

CCP Non-Default Losses

Summary

What are Non-default losses?

Non-default losses (NDL) are losses sustained by a CCP as a result of events other than the default of a clearing member. These could include losses in respect of the cash and securities collateral (including default fund contributions) furnished to the CCP by its members, the CCP's own resources or other assets and could result from:

- Investment losses (including failures of repo counterparties and defaults or downgrades in credit ratings of sovereigns).
- Losses arising from failures of securities custodians or settlement banks.
- Losses caused by fraud, theft or other bad acts of employees and/or third parties.
- Losses resulting from cyber-attacks.
- Losses from operational or systems failure.

NDL can also arise from unexpected liabilities like a regulatory fine or litigation that could result in a judgment that renders the CCP balance sheet insolvent. ISDA and FIA ("together the Associations") have worked on the issue of who should bear which type of NDL and believes that NDL should generally be borne by the CCP, especially if the CCP controls or manages the risk of these losses¹.

For the purposes of this paper, we assume that the NDL is the CCP's responsibility and would exhaust the CCP's equity and its parent would be unable or unwilling to replenish the CCP's capital, rendering it insolvent. For a systemically important CCP, we assume that this is the point or before at which the resolution authority (RA) would need to intervene² to resolve the CCP and ensure continuity of its critical operations and services.

Drafting of this paper has been triggered by the near-final EU regulation on recovery and resolution of CCPs (the EU regulation)³. The thoughts presented in this paper are, however, applicable globally, given that other regulators are also focused on this topic.

¹ There are unique considerations with respect to addressing custodial and settlement bank losses.

² Intervention could theoretically be sooner (see FSB *Guidance on Central Counterparty Resolution and Resolution Planning* (FSB CCP Resolution Guidance) paragraph 3.5).

³ https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-markets/post-trade-services/recovery-and-resolution-central-counterparties-ccps_en

This paper is presented in the context of four tools which are a superset of tools available in other jurisdictions. The analysis is therefore applicable globally⁴:

- Cash calls
- Bridge CCP tool
- Write-down-and-conversion tool
- Variation margin gains haircutting

Please see the appendix for a detailed description of which tools are available in which jurisdictions.

*How should NDL be allocated?*⁵

The guiding principle for allocating NDL should be who manages the risk.

In line with this principle we propose for the allocation of NDL:

- In order to properly incentivise CCPs to exercise prudent risk management, CCPs and their shareholders should bear almost all NDL,⁶ in particular the entire non-default losses related to risks that are exclusively within their control. That is, CCPs should bear all NDL related to:
 - operational risks.
 - general business risks.
 - legal risks.
 - cyber risks.
 - fraud (or other internal 'bad acts').
- In some instances, clearing members and their clients (together participants) may bear at least a portion of NDL related to custodial risks, settlement bank risks and investment risks. These instances are described in more detail below.

For NDL that a CCP bears itself, the CCP's parent company and/or equity holders should bear the remaining losses in the event that a CCP's capital or other dedicated funding is insufficient⁷. Consistent with this, CCP rulebooks should unambiguously indicate that default waterfalls (including CCP skin-in-the-game, CCP STIG) are not applied to NDL in recovery, as these resources are sized to cover default losses exclusively. In liquidation or resolution, the CCP SITG should be a loss bearing resource.

The rulebook should state clearly what NDL the CCP will not be responsible for, with the underlying assumption that all other losses will be borne by the CCP. We also recommend that CCPs have effective governance and procedures on the management of risks that could lead to NDL, as already practiced by best-in-class CCPs.

More work is necessary to ensure that CCPs have (or have access to) resources necessary to cover NDL. As a first step, it is crucial for CCPs and their supervisors to consider and stress test each

⁴ These are the tools contemplated in the EU regulation on CCP recovery and resolution. This toolset is largely in line with tools available in other jurisdictions.

⁵ See FSB CCP Resolution Guidance paragraphs 2.13-2.14.

⁶ See FSB CCP Resolution Guidance paragraphs 4.2 and 4.4

⁷ ISDA's CCP members take different views regarding whether parent guarantees are appropriate. We also note that recent financial industry practices have been to move away from parent guarantees for other types of financial institutions

potential non-default loss scenario to estimate the potential quantum. We understand that Crisis Management Groups of systemic important CCPs in more than one jurisdiction have gone through the five-step process proposed by the FSB's discussion paper "Financial resources to support CCP resolution and the treatment of CCP equity in resolution"⁸ (the FSB equity discussion paper) and their consultative document "Guidance on financial resources to support CCP resolution and on the treatment of CCP equity in resolution"⁹ (the FSB consultation paper). We propose a review of capital requirements frameworks of CCPs in global guidance and regional implementations based on the five-step process proposed by the FSB. This review could also include insurance and ancillary unfunded own funds capital. Such sources of funds for the CCP could reduce the need of less palatable tools like the ones analysed in this paper.

CCPs should also disclose to participants the following to assure members that the CCP will remain well protected in case a NDL occurs:

- What type of NDL scenarios they have planned for.
- How these risks are modelled and mitigated.
- The quantum of potential losses.
- What resources are available to cover these risks.

Some of this information, especially as it pertains to scenarios and modelling may be confidential, and disclosure to participants under a Non-Disclosure Agreement (NDA) would be appropriate. However, other information such as the quantum of potential losses and the size of available resources should also be added to CCPs' public quantitative disclosure requirements.

When should clearing members bear some of the loss?

Any NDL borne by clearing participants should be outside of the CCP's default waterfall, equitable and considered separately for each type of NDL. For example, it may be necessary to mutualise NDL across clearing members using the same defaulted custodian or settlement bank, or across clearing participants that have assets in the same investment. However, such mutualisation may not be appropriate across other clearing participants.

It is important to note that the Associations oppose the use of clearing member cash calls (first tool in the list above) to cover NDL. The mutualisation of default losses among clearing members in order to prevent a CCP's insolvency cannot serve as the model for addressing NDL in CCP recovery or resolution.

While default loss mutualisation can be rationalised on the basis that it encourages clearing member participation in the default management process, allocating NDL for which the CCP is responsible to clearing members and their clients can increase moral hazard risks if it shields the CCP's parent from the consequences of the CCP's failed risk management. Moreover, allocating NDL to clearing members could be procyclical as it concentrates losses on a small subset of market participants and

⁸ <https://www.fsb.org/wp-content/uploads/P151118-2.pdf> and FIA/IIF/ISDA's response (<https://www.isda.org/a/YrgME/FIA-IIF-ISDA-response-to-FSB-CCP-Equity-DP.pdf>)

⁹ <https://www.fsb.org/wp-content/uploads/P020520.pdf>

could lead to cascading defaults. A cash call applicable to NDL would be difficult if not impossible for clearing members to risk manage.

As a general matter, there is no compelling argument for deviating from the fundamental corporate finance principle that equity should be in a true first-loss position with respect to NDL,¹⁰ and that shareholders of clearing participants should not have to underwrite shareholders of another entity.

