2.17-4.2.23 of the Recovery Report contemplates variation margin gains haircutting (VMGH) as a recovery tool. While some members support VMGH as a loss allocation tool in recovery with certain limitations others do not. Members who do not support the use of VMGH in recovery believe that "comprehensive loss allocation" beyond funded (*i.e.,* default fund) and unfunded (*i.e.,* capped assessments) mutualized resources would not be appropriate outside of resolution unless remaining resources come from the CCP or its parent. These members maintain that if a CCP exhausts all of its resources and cannot obtain additional resources from its parent, then the CCP is in principle unable to pay its obligations when they come due, and therefore should be placed into resolution. Other members who do not support VMGH in recovery believe that its use could have knock-on effects in an already distressed market, particularly if clearing members causing the four largest losses (assuming "Cover 2" plus one assessment), have already defaulted. One member does not support any use of VMGH in recovery or resolution. Members who support VMGH in recovery believe that it is an effective and efficient loss allocation tool that facilitates a CCP-led recovery, provided that it is subject to strict regulatory oversight and constraints (*e.g.,* quantitative limits) determined on an ex ante basis. These members also believe that VMGH should be used only at the very end of the default "waterfall."

- Paragraphs 4.2.25 and 4.2.26 of the Recovery Report contemplate initial margin haircutting (IMH), which we universally do not support. We believe that IMH is procyclical and could incentivize clearing participants to close out of positions in order to reduce their initial margin requirements at the first sign of distress. This would likely cause further disruption in the market and could impede the CCP's recovery. IMH could also dis-incentivize participation in an auction, as clearing participants may not want to bid on positions that would increase their initial margin requirements. The potential for IMH could incentivize clearing participants to post non-cash collateral in the ordinary course, which could cause undue liquidity constraints in the event of a member default and result in CCPs needing to source liquidity from clearing participants in time of stress. Additionally, if IMH is permitted in some jurisdictions, it could drive clearing participants to clearing only through CCPs in jurisdictions that prohibit IMH. Finally, in many jurisdictions initial margin for uncleared derivatives must now be held with a third-

party custodian to shield it from the insolvency of the receiving counterparty. Not providing the same degree of protection to initial margin for cleared derivatives could dis-incentivize central clearing, which would be contrary to stated objectives of the G-20.

- Paragraphs 4.4.1-4.4.3 of the Recovery Report cover replenishment of resources. We refer to our comments regarding limitations on aggregate membership liability in the "Coverage" section above and urge CPMI-IOSCO to include such limitations as additional guidance in the Recovery Report.

- Paragraphs 4.5.6-4.5.11 of the Recovery Report contemplate forced allocations of contracts, which we do not support. Forced allocation requires clearing members to take on positions that they may not be suited to risk manage in extreme market conditions.

- Paragraphs 4.5.17-4.5.20 of the Recovery Report contemplate partial tear-ups (PTUs), which we support. However, we believe that such a tool should be subject to strict regulatory oversight and constraints. We also think that guidance is necessary with regard to pricing for PTU. We believe that the price for a torn-up position should be as close to fair market value as possible. However, given that PTUs for many cleared products are likely to be used only upon the failure of an auction in a very distressed market, we question how that price would be determined and believe that CCPs need additional guidance on this point. We note that CCPs contemplate using the last settlement price. However, we do not think that such a price would likely be accurate under relevant market conditions.

- Paragraph 4.6.12 of the Recovery Report contemplates sharing non-default losses with clearing participants, which we do not support. As discussed in the "CCP Contributions to Losses" section above, we believe that CCP capital should be appropriately sized to cover non-default losses.

