RE: CPMI-IOSCO consultative report on the framework for supervisory stress testing of central counterparties (CCPs)

Introduction

The International Swaps and Derivatives Association, the Institute of International Finance and the Futures Industry Association [1](the "Associations") and their members welcome CPMI-IOSCO's proposed framework for supervisory stress tests. While such a framework is high-level and general by nature, the final framework will be very helpful in providing a common basis for future supervisory stress tests. Given the important role that CCPs play in providing clearing services to global markets, such a framework will support international cooperation between supervisors and CCPs based on global standards.

The framework makes very clear that the aim of supervisory stress testing will be to identify and evaluate "*broad, macro-level impacts rather than assessing the adequacy of resources at specific CCPs*" and "*the tests are not specifically designed to establish minimum requirements for individual CCPs, and would not be a sound basis for direct comparisons of resilience across CCPs*". We welcome that CPMI-IOSCO make clear that there is no danger that such supervisory stress testing becomes a replacement for CCPs designing their own suite of robust and conservative stress tests.

This report is mainly addressed at supervisors and designers of supervisory stress tests. These stress tests will be an important tool in assessing the robustness of the markets, an objective that all market participants share. To achieve the maximum results for such exercises, information about the outcome of these tests needs to flow as freely as the confidential nature of trading data allows. We welcome that CPMI-IOSCO have reserved a section of the framework to discuss use and disclosure of results.

Industry's main request – provision of risk metrics from supervisory stress tests

In order to adequately manage their risk exposures to CCPs, clearing members need to be able to measure the potential losses from their default fund contributions and potential assessments. A crude way to do this is to sum up default fund contributions and potential assessments across all CCPs. Given that most firms clear several asset classes at many CCPs in different jurisdictions with different clearing members and risk profiles, summing up default fund contributions and assessments provides a theoretical maximum loss, but will not cater for the fact that not all CCPs will be affected by defaults of large clearing members in the same

[1] For the purpose of this consultation, FIA is signing on behalf of its clearing member firms.

way. The sum of all default fund contributions is therefore by design not even a plausible stress loss.

As the portfolios of other clearing members must not be known to clearing members, it is very difficult for clearing members to themselves build risk models for losses from default fund usage if large clearing members default across several CCPs. Most models that have been built rely heavily on assumptions and estimates.

We propose some risk measures that can be derived from a typical supervisory stress test. These measures should be shared privately with clearing members only and in an anonymized manner to ensure that there is no danger of accidentally sharing confidential information. It should also be noted that the information CCPs hold is ultimately clearing member data anyway.

Models currently being used by firms

Some clearing members have produced models for losses from default funds and assessments, for instance by:

- Estimating the size of other clearing members' exposures at each CCP, scaling the default fund stresses in relation to internal stress tests and calculating the loss from several other clearing members under these assumptions.
- Estimating the loss if a certain percentage of the market defaults at every CCP.
- Assessing the consistency of the size of the Default Fund with coverage assumptions and size of required Initial Margin (IM).

Data assumed to be available from a typical supervisory stress test

Under most variants of supervisory stress tests proposed by the consultation document, CCPs are providing stressed exposures per clearing member to the supervisor performing the stress test. Stress tests should be designed in a way that participating clearing members can be identified across participating CCPs, so that losses can be linked across CCPs. The stress test design should also include collecting clearing member specific data like IM and default fund contribution.

Proposed risk measures

We propose the following risk measures to be run and reported to clearing members of all CCPs in scope of the SST. All these risk measures should be anonymized and aggregated enough so positions of single clearing members cannot be reverse-engineered.

1. For each clearing member ("reporting member") on any CCP in scope of the exercise produce the combined default fund loss and assessment call (using consistent stress scenario assumptions) if another member with the biggest stress loss defaults across all CCPs of which this firm is a member. Also provide the distribution of stressed losses if the second biggest stress loss member defaults, and the third and fourth and so on. Note that the identity of the members representing the largest stress loss across all relevant CCPs can be different firms for each reporting member, depending on the set of CCPs the reporting member is active on and to what extent.

2. For each CCP, indicate the maximum assessment call that can be levied by the CCP under its rules.

3. For each CCP calculate the largest loss under all stress scenarios (can be different for different clearing members defaulting) from default fund and assessments if 10%, 20%, 30%, 40% of their clearing members (percentage by IM and/or DF contribution) default sequentially (assuming portfolios cannot be set off against each other) and concurrently. Also indicate how many of the largest members together would comprise the 10%/20%/30%/ 40% default event. Should the CCP membership be concentrated and the largest clearing member already covers more than 20% of the risk in the market, reports should highlight this fact.

4. Identification and description of the scenarios driving the largest and two largest losses in the supervisory stress test to give participants confidence that the scenarios are indeed extreme enough.

5. The distribution of uncollateralized stress losses across all clearing members for each scenario, without identifying the scenario or clearing member. If this is not possible without allowing reverse engineering of positions, the two options below should be used.

    a. **Alternate Option 1:** The largest uncollateralized stress loss for each clearing member (across scenarios) at each CCP, without identifying the scenario or the clearing member, to determine an approximate distribution of maximum clearing member stress losses;

    b. **Alternate Option 2:** the largest uncollateralized stress loss for each pair of clearing members (across the stress scenarios) at each CCP, without identifying the scenario or either clearing member, to determine an approximate distribution of maximum stress losses for two members defaulting simultaneously.

Providing such metrics to clearing participants will not only help their risk management, but also avoid pro-cyclical actions by clearing participants driven by conservative assumptions in the absence of better information about potential losses from mutualisation.