Analysis of proposed resolution tools

We compare the EU proposed tools against insolvency, which would be the no creditor worse off than in liquidation (NCWOL) counterfactual to resolution resulting from NDL. For the comparison we use a stylised balance sheet of a simplified CCP. We understand extinguishment of CCP equity would be the first step in the EU regulation and assume in all examples that equity holders take the first loss. Resolution strategies that do not use all CCP equity for loss allocation in the event of NDL that are the responsibility of the CCP would cause incredible moral hazard. Despite the Associations' opposition to cash calls for NDL, we include the tool for completeness here only because of its current inclusion in the EU regulation and the FSB consultation paper.

We used NCWOL claims as criteria as NCWOL claims are a proxy for the fairness of every tool. Depending on the situation, the Resolution Authority (RA) will have to utilise other tools to ensure financial stability.

We also would like to reiterate the proposal in the Association's response to the FSB discussion paper that the NCWOL safeguard should not apply to CCP equity. Under US regulation, CCP equity is not subject to the NCWOL safeguard.

As with all resolution tools, none of these tools would provide a satisfactory solution.

- Cash calls might be an “easy” tool for RAs, but would allocate large losses to clearing members who had no influence in managing the associated risks. Such cash calls would not be in line with the NCWOL counterfactual, inequitable and difficult to risk manage. The potential size of such allocations could also be procyclical. Cash calls could also be replaced by other sources of funds for the CCP, for instance ancillary own funds capital.
- The bridge tool ensures that critical operations are separated from the failed CCP, and therefore separate from potential litigation claims to the failed CCP. The bridge CCP is potentially also easier to sell to new investors. However, as most resources are moved to the bridge entity, losses will be concentrated on the liabilities affected by the NDL, therefore favouring some creditors over others. This could lead to large NCWOL compensation claims by these creditors.
- The write-down-and-conversion tool leads to losses to creditors which are best aligned with the losses they would have had in the NCWOL counterfactual and can be seen as the “least bad” tool. However, application of the tool will lead to required margin and liabilities on the

¹⁰ See FSB CCP Resolution Guidance.

balance sheet of the CCP would no longer be in line, resulting in additional payments and calls to and from clearing participants (please see below for more details).

- Variation margin gains haircutting is not a credible tool for NDL. A NDL might occur during benign markets when there are not enough VM gains that could be haircut. VMGH is also not suitable for all products and would, for instance, not work for many securities CCPs. Because of these shortcomings we did not include the tool in the analysis below.

Additional policy conclusions

- The comparison between resolution tools highlights the importance of a strong NCWOL safeguard to make sure creditors are treated fairly in line with the counterfactual – assuming the counterfactual is valued fairly.
- None of the analysed tools should have to be used if the CCP's equity is sized correctly. In this regard, we believe that it is critical that CCPs should hold sufficient equity to absorb potential NDL based on a set of scenarios and predefined framework that determines the appropriate coverage model for various types of NDLS, potentially including additional unfunded resources. We recommend additional work on right-sizing CCP equity with NDL in mind and welcome that the Financial Stability Board continues to work on this topic. We also recommend additional consideration of potential unfunded resources that could cover NDL, such as insurance.
- The availability of resolution tools should not lead to moral hazards in earlier stages in recovery and resolution.
- We also stress the responsibility for the competent authorities in ensuring that the CCPs they authorise and supervise adopt and implement on an on-going basis an appropriate framework of measures and resources to withstand and absorb losses from known types of NDL. This is because clearing members are not in a position to require CCPs to have a robust NDL resilience framework in place or influence the extent of resources to be held to absorb NDL (except to the extent that they are able to “vote with their feet” and move to a more resilient competitor). This is a particular issue when CCPs are effectively the single clearing provider for some products and there are no commercially viable alternatives.
- Whether margin can be posted in a bankruptcy-remote way determines to a large extent how losses are allocated to clearing participants. To allow for a level playing field we propose rules requiring CCPs to hold all margin including cash in a bankruptcy-remote manner, as CCPs in certain jurisdictions like the US typically do.
- Finally, we strongly advocate for rules banning non-recourse provisions¹¹ that would apply in the case of NDL.

¹¹ Under typical CCP rulebooks, upon a close out and liquidation, all positions will be terminated and the net amount owing to or owed by each clearing member will be calculated. Non-recourse provisions in CCP rules and arrangements generally provide that upon such a close out and liquidation, if the CCP does not have sufficient resources to pay the net amounts owed to in-the-money clearing members, clearing members will not have any deficiency claims against the CCP and will therefore suffer a loss. Clearing members cannot recover from excess capital or any CCP resources other than the SITG in the waterfall. Moreover, the CCP's shareholders would receive the value of any excess resources after clearing members were closed out, even in the event that clearing members suffered losses prior to, or as part of, the close out process

Who should pay for NDL?

CCPs should generally bear all losses completely within their control. There are some instances of NDL where clearing participants may bear at least a portion of the losses. The following section provides more detail on these cases.

In the case of some of these exceptions, it may still be appropriate (and important) for the CCP and its equity holders to bear a portion of the NDL and, therefore, CCPs should be required to demonstrate 'right-sized' regulatory capital sufficient to cover their portion of potential losses. The appropriate "split" between CCP liability and clearing participant liability is likely to vary across different types of NDL and different scenarios of each type of NDL¹². Among other things, the "split" must account for the ability to manage the risk associated with the applicable loss and must create the right incentives for managing such risks.

In all cases we note that the ownership structure should not have any influence on who pays for NDL. Even if a CCP is member owned, losses that are to be paid by the CCP should be distributed via their ownership structure and not to clearing participants, as these two structures could be different.

1. Custodial losses¹³

Description of Scenario: The CCP's custodian or CSD/iCSD defaults or has a sustained outage as a result of operational, cyber, fraud or similar issues.

We expect that issues at a custodian or CSD/iCSD will affect accessibility of collateral in most cases and that actual losses will be extremely rare.

Responsibility: Clearing members should bear part of any losses if the clearing member selects the CCP's custodian, if assets remain at the clearing member's custodian (but the CCP has access) or if the CCP is required to use certain custodians (e.g., EMIR requires CCPs to use iCSDs so neither CCP nor clearing participants select the custodian)¹⁴. To the extent the CCP has a choice, it should be held to a given standard of care that its clearing members accept and provide an indemnity for any breach of that standard of care.

Bank custodians do not guarantee sub-custodians (therefore why should CCPs guarantee custodians) and clearing brokers do not guarantee custodians to their clients. Therefore, it would be inconsistent with financial industry practice for a CCP to provide a guarantee against losses related to holding cash and non-cash assets at custodians as part of clearing services provided to members. To be clear, based on the

¹² Per Section 6.2.4 of CPMI-IOSCO- Resilience of central counterparties (CCPs): Further guidance on the PFMI. *"The CCP's own contribution related to custody and investment losses should reflect the degree of the involvement of the CCP in the decision-making process related to the custody and investment of participants' assets, including any margin and prefunded default arrangements posted to the CCP. Where the CCP has greater discretion in such process, it should consider contributing a relatively larger amount of its financial resources to absorb the losses"*

¹³ Note that as used herein, custodial risk does not cover losses associated with a clearing member's custodian that is holding assets of the clearing member's clients but that does not have a legal relationship with the CCP.