In addition to the foregoing, we believe that at this time additional guidance would be useful with regard to global coordination of CCP default management. If a clearing member (or multiple clearing members) default(s) to one CCP, it is likely that the clearing member or members will default to other CCPs. Therefore, we think that CCPs and their regulators should undertake comprehensive reviews of how CCP default management processes would interact. Among other things, the review should analyze the results of simultaneous default management processes such as auctions that follow different procedures and seek to harmonize processes across CCPs to reduce operational risks. We also believe that CCPs should adhere to consistent standards regarding secondment requirements to ensure that available trader have sufficient expertise and that clearing members are only required to second traders for a particular asset type/class to one CCP at a time. We suggest cross-CCP fire drills, including cross-CCP fire drills at CCPs that clear similar products, as part of this review.

Other Considerations

Is there a need for further guidance on the role of risk committees as an effective means of achieving proper corporate oversight and for receiving input from persons representing stakeholder interests?

Please see discussion of risk committees in "Governance" section above.

Is there a need for guidance regarding governance and the organizational (legal) structure of the CCP?

We would support guidance on the organizational (legal) structure of the CCP, provided that such guidance provided flexibility for differences in products cleared, composition of membership and other unique aspects of each different CCP. We believe that any such guidance should be informed by the work of the Financial Stability Board on CCP resolution. Any such guidance should also encourage national regulators to tailor additional guidance to CCPs in their jurisdictions, accounting for applicable legal regimes.

Is there a need for further guidance on the allocation of default fund requirements among clearing participants?

We would support guidance requiring CCPs to disclose their methodology for allocating default fund requirements to its members and other stakeholders.

Is there a need for further guidance on the composition of prefunded financial resources?

We think that this question could be interpreted in at least two ways: either as a question about composition of different resources in a CCP's default "waterfall" (*e.g.*, initial margin, CCP "skin-in-the-game" and default fund contributions) or as a question about the types of collateral that a CCP should hold as part of the prefunded resources it holds to satisfy its coverage requirements. We would generally support guidance on both of these issues and note that our comments on margin and CCP contributions to losses would be applicable to the first issue. With regard to the second issue, we note that in the event that a CCP is required to use prefunded resources in a stressed environment, it will be crucial for CCPs to have collateral with the most liquid profiles.

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We very much appreciate your consideration of our comments. If we may provide further information, please do not hesitate to contact the undersigned or staff at any of the Associations.

Sincerely,

Walt L. Lukken
President & Chief Executive Officer
Futures Industry Association (FIA)

Andrés Portilla
Managing Director - Regulatory Affairs
Institute of International Finance (IIF)

George Handjinicolaou
Deputy CEO
International Swaps and Derivatives Association, Inc. (ISDA)

Paige E. Pidano
Managing Director and Senior Associate
General Counsel
The Clearing House

David Strongin
Executive Director
Global Financial Markets Association

CCP Transparency on Margin Framework

A CCP should be required to provide enough information to allow clearing members to accurately replicate the CCP's initial margin model in order to fully evaluate its effectiveness in protecting the CCP and all of its clearing members. Specifically, all CCPs should provide (1) full documentation of the data and algorithms used to calculate initial margin and any add-ons, (2) key assumptions/ parameters (*e.g.*, confidence level and margin period of risk (MPOR)), and (3) independent model validation reports.

In order to replicate margin calculated based upon a Value-at-Risk (VAR) or Expected Shortfall (ES) approach, the following detailed documentation should be provided to clearing members:

- Rationale for chosen approach
- Tiering structure, such as maturity buckets and expiry groups for risk factors.
- Assumptions regarding factor changes (generally either absolute or relative changes)
- Look-back period and specification of any weighting scheme, *e.g.*, exponential weighting with a decay parameter of 0.94
- Full specification of methodologies used to simulate profit-and-loss
  - Full valuation
    - Documentation for calculating initial margin with respect to interest rate swaps using full valuation would, for example, require documentation of the yield curves used for discounting and cash flow generation including data and methodology used for bootstrapping, as well as the method used to calculate discount factors
  - Linear/quadratic approximation
    - Documentation of the specific parameters and their estimations
- For Monte Carlo and parametric VAR or ES
  - Distributional assumptions in simulating risk factors , *e.g.*, factor changes are assumed to be distributed normally
  - Disclosure of any models underlying Monte Carlo simulation (*e.g.*, Black-Scholes, Vasicek)
  - Strategies for estimating necessary parameters, *e.g.*, estimating volatilities with mean absolute deviation
- For Historical simulation VAR or ES
  - Where applicable, filters for data and rationale for filtering
  - Specification of any volatility scaling scheme including
    - Estimation methodology of decay parameter used if an exponential moving average volatility updating scheme is employed
    - Precise implementation methodology (*e.g.*, common decay parameter)
    - Magnitude of any volatility floor