Implementation Approach

While the consultation report provides extensive discussion of inputs, parameters, scenarios and outcomes of SSTs, there is less discussion of the practical challenges of implementation. We would encourage greater focus on the implementation framework in further releases on this topic. One suggestion which CPMI-IOSCO may wish to consider is the possibility of an independent third party managing the practical implementation process for SSTs. Many of the issues and challenges discussed in the consultation report revolve around issues relating to confidentiality, anonymization of data, consistency of SSTs (including across inputs, processes/analysis and outputs), ability to readily repeat/duplicate SSTs, procedural flexibility and the operational burden of participating in the SST process. Centralising the process through an independent, appropriately experienced third-party, may serve to address many of these challenges and ameliorate the impact of many of these issues.

Responses to CPMI-IOSCO's questions

1. Objective and purposes of multi-CCP tests (see Introduction and Element 1.i)
    a. Is the framework clear with regard to the objective that a multi-CCP SST is intended to achieve, specifically to analyse the broad, macro-level impact of a common stress event on a set of CCPs?

The framework does indeed lay out that the objective of the SST is to focus on macro-level impacts rather than assessing the adequacy of resources at specific CCPs. To this end, the framework is deliberately broad-based and non-prescriptive and allows the supervisors flexibility to define their priorities and factor in constraints in developing a stress test. Membership at multiple CCPs particularly within the same jurisdiction can be overlapping - in such cases, it would be of value to know at what point/level-of-stress would recovery tools be applied across different CCPs, as this may impact the common member's ability to contribute to resilience measures (default fund assessments, liquidity lines) at the other CCP.

Nevertheless, we note that the macro prudential orientation/focus on understanding the scope and magnitude of interdependencies is only meant to be a starting point and expect that the learning/feedback from a given SST should be used iteratively to update/refine the SST frameworks until a robust and comprehensive framework that can be automated is established. We also note that the macro-level SST can be designed to yield results that serve as basis for further focused analysis on specific CCP or market issues. As such, the proposed framework does not preclude its use to analyze the individual financial resilience of CCPs (refer footnote 8 of the consultation).

To this end, we would support the design of an SST that enables comparison of CCP resilience. Greater transparency on the resiliency of CCPs based on a common metric (SST) would better help members manage their risk overall. Therefore, we would ideally want the SSTs to evaluate the appropriateness and sufficiency of CCP designed tests that ensure resilience of CCPs. Testing resilience of CCPs through more severe scenarios and evaluating its impact on the broader market would ensure a more comprehensive systemic risk analysis under the SST.

There is also a possibility that not incorporating stresses severe enough to test CCP resilience may yield outcomes that give the impression that CCPs are well collateralized and hence be counter-productive to the purpose of the SST. Incorporating more severe scenarios is also unlikely to put any additional burden on the available resources, given the process and level of information required would be the same.

We acknowledge that there are challenges in designing stresses that test the resilience of multiple CCPs and believe one approach towards enabling this is to conduct cross jurisdictional tests across CCPs clearing the same product (e.g. IRS, FX FWDs, etc.). Such test should be a natural extension and possible end stage of SST and would help compare resilience of CCPs across similar shocks.

SSTs should not be a standalone process but should instead be leveraged and integrated with the overall regulation of CCPs. In this context, we also refer to ISDA's response to CPMI--IOSCO on "CCP Stress testing– Transparency, Governance, and Best Practices" (dated Jul 13, 2015), which states that Standardized Regulatory Stress Scenarios should be designed to allow authorities to evaluate if CCPs' sufficient financial resources to withstand stress losses arising from member defaults (i.e. appropriate Cover N). If a CCP has insufficient financial resources to cover clearing member default(s) resulting from the application of the stress scenarios,

then the authorities should have the ability to ensure that the CCP ameliorates the inadequacy by issuing findings and requiring changes to CCP risk practices/market practices/other regulatory action. In addition, depending on the extent of breach, as penalty, authorities may also consider whether such CCP should increase its capital contributions to its default waterfall to fill the breach, thereby creating incentives for a CCP to take a conservative approach towards sizing total financial resources.

It would be preferable to provide more granular guidance on practices to be followed in order to establish consistency, comparability and transparency across CCPs and regulators (which was one of the requirements laid out under the CCP work plan). This could possibly be achieved by defining best practices for the different aspects of SST which would serve as minimum criteria for different regulators to follow. This would help standardize interpretation of results for i) CCPs that are present in multiple jurisdictions, as well as for ii) clearing members clearing in multiple jurisdictions.

The scope of stress test should include both credit and liquidity stress tests which are of equal value for risk management purposes. These should be conducted simultaneously instead of prioritizing one over another. While credit risk has always been a focus area, more often than not, it is liquidity shortfall which leads to a credit crisis. For instance, an entity that has sufficient resources from a credit perspective may still not be able to liquidate assets/ realize full value leading to a payment default. Therefore it is equally important to ensure CCPs have sufficient liquidity in stressed markets

Credit stress tests would help members assess robustness of the financial safeguards held by a CCP in a default event/stress event and in turn, would indicate robustness of margin framework and default fund sizing methodology at a CCP. It would help members to identify in which scenarios a particular CCP would need to call for unfunded assessment(s) and/or use of recovery tools above default fund and assessments would be triggered. With regards to liquidity stresses, some CCPs, by virtue of their rulebook, have authority to call members for liquidity support and access non-defaulted members cash collateral should there be any shortfall. Results of the liquidity stress testing would enable members in anticipating scenarios where they could be called upon for liquidity support.

Given the SST looks at CCPs under a broad market-wide impact scenario, it is highly likely that such market events could result in related non-default losses (custodial and investment losses.) and therefore SST should progress towards evaluating NDL related stresses and possible impact on CCPs. An example would be for instance looking into concentration in payment banks.