¹⁴ The CCP should be held to a standard of care even in this case. For instance, if the CCP is aware of an issue at an iCSD, they could require collateral substitution to minimise that risk.

foregoing, CCPs should be able to include exculpatory provisions in their rules similar to the provisions that clearing brokers include in their client agreements. We note that the enforceability of such provisions would remain subject to challenge in the event that they were applied. The possibility of challenge should apply in the case of CCP rulebooks just as it would apply in the case of client clearing agreements. Among other things, CCPs should not be able to exculpate themselves for failing to satisfy the agreed standard of care with regard to performing diligence on, and selecting, custodians.

Clearing participants would have to replenish missing margin, albeit with reservation of judicial review of responsibility.

Notwithstanding the foregoing, there should not be sharing of losses if the custodian belongs to the same group as the CCP.¹⁵

Loss sharing: As per rulebook provisions. To be clear, we do not advocate loss allocation, but rather acknowledge that the CCP could disclaim responsibility for these losses.

2. *Settlement bank losses*¹⁶

Description of Scenario: CCP's settlement bank defaults

Responsibility: Clearing member if the clearing member selects its settlement bank from a sufficiently large choice of available settlement banks.

Clearing brokers do not guarantee settlement bank risk to their clients. Therefore, it would be inconsistent with financial industry practice for a CCP to provide a guarantee against losses related to using settlement banks as part of clearing services provided to members. To be clear, based on the foregoing, CCPs should be able to include exculpatory provisions in their rules similar to the provisions that clearing brokers include in their client agreements. We noted that the enforceability of such provisions would remain subject to challenge in the event that they were applied. Such judicial review should apply in the case of CCP rulebooks just as it would apply in the case of client clearing agreements. Among other things, CCPs should not be able to exculpate themselves for failing to satisfy the agreed standard of care with regard to performing diligence on, and selecting, settlement banks.

Clearing participants would have to replenish missing margin, albeit with reservation of judicial review of responsibility.

Notwithstanding the foregoing, there should be no sharing of losses if the settlement bank belongs to the same group as the CCP.

¹⁵ An example would be the Canadian Derivative Clearing Corporation and the Canadian Depository for Securities, which both belong to the TMX group.

¹⁶ Note that as used herein, settlement bank risk does not cover losses associated with a clearing participant's settlement bank. Such losses would be borne by the affected clearing participants.

Loss sharing: As per rulebook provisions. To be clear, we do not advocate loss allocation, but rather acknowledge that the CCP could disclaim responsibility for these losses.

Policy recommendation: All CCPs should have access to central bank accounts and should maintain collateral at the central bank and settle in central bank money. If the CCP does not use a central bank for settling a currency, the CCP should provide a panel of different settlement banks for members to choose from if the CCP does not bear any settlement bank losses.

3. Losses from investments actively directed by clearing participants¹⁷

Description of Scenario: Losses stemming from default or reduction in value of an investment vehicle (bank, fund, security) for investment of member cash that has been actively selected by the clearing participant.

Responsibility: Clearing participant if the clearing participant directs investments of funds held by the CCP and the CCP passes through all the returns from such investments (provided that books and records are kept to track clearing member's direction of investments).

Loss sharing: The clearing participant who directed the investment should bear the losses in full.

4. Losses from investments not actively directed by clearing participants

Description of Scenario: Losses stemming from default or reduction in value of an investment vehicle (bank, fund, security) or counterparty for investment of a clearing participant's cash that has not been actively selected by the clearing participant.

Responsibility: Investment is driven by the CCP and therefore the CCP should bear investment losses. There is also a conflict of interest: CCPs might be incentivised to increase their income from investment of cash margin, whereas clearing participants' priority is for investments to be as safe as possible.

Loss sharing: The CCP should be liable for investment losses to make sure there is an incentive for the CCP to invest cash margin extremely prudently and should be adequately capitalised to cover such losses.

Policy recommendation: CCPs should have access to central bank accounts and always invest cash margin at a central bank account, unless they can invest cash margin securely.

¹⁷ This is an exception and it is unusual for clearing members to actively direct investments in specific instruments. We are aware of only one CCP (CME) offering member directed investments.

5. *Cyber losses*

Losses from cyber-attacks are completely within a CCP's control and should be either covered by insurance or borne by the CCP.

Note that allocation of responsibility between CCPs and clearing members who may "transmit" cyber losses to the CCP are beyond the scope of this work as they involve questions of applicable law and specific facts and need to be analysed in the context of how liability for "transmitting" versus "duties to protect against" cyber-attacks is apportioned in financial services, i.e. in the framework of court proceedings.

6. *Other NDL*

Other NDL not listed above, like operational risks, general business risk, legal risks and fraud or other internal 'bad acts' should be borne by the CCP.

Analysis of proposed resolution tools

This section considers options for resolution authorities if a CCP has suffered NDL and has fully utilised all its recovery tools, its equity and any potential parental guarantees or unfunded resources available to cover NDL.

The tools that are currently being proposed by the regulators are:

- Cash calls.
- Bridge CCP tool.
- Write-down-and-conversion tool.
- Variation margin gains haircutting¹⁸.

These options are compared against CCP insolvency as the counterfactual. To illustrate the implications of these options we use a simplistic CCP with a stylised balance sheet¹⁹ to demonstrate how these tools would work conceptually. This stylised CCP takes all initial margin (IM) and default fund (DF) in cash by way of title transfer and has rights of use inconsistent with the cash being bankruptcy remote from the CCP. It also invests and holds its own-funds resources in high quality liquid assets (HQLA). To demonstrate the effect of the tools on non-clearing related liabilities, the CCP has a mortgage (secured loan) for a building, an unsecured loan for IT equipment and a subordinated loan from the parent company.

The CCP is balance sheet insolvent if its liabilities exceed its assets.

For illustration we assume a NDL where the CCP loses all title-transferred cash IM, for instance due to a cyberattack. These examples will work similarly for other NDL though.

¹⁸ Not included in this analysis due to the shortcomings of VMGH for NDL (see the summary for more details).

¹⁹ Numbers in these balance sheets are made-up for demonstration purposes and are not based on any existing CCP.

It should be noted that we did not include bankruptcy-remote margin because bankruptcy remote margin would not show up on the balance sheet and would not be included in the counterfactual or in any of the analysed resolution tools. This illustrates that participants who post cash margin or have to post some of their margin as cash, will in certain jurisdictions be disadvantaged in comparison to participants who post bankruptcy-remote margin. We note that in some instances CCP rules require a part of margin to be deposited in cash. In light of this, we strongly recommend that initial margin posted by the clearing members at any CCP should be treated as bankruptcy-remote, regardless of whether it is cash or securities. Such a change would not only provide for a level playing field between clearing participants, but also between jurisdictions.