Initial Margin Methodology Disclosure: Parametric Approaches

In order to replicate a SPAN or other parametric margin components, documentation should include:

- Rationale for chosen approach
- Description and discussion of the rationale of all parameters underlying initial margin (for SPAN, this would be scanning range, inter-month spreads, inter-contract credits, short option charge, etc.)
- Full specification of the methodologies by which these parameters are determined, including
  - Underlying data
  - Tiering structure, such as maturity buckets and expiry groups for risk factors
  - Holding period
  - Statistic(s) applied to the data
    - Volatility, min/max, VAR
  - Look-back period and details of any weighting scheme, such as the decay factor for EWMA
  - Confidence level
  - Assumptions regarding factor changes (either absolute or relative changes)
- Documentation of algorithms used to apply these parameters (for SPAN, these algorithms would include how priorities and correlations are determined in applying inter-month spreads to tenor pairs and in applying inter-contract credits to commodity pairs)
- Additions to IM driven by concentration, stress portfolio or other measurements within the default fund

Initial Margin Methodology Disclosure: Add-ons to Base Calculation

It is greatly preferable for CCPs to incorporate commonly established add-ons directly into the upfront initial margin requirement. When this occurs, the CCP would be appropriately allocating the risk across all clearing participants. Any add-ons that seek to capture risks that may not be fully captured by the initial model should be fully documented. Once again, CCPs should seek to provide enough information to allow Clearing Members to accurately replicate the add-on to fully evaluate their effectiveness.

- Thresholds, add-ons are invoked when position size or another metric exceeds a specified value. The values and rationales/underlying analytics supporting the thresholds must be provided to members.
- Common add-ons include:
  - Liquidity Risk / Concentration Risk
    - Calibration and rationale of parameters used for liquidity/concentration risks add-on should be documented (*e.g.*, penalization factors and thresholds)
    - Market risk from liquidating positions which are large relative to the market

        - This add-on may involve bid-ask spreads and volume measures and the source of these data should be documented.
- Correlation Risk
    - Market risk owing to changes in correlations during stress periods
- Basis Risk
    - Product P/L not fully captured by risk factors covered by initial margin .
- Model Risk
    - Add-on to cover general failure of initial margin model
- Wrong Way Risk
    - General wrong way risk
        - Where the exposure to a counterparty is likely to increase when the creditworthiness of that counterparty is deteriorating.
    - Specific wong way risk
        - Where a member has a direct exposure to other members' creditworthiness and/ or underlying contracts

Aggregate CCP Level IM Summary Stats Report

CCPs should compare each day's actual initial margin to the following day(s) profit and loss for each portfolio on a daily basis, and share summary level statistics to all members monthly. Such tests should include a full year of results. Summary statistics should be reported as follows:

Data Item	Description
Approach	Initial margin requirement on T is compared to the following day(s) profit and loss. The profit and loss should be calculated on the same basis as the initial margin calculation. For example if the initial margin is derived from end of day positions on T, the profit and loss should be the based on the same positions held constant over IM-assumed holding period.
Holding Period	The period (# of days) of potential future exposure/losses the initial margin is attempting to cover.
Profit and loss	The change in fair value over the holding period of the positions subject to the test.
Market/ Product	Name of market (e.g. name of exchange or OTC segment name)/ product (e.g. futures, IRS) subjected to back tests
# of Members	Number of members active in the market under review
# of Accounts	Number of accounts related to the members under review. For example House and Client(s) accounts. Accounts should include those opened and/or closed during the period.
Look back Period	The look back period in the test; this should be at least 12 months. CCPs should be encouraged to use longer periods where possible.
Confidence Level	Targeted confidence level that actual IM is intended to cover
# of Observations	Number of business days in the window multiplied by the number of accounts. For example, 250 business days and 20 accounts results in 5000 observations.
Exceedance ($)	The $ amount by which the profit and loss exceeds the initial margin when a breach occurs.
Sum of Exceedances ($)	Sum of the exceedance values across all breaches over the window being observed.
Maximum Exceedance ($)	The maximum exceedance across all breaches
Average Exceedance ($)	Average exceedance across all breaches
Number of Exceedances	Number of account level breaches
Coverage Rate	(total observations)-(number of exceedances) / (total observations)
Total Initial Margin Requirement	Initial margin requirement at aggregate market level under test. . The initial margin requirement should exclude any margin add-ons as these will not usually be observed in the profit and loss calculation. However if the CCP includes margin add-ons as part of the backtest, then the CCP should clearly state so.
Remarks	Supporting comments to explain the results (if needed)

Member Portfolio Level Back Tests and Summary Statistics

Anonymous member-level portfolio back tests generated from comparing static portfolios over a full look back period of profit and loss should be shared with members on a monthly basis, along with summary statistics as listed below. Summary statistics should be reported at the aggregate CCP level as well as shared at an anonymous individual clearing member portfolio level.

Data Item	Description
Approach	Initial margin portfolio requirement on T is compared against portfolio P&L based on current portfolio held constant over the defined holding period and look back period.
Holding Period	The period (# of days) of potential future exposure/losses the initial margin is attempting to cover.
Profit and loss	The change in fair value over the holding period of the positions subject to the test.
Market/ Product	Name of market (e.g. name of exchange or OTC segment name)/ product (e.g. futures, IRS) subjected to back test
# of Members	Number of members active in the market under review
# of Accounts	Number of accounts per member and at aggregate level under review. For example House and Client(s) accounts. Accounts should include those opened and/or closed during the period.
Look back period	The look back period in the test; this should be at least 12 months. CCPs should be encouraged to use longer periods where possible.
Confidence Level	Targeted confidence level that actual IM is intended to cover. Separate test may also include "IM's" calibrated to lower confidence levels (95%, 90%) purely to facilitate testing.
# of Observations	Number of business days in the window multiplied by the number of accounts. For example, 250 business days and 20 accounts results in 5000 observations. This statistic should also be provided at a member level.
Exceedance ($)	The $ amount by which the profit and loss exceeds the initial margin when a breach occurs. This should be reported a member level and aggregate CCP level.
Sum of Exceedances ($)	Sum of the exceedance values across all breaches over the window being observed. This should be reported a member level and aggregate CCP level.
Maximum Exceedance ($)	The maximum exceedance across all breaches. This should be reported a member level and aggregate CCP level.
Coverage Rate	(total observations)-(number of exceedances) / (total observations) .This should be reported a member level and aggregate CCP level.
Total Initial Margin Requirement	Initial margin requirement at aggregate market level and portfolio level under test. . The initial margin requirement should exclude any margin add-ons as these will not usually be observed in the profit and loss calculation. However if the CCP includes margin add-ons as part of the back test, then the CCP should clearly state so.
Frequency Test	Test to evaluate whether frequency of breaches is not significantly larger than that predicted by the target confidence level (e.g., Kupiec test)
Clustering Test	Test to evaluate whether breaches occur at random or whether clustering indicates otherwise (e.g., Christoffersen Test).

Hypothetical Portfolio Level Back Tests and Statistics

Hypothetical portfolio back testing can be very informative, as long as portfolio composition is revealed in detail with rationale along with the following data items/statistics and full back-test reports. Statistics and full back-test reports should be shared with members by each hypothetical portfolio level.