The industry also suggests including a component of revere stress testing in supervisory stress tests, at least as an option to be considered (see also the response to question 6 as to how the results from a reverse stress test could be reported). We fully support the approach laid out in Element 1.ii, para 31 which suggests targeting CCPs based on particular factors, which could, for instance, include: (i) the systemic importance of the CCPs; (ii) the particular markets or products cleared; (iii) the currencies in which cleared products are denominated; (iv) the number of common participants (in particular, where one or more of those participants account(s) for the largest credit exposures at one or more of the CCPs) and, in particular, where one or more of those participants constitutes the largest credit exposures for one or

more of the CCPs; or (v) other relevant interdependencies between CCPs, such as common liquidity providers. Moreover, we would ultimately suggest multi-CCP stress tests extend across jurisdictions, as doing so will provide more realistic estimates of the impact of the events.

Finally, we note that while authorities are "encouraged" to use the framework, there should be implementation monitoring similar to the Level 1/ Level 2 assessments undertaken by CPMI-IOSCO to incentivize regulators to undertake these stress tests.

b. Do potential users of the framework consider that its structure and content, including the design tool in Annex A, are adequate to facilitate and support them in designing and running a multi-CCP SST to meet the stated objective?

A framework is high-level and general by nature, but will be very helpful in providing a common basis for future supervisory stress tests. Given that the important CCPs clear global markets, such a framework will support international cooperation between supervisors and CCPs based on global standards.

The design tool provides an easily accessible list of topics to be considered and questions to be asked.

This question should largely be directed towards Regulators and CCPs who are the users of the framework, with the exception of risk metrics described above. These should be better specified to make sure comparable measures are provided in different SSTs.

c. Do potential users of the framework consider that it is sufficiently flexible to accommodate different authorities with varying responsibilities, legal frameworks, expertise and resources?

This question should be ideally be directed towards Regulators and CCPs who are the users of the framework.

From a participant perspective, while we acknowledge the need for flexibility in the initial stages of SST designing, if the flexibility is too broad, it could result in reduced grounds for comparisons across jurisdictions. This would result as each authority designs extremely bespoke SST which could use widely different data sources, risk factors, and stress scenarios.

It would also result in in non-standardized stress testing across CCPs clearing the same product/ asset class in multiple jurisdictions and as such results won't be comparable. Ideally, there should be a requirement for coordination and cooperation amongst regulators to ensure stress testing includes a standard suite of scenarios that would ensure that the objectives of consistency and comparability are achieved. As noted we believe that these standard scenarios should allow ultimately allow cross-jurisdiction tests.

d. What do stakeholders consider to be the benefits or other implications from a multi-CCP SST?

Clearing members see only their positions and exposures at CCPs, and have, other than the crude measure of adding up default find contributions, no useful visibility of the risk they are mutualizing. Supervisory stress tests will be helpful in this regard (see our detailed description above), and will also help supervisors to assess and manage systemic risk.

Supervisory stress tests serve several purposes and the benefits of the test would be a function of the scope of the exercise that has been conducted. In general, multi-CCP stress tests provide a consistency and comparability check:

- Comparison: All CCPs would be subject to the same macro level stress scenarios, it would help compare the resiliency of multiple CCPs within a jurisdiction or multiple CCPs across multiple jurisdictions (if SST is cross-jurisdictional). Further, if SSTs globally were subject to minimum best practice standard, this would allow comparability of CCPs globally.
- Measure progress: In addition to cross-CCP comparison, the periodic SSTs would provide authorities common criteria on which to measure progress made by CCPs in resolving shortcomings identified in their risk practices.
- Standardized interpretation of results: Further, contingent on effective and sufficient disclosures, outputs from the SST could help standardize the interpretation of results for (i) CCPs that are present in multiple jurisdictions, as well as for (ii) FCMs clearing in multiple jurisdictions.
- Identify interdependence: It helps identify interdependencies between markets and allows regulators to assess systemic effects associated with multiple CCPs responding to the same stress. This in turn would enable regulators to identify inherent issues in the system and prioritize efforts in enhancing resilience of critical infrastructures and entities.
- Providing additional risk metrics (see above)
- It provides a starting point for additional analysis and action by relevant authorities

Resilience: Where designed to evaluate resilience of individual entities, it gives comfort around resilience, enables comparison of resilience and where it has repercussions for CCPs, it will ensure CCPs are conservative if there are consequences for them. It can also be used by participants to assess the impact of specific stress scenarios and allow participants to identify inherent risk issues and manage to those risks. In this context, we note that paragraph 188 speaks to authorities' expectation on risk management that applies to CCPs, clearing participants and third parties which would all largely be relevant in the context of testing the resilience of CCPs.

e. Remaining cognisant of confidentiality concerns and the potential need for aggregation and anonymisation of test results, how do stakeholders anticipate using the results of SST exercises?

Protecting confidential information is paramount. Clearing participants often see confidentiality reasons used as a means to restrict CCP transparency though. As a general principle, clearing participants' information about size, composition, risk of their portfolio and trading activities needs to be protected at all times.

However, as long as the above information is protected, confidentiality should not be used as a reason to restrict disclosure of relevant information to market participants, provided that

the information is aggregated to an extent that no individual portfolios, transactions or risk profiles can be deducted.

Please see above for a description of the risk measures clearing members would like to see from such supervisory stress tests. We are mindful that there are confidentiality concerns, but note that the data CCPs are managing is ultimately clearing member data, and the risk measures we propose are aggregated to an extent that underlying portfolio data cannot be re-engineered.