For purposes of considering any insolvency counterfactual, it should be noted that if the CCP's rules contain a close-out netting provision, then in the CCP's insolvency all transactions cleared by the CCP could be promptly terminated in accordance with such provision, which should provide for the valuation of the transactions and netting of the termination values.²⁰ A net termination value would be calculated for all transactions carried by each member in all its house accounts and a separate net termination value calculated for all transactions carried by each clearing member in each of its client accounts. Each clearing member would have a claim as a general unsecured creditor for the return of its IM and DF contributions, and we assume that clearing members would seek to set off net termination values they owed to the CCP against amounts owed by the CCP to them in respect of IM and possibly DF contributions, which could thereby reduce the amount of their total claim against the CCP.²¹ To the extent a clearing member's net termination amount exceeded amounts owed to it by the CCP, the CCP's receivable for the excess amount would constitute an asset of the CCP distributable in accordance with the creditor hierarchy. Net termination amounts owed to clearing members would be added to such clearing members' claims for the return of IM and DF contributions and would increase the amount of their total claim against the CCP, which would be satisfied with available funds on a *pari passu* basis with the claims of other general unsecured creditors.

For the counterfactual in these simplified examples, we have not taken any close-out claims into account, effectively assuming that no clearing participant would either owe or be owed a termination value as a consequence of the termination of its transactions – similar to a point in time when all variation margin (VM) payments have just been made and the market has not moved. We, however, want to highlight that if the NDL happens for instance before VM is paid out and there was a large market move, directional clearing participants could end up being large unsecured creditors of the CCP.

We also have not included administrative expenses of the RA or preferred claims like salaries.

We also assume that for purposes of determining the losses borne by the CCP's equity, the value of the CCP's shares equal their book value.

²⁰ Assuming no automatic termination in the CCP's rules and that the close out netting provision can be triggered on CCP insolvency. Must consider enforceability under relevant laws and applicable legal opinions.

²¹Subject to existence and enforceability under relevant laws of appropriate set off provisions.

Starting position:	Assets	Liabilities and Equity
Stylised CCP with all assets in cash	800 Cash IM (house)	800 IM Liability (house)
	200 Cash IM (client)	200 IM Liability (client)
	300 Cash DF	300 DF Liability
	10 Building	10 Secured loan for building
	10 IT	10 Unsecured loan for IT systems
	20 proceeds from subordinated loan (HQLA)	20 Subordinated loan from parent
	20 HQLA	20 Equity: Assets - Liabilities

Baseline: The Counterfactual

The counterfactual to resolution arising from NDL is insolvency. Assuming there are no provisions in the CCP's rules that would contractually allocate NDL to members in order to prevent the CCP's insolvency, the NDL would result in the CCP's balance sheet insolvency and it would be subject to liquidation under relevant insolvency proceedings. The insolvency process would involve the distribution of all the CCP's unencumbered assets in accordance with a statutory creditor hierarchy, which as a general matter would be along the lines of the following: (1) administrative expenses of the proceedings, (2) certain preferred claims, such as amounts owed to the government or employees, (3) unsubordinated general unsecured liability of the CCP and (4) any subordinated liability of the CCP.²² Amounts, if any, remaining after such distribution would be paid to the CCP's shareholder(s) in respect of the CCP's equity. Secured creditors of the CCP would liquidate the CCP's encumbered assets and would be entitled to assert a claim for any deficiency as a general unsecured liability.

After distribution of the CCP's assets, any unsatisfied claims of creditors would be extinguished and the CCP dissolved. Thus, the claims of the CCP's creditors could be viewed as being "haircut" through this process.

²² Consider any variations under relevant insolvency laws.

Counterfactual: CCP insolvency			
Stylised Balance Sheet CCP			
Starting position:	Assets		Liabilities and Equity
Stylised CCP with all assets in cash	800	Cash IM (house)	800 IM Liability (house)
	200	Cash IM (client)	200 IM Liability (client)
	300	Cash DF	300 DF Liability
	10	Building	10 Secured loan for building
	10	IT	10 Unsecured loan for IT systems
	20	proceeds from subordinated loan (HQLA)	20 Subordinated loan from parent
	20	HQLA	20 Equity: Assets - Liabilities
CCP loses cash IM of 1000. Liabilities are higher than assets and the CCP becomes balance sheet insolvent.	Assets		Liabilities and Equity
		Cash IM (house)	800 IM Liability (house)
		Cash IM (client)	200 IM Liability (client)
	300	Cash DF	300 DF Liability
	10	Building	10 Secured loan for building
	10	IT	10 Unsecured loan for IT systems
	20	proceeds from subordinated loan (HQLA)	20 Subordinated loan from parent
	20	HQLA	-980 Equity: Assets - Liabilities
	73%	Haircut	Haircut calculated as $(1 - (\text{Assets w/o Building}) / (\text{Liabilities w/o mortgage}))$ after wiping out subordinated loan.
Haircut/loss per CCP liability in Counterfactual			
Claimant			Loss Liability
Members			586.26 IM Liability (house)
Clients			146.56 IM Liability (client)
Members			219.85 DF Liability
External creditor			7.33 Loan for IT
Parent			20.00 Subordinated loan
CCP			20 Equity (book value)

Comparison of tools

As the CCP becomes balance sheet insolvent at the time of the assumed loss, we assume in the following comparisons that the resolution tools will be applied before any clearing resources (in this example the lost cash IM) have to be replenished. We, however, note that while the stabilisation of the CCP needs to occur immediately, it is not expected that the resolution would be completed immediately. If a bridge CCP tool is used, for example, then within the first few days after commencement of resolution, the bridge would need to be established, assets and liabilities transferred to it and it would need to call for replenishment of resources, as it could not function without replenishment, but the sale of the bridge will take additional time.

Clearing member cash call

Description: Based on the EU regulation we understand that if the RA uses a cash call, it would allocate the losses to clearing members in a manner proportional to the clearing members' DF contribution.

Should the CCP equity not be extinguished as assumed for all examples in this paper, requiring clearing members to meet a cash call to effectively re-capitalise the CCP but allowing the CCP's parent to retain its equity in the CCP would present significant moral hazard concerns and runs counter to basic corporate finance principles.

Use of a member Cash Call			
Stylised Balance Sheet CCP			
	Assets		Liabilities and Equity
Starting position:			
Stylised CCP with all assets in cash	800	Cash IM (house)	800 IM Liability (house)
	200	Cash IM (client)	200 IM Liability (client)
	300	Cash DF	300 DF Liability
	10	Building	10 Secured loan for building
	10	IT	10 Unsecured loan for IT systems
	20	proceeds from subordinated loan (HQLA)	20 Subordinated loan from parent
	20	HQLA	20 Equity: Assets - Liabilities
CCP loses cash IM of 1000. Liabilities are higher than assets and the CCP becomes balance sheet insolvent.			
	Assets		Liabilities and Equity
		Cash IM (house)	800 IM Liability (house)
		Cash IM (client)	200 IM Liability (client)
	300	Cash DF	300 DF Liability
	10	Building	10 Secured loan for building
	10	IT	10 Unsecured loan for IT systems
	20	proceeds from subordinated loan (HQLA)	20 Subordinated loan from parent
20	HQLA	-980 Equity: Assets - Liabilities	
RA writes down subordinated loan and issues cash call of 980 to members and use the money to replenish IM. Shares in CCP transferred to members.			
	Assets		Liabilities and Equity
	800	Cash IM (house)	800 IM Liability (house)
	200	Cash IM (client)	200 IM Liability (client)
	300	Cash DF	300 DF Liability
	10	Building	10 Secured loan for building
	10	IT	10 Unsecured loan for IT systems
		proceeds from subordinated loan (HQLA)	Subordinated loan from parent
20	HQLA	20 Equity: Assets - Liabilities	
Haircut/loss per CCP liability in Counterfactual			
Claimant		Loss	Liability
Members		960	IM Liability (house)
Clients			IM Liability (client)
Members			DF Liability
External creditor			Loan for IT
Parent			20 Subordinated loan
CCP			20 Equity (book value)

Note that the loss to members is calculated as the 980 cash-call minus 20 equity received as compensation. Should this compensation not be forthcoming, the loss would be the full 980 cash call.