Data Item	Description
Approach	Initial margin portfolio requirement on T is compared against portfolio P&L on a hypothetical portfolio held constant over the defined holding period and for a given look back period.
Holding Period	The period (# of days) of potential future exposure/losses the initial margin is attempting to cover.
Profit and loss	The change in fair value over the holding period of the positions subject to the test.
Market/ Product	Name of market (e.g. name of exchange or OTC segment name)/ product (e.g. futures, IRS) subjected to back test
Hypothetical Portfolio (s)	Position-by-position listing of each portfolio's contents.
Look back period	The look back period in the test; this should be at least 12 months. CCPs should be encouraged to use longer periods where possible.
Confidence Level	Targeted confidence level that actual IM is intended to cover. Separate test may also include "IM's" calibrated to lower confidence levels (95%, 90%) purely to facilitate testing.
# of Observations	Number of business days in the window for the given portfolio back test.
Exceedance ($)	The $ amount by which the profit and loss exceeds the initial margin when a breach occurs.
Sum of Exceedances ($)	Sum of the exceedance values across all breaches over the window being observed.
Maximum Exceedance ($)	The maximum exceedance across all breaches.
Coverage Rate	(total observations)-(number of exceedances) / (total observations) .
Total Initial Margin Requirement	Initial margin requirement of portfolio under test. . The initial margin requirement should exclude any margin add-ons as these will not usually be observed in the profit and loss calculation. However if the CCP includes margin add-ons as part of the back test, then the CCP should clearly state so.
Frequency Test	Test to evaluate whether frequency of breaches is not significantly larger than that predicted by the target confidence level (e.g., Kupiec test)
Clustering Test	Test to evaluate whether breaches occur at random or whether clustering indicates otherwise (e.g., Christoffersen Test).

Factor Level Back Tests and Statistics

Factor-level back testing is most typically applicable to parametric approaches like SPAN, and can be viewed as an indirect approach to back testing. It simply tests the performance of parameters (across all member portfolios) upon which initial margin is derived. Given the large number of CCPs still using SPAN, this is an important type of back test to include within any CCP industry level request. Both summary level statistics and full factor level back-test reports should be shared with members.

Data Item	Description
Approach	The parameters underlying IM are tested against relevant factor data (for example , for SPAN IM for a futures contract might compare the "scanning range" paramter against actual changes in in the contract price)
Holding Period	The period (# of days) of potential future exposure/losses the initial margin is attempting to cover.
Market/ Product	Name of market (e.g. name of exchange or OTC segment name)/ product (e.g. futures, IRS) subjected to factor level back test
Parameter Under Test	Name and description of the IM parameter being tested. For example, the parameter might be "CDS Index Basis: the risk that CDS Index Spread deviates from those predicted by the underlying CDS contracts".
Factor	Factor(s) employed in back test. For the "CDS Index Basis" the factor might include the five years of CDS Index Spread less that predicted by the spreads of udnerlying CDS contracts"
Look back period	The look back period in the test; this should be at least 12 months. CCPs should be encouraged to use longer periods where possible.
Confidence Level	Targeted confidence level that actual IM is intended to cover. Separate test may also include "IM's" calibrated to lower confidence levels (95%, 90%) purely to facilitate testing.
# of Observations	Number of business days in the window for the factor level back test.
Exceedance	The amount by which factor exceeds parameter value in a given instance
Sum of Exceedances	Sum of the exceedance values across all breaches over the window being observed.
Maximum Exceedance	The maximum exceedance across all breaches.
Coverage Rate	(total observations)-(number of exceedances) / (total observations) .

Product Level Back Tests

CCPs should undertake both portfolio and product-level back testing. Assuming a portfolio is relatively diversified, relying on portfolio-level back testing only may allow conservatively-margined products to mask under-margined products. Product-level back testing should capture spreads and butterflies in addition to forward outrights, as margin offsets can be overstated for these strategies.

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