Participants: From a clearing member perspective, the stress test results can be used to help understand the risks of default of the clearinghouse and exposures resulting from the defaults of other members. It would especially help members identify scenarios wherein unfunded assessments would be called and/or scenarios wherein recovery tools above default fund and assessments would be triggered. Disclosure of distribution of stressed loss would enable participants to model sufficiency of coverage and stress their own internal exposures to CCPs and accordingly manage risk to those. We also note in Para 188 that SST can inform authorities expectations on risk management that apply to clearing participants and believe granularity in disclosures would help participants strengthen frameworks to suitably risk manage CCP exposures.

Authorities: The stress test frameworks should be an integral part of assessment, oversight and regulation of CCPs rather than standalone process that is being run. To this end, supervisory stress tests for CCPs should have consequences similar to MRAs in case of bank stress testing. If resources are found to be short, there should be implications for ownership with the shortfall being covered through capital rather than additional resources from the market. This would ensure that the CCP owners have sufficient incentives to focus on appropriately sizing the financial safeguards.

2. Scope and frequency of SST exercises (see Element 1.ii, iii)
    a. How can the authorities best strike a balance between the usefulness of SST results and the potential resource burdens and costs to themselves, CCPs and other stakeholders associated with conducting a SST exercise?
    In particular:
        i. What would be an appropriate frequency for conducting SSTs?

The ISDA response letter to CPMI-IOSCO on CCP Stress testing (dated Jul 13, 2015), suggested that supervisors refresh the Standardized Regulatory Stress Scenarios on an annual basis. We note that this is also in line with the frequency currently used by ESMA for the EU wide CCP stress testing. and is also in line with the supervisory stress tests applied to Banks

There are benefits to conducting SSTs on an annual basis as it ensures that there is continuity to the process for incorporating learnings in subsequent SSTs. Nevertheless, we believe that the frequency of stress test should balance the benefits with resources and ensure that conducting a stress test on a less frequent basis does not result in loss of relevant feedback/learnings (eg: those with experience of an SST might no longer be involved in the subsequent processes).

Finally, irrespective of the frequency it needs to be ensured that there are enough checks on implementation required of CCPs and market participants.

ii. ii. Would the use of multiple reference dates sufficiently increase the information provided by a SST exercise to justify a higher resource cost?

We strongly believe that SST should involve multiple reference dates as this definitely add value from the perspective of evaluating portfolios of varied composition at different points in time and also prevent window dressing of positions/ data as participants would not be aware of what data will be used for SST.

When considering multiple reference points, these should be diversified to include quarter-end, year-end and intra-month dates. Dates of significance, such as expiry dates, settlement dates etc should also be included as they are likely to be dates with material position changes. In addition, select dates with material market activity such as elections/ Brexit should also be incorporated to ensure the SST evaluates impact of large market moves.

Where feasible/ data available, it may also be worth evaluating intra-day positions as it is equally likely that defaults can happen in the middle of the day when there are large moves.

3. Involvement of CCPs and other stakeholders (see Element 1.iv; Element 2.i, ii)
    a. What level of engagement would CCPs and other stakeholders expect to have in the design of an SST exercise? Please explain whether the level of engagement is likely to depend on the particular purpose or design of the SST. How might stakeholder feedback best be sought?

The industry believes that engagement of CCPs and clearing members is critical in designing supervisory stress tests. Especially if the stress tests are designed to be repeatable (see questions above), CCPs input will be valuable in designing effective and efficient data structure and reporting processes. Existing CCP stress scenarios might also be a good starting point, for supervisors to design the scenarios. CCPs' input will also be required to enable supervisors to design relevant stress scenarios that can be applied to all involved CCPs in a meaningful way.

And whilst providing risk measures to clearing members might be seen by supervisors as a useful side-effect, such output is very valuable for clearing members and the risk measures provided should be designed together with industry. Supervisors should establish mechanisms to receive feedback on the design of SST. In fact, supervisors should consult stakeholders at all stages of the stress test - before, during and after to provide feedback on key decisions around developing scenarios.

Consultation early on would revolve around designing the purpose and scope of the test – the expertise that dealers have across asset classes and products would allow them to provide input into the magnitude and consistency of stresses. In addition, dealers have experience with regulatory stress testing through CCAR that can be leveraged to design stress scenarios for CCPs supervisory stress testing.

Consultation during the test would focus on timing and format of data submission to reduce resource burden and on confidentiality of data provided.

Consultation after the test would focus on disclosure of results of tests and action to be taken to improve resilience of the system. Communication of stress testing results to participants can be through private disclosures but should be at a granular level. This would enable them

to understand how the regulators modeled the stress testing, how they identify risk concerns/areas. This in turn would allow members to take correct risk reduction steps to address the risk concerns highlighted by the stress testing. Otherwise, it is quite possible that the risk reduction measures undertaken by participants might not address the risk concerns highlighted by the stress testing results.

b. Which roles and responsibilities should CCPs assume – or would CCPs expect to assume – in the design and running of an SST?

While feedback should be sought from all market participants, the ultimate responsibility for designing the SST should rest with the regulators. This is in line with bank stress testing where stress scenarios are developed by regulators but are run by banks.

Regulators should ensure transparency with the participants at the time of developing stress scenarios as well as at the time of disclosing the results. This would allow participants (in this case CCPs) to understand how the regulators perceive/identify risk areas. Participants should have visibility as to how regulators derive their stress testing results. Else, participants would not be able to compare results of the internal stress testing with that of regulatory stress testing.

CCPs should definitely be involved in providing feedback on design phase, valuing portfolios/ calculating P&Ls and submitting validated data to the regulators. However to prevent CCPs from changing their risk management framework to yield better results in SST, CCP input should be one amongst many and should not be the only factor driving the SST. The stress scenarios should not be sourced solely from or disclosed to the CCP. This is also because sourcing stresses from CCPs will not test the resilience of CCPs providing the stress scenarios.