Comparison with counterfactual

Instead of replenishing IM [and DF contributions] and receiving a claim in exchange, members have to pay the full amount of losses if the RA uses a cash call. Clearing members will have higher losses than in insolvency, triggering compensation claims under the NCWOL protection. These claims would have to be paid by the RA, i.e. the taxpayer²³. This is not a desirable outcome. All other creditors would be unaffected. Should the resolution cash call become part of the CCP's operating rules, clearing members would not receive any compensation (because they would have contracted and agreed to satisfy such cash calls in the ordinary course).

NCWO Analysis			
Claimant	Loss under Counterfactual	Loss with cash call	Difference / Compensation
Members (IM + DF)	806.11	960	153.89
Clients	146.56		-146.56
External creditor	7.33		-7.33
Parent	20.00	20	0.00
CCP	20.00	20	0.00
(Negative compensation will be capped to zero)			

Other comments

In this example clearing participants will end up with equity in a CCP. This outcome could be avoided if the RA sold the resolved CCP to a third party, therefore avoiding the need of clearing participants having to re-capitalise the CCP. Such a change would, however, not make the NCWOL analysis more compelling.

Positives

- Potentially faster than the bridge CCP tool.

Negatives

- Losses fall only on clearing members and are not aligned with losses that such clearing members would have had in the NCWOL counterfactual. Use of this tool would cause large NCWOL claims, unless the resolution cash call is part of the CCP's operating rules, which the Associations do not support.
- If no compensation has to be paid for the use of the resolution cash call, clearing members have large losses stemming from a risk they had no influence in managing (although they would have contracted and agreed to satisfy such cash calls in the ordinary course. In practice, clearing members have little choice but to become a member of major CCPs, do not have any negotiating power and are forced to accept provisions in the CCP's operating rules). Such loss allocation would be massively inequitable and runs counter to basic corporate finance principles.
- Clearing members have signed up to mutualise the credit risk of other clearing members by paying into a DF and being liable for capped assessments for losses from the default of another member. This is different from ND.L.

²³ Please note that the article 27 of the Council draft of the EU regulation suggests that the NCWO claim could also be paid out of future income of the CCP.

- Allocating NDL to clearing members could be procyclical as it concentrates losses on a small subset of market participants and can lead to cascading defaults.
- A cash call applicable to NDL would be difficult if not impossible for clearing members to risk manage.

Overall, we strongly oppose including clearing member cash calls as a tool to cover NDL and, in particular, we generally oppose inclusion of such cash calls in CCP rules. If NDL cash calls were in CCP rules, it would prevent compensation for clearing members that covered the NDL. We advocate that if clearing member cash calls are used to cover NDL, clearing members should be compensated. Compensation mechanisms should be documented in the CCP's operating rules or relevant regulation.

Use of the CCP bridge tool

Description: If the RA uses a CCP bridge tool, it will transfer assets and liabilities required for clearing to the bridge entity, enabling uninterrupted operation of the CCP. The RA would then market and sell the bridge entity to new investors. Any sales proceeds remaining after paying more senior claimants in the creditor hierarchy would be paid to holders of claims in respect of the NDLs. Alternatively, the RA could exchange the equity in the bridge entity for the participants' claims for the return of their lost IM, which would obviate the need for a sale of the bridge. However, as not all clearing participants want to become CCP owners this means that remaining sales proceeds should be paid to the holders of claims in respect of the NDLs.

Use of the bridge tool					
	Stylised Balance Sheet CCP			Stylised Balance Sheet Bridge	
Starting position:	Assets		Liabilities and Equity		
Stylised CCP with all assets in cash	800	Cash IM (house)	800	IM Liability (house)	
	200	Cash IM (client)	200	IM Liability (client)	
	300	Cash DF	300	DF Liability	
	10	Building	10	Secured loan for building	
	10	IT	10	Unsecured loan for IT systems	
	20	proceeds from subordinated loan (HQLA)	20	Subordinated loan from parent	
	20	HQLA	20	Equity: Assets - Liabilities	
CCP loses cash IM of 1000. Liabilities are higher than assets and the CCP becomes balance sheet insolvent.	Assets		Liabilities and Equity		
		Cash IM (house)	800	IM Liability (house)	
		Cash IM (client)	200	IM Liability (client)	
	300	Cash DF	300	DF Liability	
	10	Building	10	Secured loan for building	
	10	IT	10	Unsecured loan for IT systems	
	20	proceeds from subordinated loan (HQLA)	20	Subordinated loan from parent	
20	HQLA	-980	Equity: Assets - Liabilities		
RA moves all assets and liabilities required for clearing to the bridge. The bridge CCP calls for new IM and is subsequently sold	Assets		Liabilities and Equity		
		Cash IM (house)	800	IM Liability (house)	800
		Cash IM (client)	200	IM Liability (client)	200
					300
	20	proceeds from subordinated loan (HQLA)	20	Subordinated loan from parent	10
	20	Proceeds from sale of bridge			10
		-980	Equity: Assets - Liabilities	20	
Haircut for liabilities in failed entity	96%	Haircut	Haircut calculated as $(1 - (\text{Assets})/(\text{Liabilities}))$ after wiping out subordinated loan.		
Haircut/loss per CCP liability in Counterfactual					
Claimant			Loss	Liability	
Members			768	IM Liability (house)	
Clients			192	IM Liability (client)	
Members				DF Liability	
External creditor				Loan for IT	
Parent			20	Subordinated loan	
CCP			20	Equity (book value)	

Comparison with counterfactual: As most resources are moved to the bridge, the haircut of liabilities in the failed CCP will be much larger, concentrating losses on the liabilities affected by the NDL, therefore favouring some creditors over others:

NCWO Analysis			
Claimant	Loss under Counterfactual	Loss with bridge	Difference / Compensation
Members (IM + DF)	806.11	768	-38.11
Clients	146.56	192	45.44
External creditor	7.33	0	-7.33
Parent	20.00	20	0.00
CCP	20.00	20	0.00
(Negative compensation claims will be capped to zero)			

Assuming the sale proceeds do filter back to the claimants of the failed CCP, and should the sale proceeds increase, the NCWOL compensation may decrease, but will still not be sufficient to ensure that the amount of losses borne by certain clearing participants in resolution are not greater than the losses they would have borne in the counterfactual:

	Compensation under proceeds from sale of the bridge of:			
Sale Proceeds	0	20	100	200
Members (IM + DF)	-22.11	-38.11	-102.11	-182.11
Clients	49.44	45.44	29.44	9.44
External creditor	-7.33	-7.33	-7.33	-7.33
(Negative compensation claims will be capped to zero)				

Note that in this example clients suffered more losses in resolution than recovery. This is not always the case and is driven by the particular example. Were, instead of the chosen example, the cash in the default fund lost, losses would have fallen to a larger extent on clearing members.

Positives

- Critical operations are separated from potential litigation claims against the failed CCP.
- Bridge CCP is potentially easier to sell.

Negatives

- As most resources are moved to the bridge, losses will be concentrated on the liabilities affected by the NDL, therefore favouring some creditors over others. This can lead to large NCWOL compensation claims by these creditors.

Write-down-and-conversion tool

Description: The RA extinguishes all CCP equity, then extinguishes certain liabilities of the CCP according to the creditor hierarchy to cover the losses and converts other liabilities to equity to make sure the CCP is appropriately capitalised again.

For demonstration of this tool, house and client margin has been split across a few illustrative clearing members and clients. The overall sums are the same (800 house IM, 200 client IM and 300 DF) as in previous examples to maintain comparability.

Please note that in this example no initial margin is haircut. The version of the near-final EU regulation that resulted from the trilogue as signed off by the Council²⁴ proposes to ban initial margin haircutting, both as a direct tool and also by exempting initial margin from the write-down-and-conversion tool.

²⁴ <https://data.consilium.europa.eu/doc/document/ST-9397-2020-ADD-1/en/pdf>

Use of the Write-Down-and-Conversion Tool			
Stylised Balance Sheet CCP			
	Assets		Liabilities and Equity
Starting position:			
Stylised CCP with all assets in cash	200	IM CM 1	200 IM Liability CM 1
	350	IM CM 2	350 IM Liability CM 2
	250	IM CM 3	250 IM Liability CM 3
	40	Cash IM client 1	40 IM Liability client 1
	80	Cash IM client 2	80 IM Liability client 2
	30	Cash IM client 3	30 IM Liability client 3
	50	Cash IM client 4	50 IM Liability client 4
	70	DF CM 1	70 DF Liability CM 1
	130	DF CM 2	130 DF Liability CM 2
	100	DF CM 3	100 DF Liability CM 3
	10	Building	10 Secured loan for building
	10	IT	10 Unsecured loan for IT systems
	20	proceeds from subordinated loan (HQLA)	20 Subordinated loan from parent
	20	HQLA	20 Equity: Assets - Liabilities
CCP loses cash IM of 1000. Liabilities are higher than assets and the CCP becomes insolvent.			
	Assets		Liabilities and Equity
		IM CM 1	200 IM Liability CM 1
		IM CM 2	350 IM Liability CM 2
		IM CM 3	250 IM Liability CM 3
		Cash IM client 1	40 IM Liability client 1
		Cash IM client 2	80 IM Liability client 2
		Cash IM client 3	30 IM Liability client 3
		Cash IM client 4	50 IM Liability client 4
		70 DF CM 1	70 DF Liability CM 1
		130 DF CM 2	130 DF Liability CM 2
		100 DF CM 3	100 DF Liability CM 3
		10 Building	10 Secured loan for building
		10 IT	10 Unsecured loan for IT systems
		20 proceeds from subordinated loan (HQLA)	20 Subordinated loan from parent
		20 HQLA	-980 Equity: Assets - Liabilities

After writing down equity/shares, RA writes down liabilities to cover losses	Assets		Liabilities and Equity	
		IM CM 1	53.435	IM Liability CM 1
		IM CM 2	93.511	IM Liability CM 2
		IM CM 3	66.794	IM Liability CM 3
		Cash IM client 1	10.687	IM Liability client 1
		Cash IM client 2	21.374	IM Liability client 2
		Cash IM client 3	8.0153	IM Liability client 3
		Cash IM client 4	13.359	IM Liability client 4
		70 DF CM 1	18.702	DF Liability CM 1
		130 DF CM 2	34.733	DF Liability CM 2
		100 DF CM 3	26.718	DF Liability CM 3
		10 Building	10	Secured loan for building
		10 IT	2.6718	Unsecured loan for IT systems
		20 proceeds from subordinated loan (HQLA)	0	Subordinated loan from parent
	20 HQLA	0	Equity: Assets - Liabilities	
Haircut	73%	Haircut	Haircut calculated as $(1 - (\text{Assets w/o Building}) / (\text{Liabilities w/o mortgage}))$ after wiping out subordinated loan.	
RA converts liabilities into equity and transfers shares to new equityholders	Assets		Liabilities and Equity	
		IM CM 1	50.382	IM Liability CM 1
		IM CM 2	88.168	IM Liability CM 2
		IM CM 3	62.977	IM Liability CM 3
		Cash IM client 1	10.076	IM Liability client 1
		Cash IM client 2	20.153	IM Liability client 2
		Cash IM client 3	7.5573	IM Liability client 3
		Cash IM client 4	12.595	IM Liability client 4
		70 DF CM 1	17.634	DF Liability CM 1
		130 DF CM 2	32.748	DF Liability CM 2
		100 DF CM 3	25.191	DF Liability CM 3
		10 Building	10.00	Secured loan for building
		10 IT	2.52	Unsecured loan for IT systems
		20 proceeds from subordinated loan (HQLA)	-	Subordinated loan from parent
	20 HQLA	20	Equity: Assets - Liabilities	
Haircut	6%	Haircut	Haircut calculated as $(\text{Required Equity} / \text{Liabilities before conversion})$ w/o secured loan liability	

RA calls for IM replenishment	Assets	Liabilities and Equity	
	200 IM CM 1	250.38	IM Liability CM 1
	350 IM CM 2	438.17	IM Liability CM 2
	250 IM CM 3	312.98	IM Liability CM 3
	40 Cash IM client 1	50.076	IM Liability client 1
	80 Cash IM client 2	100.15	IM Liability client 2
	30 Cash IM client 3	37.557	IM Liability client 3
	50 Cash IM client 4	62.595	IM Liability client 4
	70 DF CM 1	17.634	DF Liability CM 1
	130 DF CM 2	32.748	DF Liability CM 2
	100 DF CM 3	25.191	DF Liability CM 3
	10 Building	10.00	Secured loan for building
	10 IT	2.52	Unsecured loan for IT systems
	20 proceeds from subordinated loan (HQLA)	-	Subordinated loan from parent
	20 HQLA	20	Equity: Assets - Liabilities
Haircut/loss per CCP liability in Counterfactual			
Claimant		Loss	Liability
Members		586.26	IM Liability (house)
Clients		146.56	IM Liability (client)
Members		219.85	DF Liability
External creditor		7.33	Loan for IT
Parent		20.00	Subordinated loan
CCP		20.00	Equity (book value)

Comparison with counterfactual: This tool is by design the nearest to the counterfactual, as the tool uses the same creditor hierarchy as in insolvency. Opposite to insolvency, some of the creditors' claims will have been converted into equity of the resolved CCP.