CCP should not be put into a position where they have a conflict between providing input in the stress test or running part of the stress test themselves on the one hand, and being judged by the SST at the same time. A SST therefore cannot rely extensively on input from CCPs or use of their models unless this is performed in a transparent way. For the same reason supervisors should be closely involved in the design of scenarios and could use third party resources if the effort designing and analyzing the SST is too much to be done in-house.

Targeted feedback from those with expertise (be it specific CCPs, participants, the prudential regular or the resolution authority in the jurisdiction) can be sought through bilateral meetings. Feedback from broader market participants/ other regulators can be sought through multilateral meetings/ closed workshops.

c. What safeguards would ensure that the independence of an SST as a supervisory exercise is maintained?

Regulators must establish a mechanism for validating all data and information received from various stakeholders. There should also be an explicit governance process for documenting feedback from various stakeholders, recognizing conflicting views and documenting rationale for the approach used/ preferred.

The governance arrangement must ensure the independence of the exercise and allow authorities to retain control without fully relying on CCPs for all inputs. Where CCPs provide

significant input to the design of stress scenarios, authorities must take steps to review models used and outputs provided by CCPs to ensure its independence.

4. Information-sharing, data collection and data protection (see Element 2.iii, Component 4)
    a. Do stakeholders perceive any legal or operational constraints on sharing the (individual/named) data required to support an SST exercise? Please describe.

It is possible that current arrangements have not been set up to allow that sharing of data with supervisors in other jurisdictions. Given the huge importance of clearing for global derivatives markets, the effort of agreeing new arrangements would be well worth the benefits of having multi-jurisdictional stress tests.

The confidentiality issues associated with the data request would depend on the nature of the data - raw position level data vs. P&L information once the CCP has run through stress scenarios and conducted analysis, House vs client information and our legal obligations associated with them. For instance, there could be jurisdictional restrictions based on location of a client, a CCP, and a member. Confidentiality concerns would also vary by jurisdiction depending on data privacy laws. Given that the firm-specific data would include client related information and proprietary information, it would be important to understand specific requirements of the exercise. It is quite possible that firm specific data sharing could result in regulators/authorities receiving information that might not be needed, if purpose of sharing the data is not clearly defined.

Another key concern would be information security, that is, what minimum standards/controls would be followed while handling the data – for example, access rights, modes of transmission, procedures followed to store, distribute, control, how long will it be retained, who else it will be shared with and when will data be disposed once it has been used. Ideally, participant approval should be sought BEFORE data is shared.

Given the data is ultimately owned by the participant firm rather than the CCP or authorities, if data were to be shared by the CCPs, firms would need assurance around handling of data and be aware of consequences if there is mishandling of data. Ideally, there should be contractual agreements that include participants such that they would have recourse to the CCP or regulators in case of an issue.

    b. What arrangements do stakeholders consider could be put in place to enhance the effectiveness of data collection and to promote the quality and consistency of data? What are the potential limitations?

Stakeholders – CCPs, clearing members and clients will require strict confidentiality of their data in all jurisdictions involved. They also require state of the art protection of this data from cyber risk.

The SST design framework should take into account the nature of data required for the analysis and communicate this to stakeholders upfront.

The SST framework contemplates multiple approaches to data - sourcing it directly from participant, leveraging information already submitted to authorities, requiring CCPs to share data and requiring CCPs to undertake some analysis and submit results of the analysis (P&L etc).

We recognize that of these, the efficient approach would be to require CCPs to undertake the bulk of the calculation in measuring P&L and/or inflow/outflow of cash such that the volume and granularity of data and disclosures are reduced. In this regard, CCP input in determining data templates should be sought and effort should be made in standardizing such template (across jurisdictions and across tests undertaken over the years) as it will help reduce scope of errors. Consistency and validation checks, at a minimum through spot checks, should be undertaken at the front end, before any analysis is undertaken by regulators to ensure that results of the analysis are meaningful.

Nevertheless, sharing of data would have to be a on case by case basis and there cannot be a blanket approval around CCP sharing information as firms would have to ensure that client information is adequately protected in line with the developing regulatory guidance before any form of data sharing can be agreed to (detailed below).

c. What assurances would stakeholders seek if their data were to be used in an SST exercise?

Any approval to share data would need to be on case-by- case basis rather than a blanket approval. To determine if there is any concern with the data sharing request, various factors would need to be considered internally before giving any approval. For example, what data is required to be shared, purpose of sharing the data, use of the data, the recipients of the analysis, whether data would be handled in an anonymized manner etc. Where data is being disclosed to authorities who do not have any regulatory oversight over a member bank, in such scenario consent from the relevant member bank should be obtained. This is also relevant in the context of obligations imposed on participants around protecting client information. As these regulatory obligations evolve over time, and different regulators may or may not be eligible to receive client data, a blanket approval for data sharing is not feasible.

d. What data protections and safeguards should the authorities put in place?

Some of the measures that can be incorporated include (but are not limited to):

Transparency: It is equally important for supervisors to be transparent about how data is being protected and what information will subsequently be shared (with whom, in what format and for what purpose).

This will help ensure that strict controls can be implemented to monitor/grant permission to certain authorities to see information (particularly where multiple authorities with differing oversights are involved).

Direct sourcing: If individual firm data is needed, it would be more efficient for data to be collected directly from the firms rather than from the CCPs. This would allow member firms to understand what information is being disclosed and for what purpose. Where such information is directly shared by CCPs, the member firms should be notified about such

sharing of the information with the regulators. This would ensure that each firm knows which authorities have access to the information.