NCWO Analysis			
Claimant	Loss under Counterfactual	Loss with write-down-and-conversion tool	Difference / Compensation
Members (IM + DF)	806.11	806.11	0.00
Clients	146.56	146.56	0.00
External creditor	7.33	7.33	0.00
Parent	20.00	20.00	0.00
CCP	20.00	20.00	0.00
(Negative compensation will be capped to zero)			

Other considerations:

In this example, clearing participants will end up with equity in a CCP. This outcome can be avoided if the RA sells the resolved CCP to a third party, therefore avoiding the need of creditors having to re-capitalise the CCP. A sale to a third party would remove the last step in this tool ("conversion") but has not been considered to demonstrate the full range of the tool.

The write-down and conversion tool is the only tool that does not lead to NCWOL claims and might, therefore, be a preferable tool. There is, however, an anomaly: After application of the tool the assets and liabilities in respect of IM and DF no longer match:

Assets		Liabilities and Equity	
200	IM CM 1	250.38	IM Liability CM 1
350	IM CM 2	438.17	IM Liability CM 2
250	IM CM 3	312.98	IM Liability CM 3
40	Cash IM client 1	50.076	IM Liability client 1
80	Cash IM client 2	100.15	IM Liability client 2
30	Cash IM client 3	37.557	IM Liability client 3
50	Cash IM client 4	62.595	IM Liability client 4
70	DF CM 1	17.634	DF Liability CM 1
130	DF CM 2	32.748	DF Liability CM 2
100	DF CM 3	25.191	DF Liability CM 3
10	Building	10.00	Secured loan for building
10	IT	2.52	Unsecured loan for IT systems
20	proceeds from subordinated loan (HQLA)	-	Subordinated loan from parent
20	HQLA	20	Equity: Assets - Liabilities

This is not a problem for assets like buildings and IT, which might depreciate anyway over time. IM and DF, however, were posted by clearing members and other participants (in the case of IM). In the example of DF, the CCP has enough DF for clearing operations, assuming the DF was sized correctly before the NDL occurred. Members have, however, only a smaller claim to the DF.

To re-arrange the balance sheet, the RA will pay out the funds to participants where the CCP's liabilities exceed the corresponding assets, and the RA will have to call for additional resources where the liability is lower than the corresponding asset. In the example above, the CCP would pay out IM liabilities, but call for DF contributions, resulting in a net payment. Note that this re-arranging is a purely mechanical exercise to re-arrange the balance sheet and does not allocate further losses. We assume the CCP sells some HQLA to pay for the net balance:

After application of the write-down-and-conversion tool	Assets		Liabilities and Equity		CCP pays	CCP calls
		200	IM CM 1	250.38	IM Liability CM 1	50.38
	350	IM CM 2	438.17	IM Liability CM 2	88.17	
	250	IM CM 3	312.98	IM Liability CM 3	62.98	
	40	Cash IM client 1	50.08	IM Liability client 1	10.08	
	80	Cash IM client 2	100.15	IM Liability client 2	20.15	
	30	Cash IM client 3	37.56	IM Liability client 3	7.56	
	50	Cash IM client 4	62.60	IM Liability client 4	12.60	
	70	DF CM 1	17.63	DF Liability CM 1		52.37
	130	DF CM 2	32.75	DF Liability CM 2		97.25
	100	DF CM 3	25.19	DF Liability CM 3		74.81
	10	Building	10.00	Secured loan for building		
	10	IT	2.52	Unsecured loan for IT systems		
	20	proceeds from subordinated loan (HQLA)	-	Subordinated loan from parent		
	20	HQLA	20	Equity: Assets - Liabilities		
After excess margin liabilities have been paid out and DF liability shortfalls have been called (payouts are higher than calls, therefore proceeds from subordinated loan and some HQLA are depleted)	Assets		Liabilities and Equity			
	200	IM CM 1	200.00	IM Liability CM 1		
	350	IM CM 2	350.00	IM Liability CM 2		
	250	IM CM 3	250.00	IM Liability CM 3		
	40	Cash IM client 1	40.00	IM Liability client 1		
	80	Cash IM client 2	80.00	IM Liability client 2		
	30	Cash IM client 3	30.00	IM Liability client 3		
	50	Cash IM client 4	50.00	IM Liability client 4		
	70	DF CM 1	70.00	DF Liability CM 1		
	130	DF CM 2	130.00	DF Liability CM 2		
	100	DF CM 3	100.00	DF Liability CM 3		
	10	Building	10.00	Secured loan for building		
	10	IT	2.52	Unsecured loan for IT systems		
	0	proceeds from subordinated loan (HQLA)	-	Subordinated loan from parent		
	12.52	HQLA	20	Equity: Assets - Liabilities		

Positives

- This tool is designed to provide the same losses as participants would have in the counterfactual, and, therefore, no NCWOL claims are to be expected. Should initial margin be exempt from this tool, a change that would be welcomed by our members, losses from this tool would no longer be in line with the counterfactual for clearing participants.

Negatives

- After application of this tool, the balance sheet is matched overall, but liabilities for e.g. IM are not in line with actual IM posted. This requires a re-balancing exercise. Note that this re-balancing will not change the final losses and is purely mechanical, paying out excess liabilities and calling for shortfalls.
- Whilst this tool leads to the same losses for participants as they would have in the counterfactual, some may interpret the impact as being similar to the use of IM haircutting (IMH), which the Associations do not support. The negative incentive implications of IMH ex

ante are not applicable in this case. Initial margin of clearing participants that was posted to cover the risk of their own portfolios cannot be expected to be used to resolve a CCP that resulted from risks no participant could manage. This is why bankruptcy remoteness of participant initial margin should be an important objective for the industry to achieve.

- The EU regulation excludes certain liabilities from the application of the write-down-and-conversion tool, for instance “liabilities to commercial or trade creditors arising from the provision to the CCP of goods or services that are critical to the daily functioning of its operations, including IT services, utilities and the rental, servicing and upkeep of premises”. The larger these liabilities are, the more the use of these tools will lead to higher losses to clearing participants as in the counterfactual. It might have been possible that the IT supplier in the example above would be classified as a critical service and could not have been haircut.

Appendix 1: Resolution tools in other jurisdictions

Tools	Available in ²⁵						
	EU	US	Canada	Hong Kong	Singapore	Australia	India ²⁶
Cash calls	✓		✓		△*		
Bridge CCP tool	✓	✓		✓	✓		
Write-down-and-conversion tool	✓		✓	✓			
Variation margin gains haircutting	✓	✓	✓		✓	✓	

△* Possibly for approved exchanges, approved clearing houses and licensed trade repositories (indirectly, by obtaining a court order to enforce compliance with business rules), but not for other types of CCPs unless the conditions for triggering the MAS' emergency powers or the foreign resolution recognition mechanism are fulfilled.

Canada

Canada's Payment Clearing and Settlement Act²⁷ (PCSA) has conferred on the Bank of Canada (BoC) responsibilities and powers for the oversight of financial market infrastructures (FMIs), recognizing the essential role of the major clearing and settlement systems in the Canadian economy, and of the importance of regulatory oversight of them to ensure that they are adequately controlling systemic risk.

The Bank of Canada (BoC) is the resolution authority (RA) for Canadian FMIs that have been designated by the Governor of the BoC under the PCSA as having the potential to pose systemic risk. The BoC's responsibilities as the Canadian FMI resolution authority are set out in Part I.1 of the PCSA and accompanying Payment Clearing and Settlement Regulations²⁸ (Regulations).