Confidentiality agreements: Any such information sharing, whether by CCPs or by member firms, should be subject to robust confidentiality agreements. The member banks must be beneficiaries of the agreements so that they have direct recourse against the relevant party. Where information is shared by CCPs, such agreements should also cover the client firms' consent for CCPs to share the data to avoid any ambiguity and liability.

Restricted usage: Use of data should only be to satisfy the regulatory request that resulted in its submission. Firms should be informed of any other use.

Secured channel of communication: Robust controls should be implemented over the communication network to safeguard data, tightly control access to network devices through management approval and subsequent audit. Strong authentication and encryption to secure communications should be used, especially when data is in transit over any public shared network and non-wired network.

Encryption: Use of encryption products must comply with local restrictions and regulations on the use of encryption in a relevant jurisdiction. Virtual Private Network (VPN) transmissions should be performed over an encrypted channel.

Cyber Risk: There should be adequate clarity/ disclosure on how cyber risk would be addressed by the regulators and other authorities who would handle data and how data will be adequately protected.

Storage, transportation, and access: Safe storage and secure transportation of electronic or paper records should be provided from source to destination including any transit stops. Only authorized individuals should be granted appropriate entitlements to access data.

Retention and Disposal: Policy on retention and disposal should also be clearly specified in the information sharing agreement. Data should not be retained longer than needed to satisfy the regulatory request and should be moved to archive storage after use/ destroyed in a timely and secure manner.

e. The framework anticipates that CCPs will be a primary source of data for many SSTs. Is this an accurate assumption? Do stakeholders agree that this approach is generally likely to be most efficient from an operational and confidentiality perspective? Are there other potential sources of data? If so, what other data sources could be relevant for conducting an SST and what guidance would be useful to provide to authorities?

In terms of alternative data sources, trade repositories might contain data required for this stress test. CCP data however is used every day to calculate margin requirements, variation margin calls and settlement and are likely of better quality. CCPs are also performing stress testing on their data on a daily basis. For this reason it would be surprising if that data will be of insufficient quality for a SST.

Where member and client specific data is required, it is shared directly by the member with the relevant regulators which would be governed by the confidentiality agreement. Direct data sharing with the regulators and associated confidentiality agreement would ensure that

if there is any data leakage, participants would have recourse to the relevant regulator. As against this, if a CCP shares the information, the confidentiality agreement would be between the CCP and the regulator and participants would not have any recourse despite being the affected party.

- Anonymizing data: Anonymizing data to address confidentiality concerns so long as integrity/effectiveness of the SST is not impacted. While this reduces privacy risk, it does not completely eliminate it. (Possibility of reverse engineering).
- In this context, we acknowledge the attention paid by regulators and suggesting framework where by one group of regulators would develop keys to anonymize firm level information without looking at position data while another group would undertake analysis without seeing the key.
- While this would help mitigate concerns around privacy, keys once created and used should be destroyed so that it is impossible for anyone to reverse engineer firm level information
- Even where the process is to destroy keys, there could be control issues if for instance, the destruction of keys does not happen as envisaged.

5. Technical content of the framework (see Components 3 and 5)
    a. Do stakeholders have any comments on the technical content of the framework, including but not limited to the guidance on setting extreme but plausible scenarios, identifying core risk factors, calibrating shocks, extrapolation, identifying defaults/failures, aggregation procedures and metrics?

It is clear from the text that the committee has spent lots of time on the design of stress scenarios. We have only a few comments.

If the SST includes sequential defaults or stress events, the period over which the default has to be simulated will be likely longer than the SPOR – if shorter there would be some additional modelling of potential interdependencies and netting benefits between the default events.

For calibration of shocks it is important whether shocks generated from historical scenarios, or theoretical scenarios based on historical events, are applied as absolute shocks or relative shocks. Depending on asset class, both absolute and relative shocks can lead to unintended outcomes. Best practice in stress testing at CCPs and banks is to use a mixture of absolute and relative shocks.

For specifying who will default or other failures, in the majority of cases this will be driven by the exposures under each scenario for every participant: the CCP should provide all stresses to the relevant supervisor (this can be different supervisors for different sections of the CCP membership), who then will select the stresses that generate the largest overall loss. In relation to providing stressed exposures to clearing members this could even be different defaulted entities for each clearing member.

As for designing the SST, the risk sources and exposures to include will depend mainly on the objectives of the text. Sophisticated CCPs will have enough in-built flexibility from their own stress tests to be able to perform these tests – the burden on execution will be considerable less than the time required for the design of consistent and relevant stress scenarios.

Also, whether a SST and the design choices are in line with PFMIs or not depends on the objectives of the SST. As long as the stress scenarios are made available to the addressees of the SST – which should include clearing members and with a higher level of aggregation of the results also the public – then the results of the SST can be put into perspective of the stress scenarios used.

Identifying defaults/ failures: A possible approach could be to consider default of the two largest members at a CCP along with the largest member(s) present across CCPs. This would ensure that the impact is widespread, diversified and sufficiently conservative (greater than cover 2 across CCPs).

Another approach would be to factor in correlation across members when considering the defaulting members – eg. default of members of less than a particular public rating (BBB-), or default of members with significant correlation in CDS spread.

The SST should also take into account impact of any CCP assessments on credit quality of non-defaulting members – i.e. if cash calls or other loss allocation tools result in subsequent defaults.

Calibrating shocks: Shocks should be consistent across risk factors and should be calibrated with knock on effects rather than viewed as instantaneous shocks.

Intra-day moves: Impact of intra-day position and market volatility should be factored in by using intra-day positions as reference data and price moves as part of shocks rather than just focus on end-of-day positions.

Extreme but plausible: Focus should be on determining extreme but plausible in the context for each CCP. This can be challenging in the context of an SST that is across different asset classes but this can be more easily designed for SST focused on CCPs clearing similar products.

The SST could also include a mix between plausible and implausible scenarios to probe recovery situations at CCPs and the tools used in such circumstances. Using a mix of scenarios might require reporting the used scenarios next to the results to give recipients of the results the ability to look at results in the context of the severity of the stress scenario used.

In this context, using stress shocks developed by a CCP is not conservative as it does not test the resilience of that CCP and would defeat the intention of evaluating what the deficiencies are with existing CCP stress testing process.

Stress testing assumptions should be realistic. If participants have hedged/taken risk offsetting actions, the stress testing should take into account such actions. In the absence of that the stress testing results would be overly conservative and would be far from losses that would be incurred making stress testing results less effective/useful for risk management purposes

Aggregation: The SST consultation rightly recognizes the different approaches to aggregation of information – at portfolio, clearing service, CCP, across CCP and participant level. It is important that there is consistency in approach when SST are undertaken across jurisdictions to ensure results are comparable.

Cross CCP arrangements: In the context of aggregation, it is also equally important to evaluate cross margining arrangements/ interoperability and other links amongst CCPs to evaluate how stress at one entity would impact and be aggregated across entities.

We also propose to consider including non-default losses in the scenarios.

b. In designing a SST, what should authorities consider when determining which risk sources and risk exposures to include? How can authorities balance the need for sufficient content with burden?

Need for Narrative: Given the diversity of the products cleared by CCPs it is useful to include a narrative explaining the macro stress scenario designed by regulators, to help ensure they are interpreted and applied consistently. In fact an efficient approach would be to give asset level stresses, a narrative, and then allow the CCPs to create sub-asset class scenarios. Such scenarios can be developed qualitatively based on CCPs views on what is punitive for its portfolio or be model driven. This would allow CCPs to apply the stresses to the parameters that are of high importance/peculiar to their clearing services. That said, in this approach, comparability of the stress testing results would be limited given that it is highly likely that stresses applied across CCPs would differ. In the absence of narratives, there is a risk of different CCPs coming up with different stresses. In that case, the results of the stress testing won't be comparable. In this context we note that the consultation does not envisage the extent of documentation that is likely to accompany the stress testing.

Client Default: Risk exposures should factor in not just the defaulting member positions but also their client positions assuming that the member clients will not be ported. This is in line with the requirement laid down by -CPMI-IOSCO in their recent guidance to CCPs for sizing their financial resources.

c. In designing an SST, authorities may (need to) make design choices that differ from the expectations set forth in the PFMI and further guidance on stress-testing practices by individual CCPs. Do CCPs foresee issues if authorities proceed in a manner that differs from approaches taken by individual CCPs in their own stress tests? What trade-offs would the authorities need to assess when making those design choices?

The PFMIs provide granular guidance to CCPs on approaches that can be used to design their stress tests to size financial safeguards. Given these are guidance, and individual CCP implementation of the guidance would be different it is fine for design choices made by authorities to be different. For instance, CCPs may elect to size financial safeguards based on cover 2 whereas as part of SST authorities may include a different assumption with respect to the number of members defaulting. Similarly, CCPs may assume availability of recovery resources in their waterfall, while supervisors may elect not to rely on assessments.

d. What is an appropriate number of scenarios to include in an SST? What factors should authorities consider when determining the number of scenarios to apply?

The number of stress scenarios again depends on the objective of the SST: if the objective is to investigate a particular market development or supervisory concerns, then in extremis even one scenario is helpful. For more regular SSTs the scenarios should include several possible

stresses to the financial system to make the effort of designing and executing the SST worthwhile.

Variety & Severity: It is essential that there be a wide variety of stress scenarios covered by the stress tests. Purely directional stresses by asset classes, for example, may tend to hide exposures in portfolios that are nominally diversified. It is also equally important to have scenarios of different severities – baseline, adverse, severely adverse, to test sufficiency of CCP resources under various stress environments.

Correlation: While developing scenarios stresses on factors that move together in the real world should be considered as correlations can break during stressed environment. Historic shocks should not be solely used for developing stress scenarios. In developing the test, it should be considered whether shocks should be instantaneous or develop over a pre-defined projection period. Given CCPs have ability to scale up resources with increased volatility, an instantaneous shock is likely to be more severe. At the same time instantaneous default assumptions allow for offsets across member portfolios, so it may be more conservative to assume a sequential default that develops over a period with shocks from the first default stressing markets further. In this context, we are unclear on what para 137 envisages in terms of simultaneous and sequential defaults. It would be helpful to have greater granularity over what time period the envisaged simultaneous and sequential refer to.

The stress scenarios should ideally be based on ongoing macro-economic developments as experienced in day-to-day functioning of markets and the stress scenarios should be managed on a regular basis. The primary approach would be to compare results to historical periods of great stress. In addition, a narrative will aid in the determination if the scenario is adequately severe.

Further, all CCPs clearing the same product type should be subject to at least to a minimum, the same suite of scenarios. This would ensure comparability of the stress test results across CCPs.

Other points to note:

- Ideally, the regulators should come up with stress scenarios independent of CCPs.
- The SST should take into account scenarios that are specific to the product types. For e.g. for CDS, jump-to-default scenarios should be included.
- At the same time SST should avoid incorporating too many scenarios as it may hinder analysis.

6. Use of SST results and disclosure (see Component 6)
    a. Do stakeholders have views on disclosure of the results of an SST? Are there circumstances in which results should not be disclosed publicly?

Disclosures on Approach: We fully agree with the considerations laid out in the consultation that the form of disclosure should be consistent with the purpose of the test and that the process of determining the possible use of the SST could be iterative.

We acknowledge that consideration needs to be given to how the SST results are likely to be used as this would influence the design of the stress framework. While we acknowledge that the primary recommendation is to design a SST that focuses on a set of CCPs, supervisory

action targeted at specific CCPs should not be ruled out. This is likely to be relevant as SST focused on CCPs clearing a product set are equally likely to reveal vulnerabilities that would need to be addressed by individual/ less resilient CCPs.

Given that the design of SST influences if/ how the results can be used, it is disclosure of information that enables understanding of the approach to supervisory stress test framework is critical. This would provide context for the SST and information the manner in which results can be interpreted and support comparability of results across different authorities and jurisdictions.

Level of disclosures: We also equally agree that the level of disclosure may be different for different audiences and that public disclosures should be timed to ensure they don't impact markets and are necessarily at aggregated levels such that the results do not have impact on publicly traded instruments

Public disclosures should talk about the findings of the exercise, regulators view on the robustness of CCPs without mentioning specifics on individual member/ client performance. If there is need to comment on members, it should be on an anonymized and aggregated basis. Sensitive data should be removed and there should be restrictions on the CCPs and authorities that are privy to certain data.

Nevertheless, there should be greater disclosures to members privately as breaks in stress tests will reveal probability of usage of unfunded resources/ recovery tools to help members in risk management.

Type of disclosures: In general, public disclosures should talk about what the findings of the exercise were, regulator's view on robustness of CCPs without mentioning specifics on individual member/client performance. Results should essentially talk about

- Sufficiency of defaulters margin collateral
- Sufficiency of defaulters total (IM + default fund collateral)
- Sufficiency of defaulters resources plus the tranche of CCP equity (skin-in-the-game)
- Sufficiency of funded protections
- Sufficiency of funded protections and assessments

Losses of member (and member families) across multiple CCPs, where the firm participates, for each scenario relative to those institutions funded protections should be disclosed to ensure systemic risk can be evaluated.

b. Remaining cognisant of confidentiality concerns and the potential need for aggregation and anonymisation of the results, what types of disclosure would stakeholders find most useful?

Clearing members are very interested in the impact of defaults across several CCPs on their own default fund contributions and assessments (see description above).

If the results are sufficiently aggregated so they cannot be re-engineered to get information about positions of a clearing participants, it is difficult to foresee cases where there should not be disclosure to the wider market and the public. We therefore welcome the statement in the guidance that authorities should aim to be as transparent as possible.

We do not think that the fact that some CCPs are publicly traded should stand in the way of transparency: for disclosure to their clearing members the information is aggregated enough if the risk measures described above (or similar) are used. For public disclosure, there will be ways to make information public that automatically ensures that the information is no longer non-public information.

There may be cases in stressed situations where supervisors will ask CCPs for a SST looking at only one particular firm they are concerned about. Such a case would obviously not satisfy the requirement of suitable aggregation and cannot be made public, or even shared with clearing members. We however don't think that such cases are seen as typical SST, albeit they might use the infrastructure built for SSTs.

Anonymous results: While anonymity reduces usefulness of data, it is necessary to avoid the disclosure of information that may be exploited by competitors. The risk of such exploitation for commercial use is limited by the fact that we are suggesting disclosure at member level and not at product level.

Identification of stress scenarios: Data is most useful when it can be linked to stress scenarios so that an independent assessment can be made of the likelihood and magnitude of the exposure in stress conditions.

Clarification of assumptions: Participants would like to see detailed results at the CCP/scenario level with disclosed member default assumptions combined market stress scenarios producing a CCP loss and disclosure of progression and allocation of losses through the CCP waterfall.

Distribution of losses: Clearing members would most like to see losses aggregated at the member level (with client portfolios included based on a transparent porting assumption). Although (as discussed below) to some extent anonymity is required, there are several options that would be revealing. The different options to disclose information in the order of our preference (starting with the most preferred) are as below:-

- All IM and All uncollateralized stress losses by member with scenario identified but member anonymous.
- All IM & Maximum uncollateralized stress loss by member with scenario identified but member anonymous
- All IM & Maximum uncollateralized stress loss by member with both scenario and member anonymous
- Maximum uncollateralized stress loss by member with both scenario and member anonymous
- Trend data on daily uncollateralized stress losses (the single largest and the aggregate number of the two largest uncollateralized stress losses

Members could use the results to help understand the risks of default of the clearinghouse and our exposures resulting from the defaults of other members. Especially, it would help members identify scenarios wherein member's unfunded assessments would be called and/or scenarios wherein recovery tools above default fund and assessments would be triggered.

Aggregated results on interconnectedness: Where SST are run across CCPs in a jurisdiction or across jurisdictions, the following disclosures would help evaluate interconnectedness risk.

- For each clearing member, the combined stressed loss (using consistent stress scenario assumptions) across all CCPs where the firm is member.
- The distribution of stressed losses if the biggest member defaults/ the second biggest stress loss member defaults, and the third and fourth and so on.
- The loss from default fund and assessments if 10%, 20%, 30%, 40% of their clearing members (percentage by IM and/or default fund contribution) default sequentially (assuming portfolios cannot be set off against each other). Also indicate how many of the largest members together would comprise the 10%/20%/30%/ 40% default event
- The default fund loss and assessment call that would be issued to each member if the biggest members who causes the overall largest loss across all the CCPs/ markets defaults

Conclusion

The Associations would be pleased to discuss any aspects of this industry submission at your convenience. We look forward to continued engagement on this important matter.