As RA of Canada's FMI resolution regime, the BoC has the responsibility to develop plans on how to respond to the unlikely failure of a Canadian designated FMI. The BoC also has the power in a crisis to take control of a failing FMI to limit the impact on Canada's financial system and its economy.

The BoC can also draw on additional tools as part of an FMI resolution if necessary to safeguard financial stability. These broad powers are set out in section 11.11(1) of the PCSA, and include cash calls, variation margin gains haircutting, full/partial contract tear-up, full/partial write-down of CCP

²⁵ These instruments are available, but not necessarily mandatory in these jurisdictions with the exception of the RA cash calls, which would be available to the RA by regulation.

²⁶ In order to meet the losses that arise out of non-default events, a contingency reserve fund ("CRF") is maintained by CCIL from their profits.

²⁷ <https://laws.justice.gc.ca/eng/acts/P-4.4/index.html>

²⁸ <https://laws-lois.justice.gc.ca/eng/regulations/SOR-2019-257/page-1.html>

equity, and taking any measures to allocate to participants the amount of the shortfall due to the clearing house.

The BoC has also published a Guideline Related to the BoC's Role as FMI Resolution Authority²⁹ (Guideline), to describe how the BoC expects to carry out its statutory responsibilities and use its powers as the FMI resolution authority. As an example, the BoC does not expect to use IM haircutting or forced allocation, as they may have an adverse impact on financial stability and clearing members' incentives to centrally clear.

The BoC may however take control of an FMI and sell its assets, arrange for the assumption of the FMI's liabilities by another party, carry on the FMI's business, start legal proceedings on behalf of the FMI, and execute or sign any documents in the name of the FMI.

The RA's powers may be used to cover losses from the default of one or more participants, or from non-default losses (NDLs). The Guideline indicates that to allocate NDLs, the BoC would turn to the provisions in the FMI's recovery plan and related arrangements, and they would typically be addressed by drawing on the FMI's liquid assets and any parental support or guarantees that may exist if the FMI is part of a corporate group.

Hong Kong

Hong Kong's resolution regime is generally applicable to CCPs, albeit that some aspects which work well for other financial institutions do not work as well for CCPs. Thus, of options set out in the table, transfers to a bridge institution and write down and conversion apply to CCPs.

We understand that Hong Kong will introduce a CCP resolution regime when that in the EU has been finalised. However, at the moment, no specific regulatory requirements exist.

Australia

In November 2019, the Council of Financial Regulators ("**Council**") released a consultation paper ("**Consultation**") seeking stakeholder views on a package of proposed regulatory reforms for FMIs, including some changes to the supervisory framework and a resolution framework for domestic clearing and settlement facilities. The reform package seeks to modernise and streamline regulators' supervisory powers and provide new powers to resolve a distressed domestic clearing and settlement facility. More information is available at:

<https://www.cfr.gov.au/publications/consultations/2019/consultation-on-financial-market-infrastructure-regulatory-reforms/>.

²⁹ <https://www.bankofcanada.ca/wp-content/uploads/2020/06/guideline-fmi-resolution-authority.pdf>

At its quarterly meeting in March 2020, the Council discussed the outcome of the Consultation. The Council has indicated that it will advise Government of its updated reform proposals to assist with policy design.

As of now, none of the EU proposed tools are presently applicable in Australian legislation. We note that certain tools (such as cash calls and variation margin gains haircutting, and rules in relation to the allocation of investment losses) are currently set out in the ASX Recovery Rules of ASX Clear and ASX Clear (Futures) in the recovery context. Under the proposed resolution regime set out in the 2015 Treasury paper and Consultation, the statutory manager which could be appointed to a domestic clearing and settlement facility licensee would assume the power of the licensee's board, including carrying out recovery measures and other actions in accordance with the licensee's rulebook (noting that the exercise of powers by the statutory manager would be overseen by the resolution authority). Under the Consultation, the scope of these resolution powers is expanded to allow the resolution authority to take action in respect of related bodies corporate of a domestic clearing and settlement facility licensee in resolution.

Singapore: General Overview

As a preliminary note, there is no specific targeted resolution framework for CCPs under Singapore regulatory law. It should be noted, however, that:

- (a) CCPs are included in the general resolution framework applicable to "pertinent financial institutions" under Parts IVA and IVB of the Monetary Authority of Singapore Act, Chapter 186 of Singapore (the "**MAS Act**") and the Monetary Authority of Singapore (Resolution of Financial Institutions) Regulations 2018. "Pertinent financial institutions" is Singapore-specific and applies to Singapore approved exchanges, recognised market operators, approved and recognised clearing houses, licensed trade repositories (and licensed foreign trade repositories), and depositories; and
- (b) the Securities and Futures Act, Chapter 289 of Singapore (the "**SFA**") empowers the MAS to enforce (by way of a court application) contractual obligations under a CCP's business rules, and also exercise powers to ensure orderly resolution (for example, under Parts II, IIA and III of the SFA, the MAS may appoint a statutory adviser in respect of a CCP or assume control of and manage the business of the CCP in a number of specified circumstances, including where the CCP informs the MAS that it is likely to become unable to meet its obligations).

Singapore: Analysis of Resolution Tools

The **availability** of the MAS' statutory powers in this regard is not dependent on whether the losses giving rise to the need for resolution are non-default losses or otherwise, but this would likely affect the MAS' choice of the preferred resolution approach from the toolkit described above.

Tools	Availability in Singapore
Cash calls	<p>Possibly for approved exchanges, approved clearing houses and licensed trade repositories (indirectly, by obtaining a court order to enforce compliance with business rules as described in Part A below).</p> <p>No for other types of CCPs, unless the conditions for triggering the MAS' emergency powers or the foreign resolution recognition mechanism are fulfilled (please see Parts B and C below).</p> <p>There is no express statutory power for the MAS to effect a cash call, i.e. explicitly require CCP members to make contributions to the CCP. However, there are certain general powers that may be used to cover this point, which we have outlined in Parts A to C below.</p> <p><u>A. Court order to enforce business or listing rules</u></p> <p>For an approved exchange, approved clearing house or licensed trade repository, it is possible for the MAS to apply to court for a court order directing a person to comply with any cash call provisions under the business rules of the exchange, clearing house or trade repository, provided the rules provide for contributions to be made (sections 25, 68 and 46S respectively of the SFA). The MAS does not expressly require approved exchanges or approved clearing houses to include cash call provisions in their rules, although there is a general obligation to make arrangements for the safe and efficient clearing and settlement of trades and (in the case of approved clearing houses) to deal with the handling of defaults.</p> <p>There is no equivalent power for recognised market operators or recognised clearing houses, licensed foreign trade repositories or other types of CCPs.</p> <p><u>B. Emergency powers of the MAS</u></p> <p>There are additionally certain emergency powers that the MAS may invoke in respect of an approved exchange, recognised market operator, licensed trade repository, approved clearing house or recognised clearing house (sections 46AA, 46Y and 81S respectively of the SFA) where the MAS has reason to believe that an “emergency” exists, or thinks that it is necessary or expedient in the interests of the public (or a section thereof) or for the protection of investors. These powers include the ability to direct the relevant CCPs above to take such as action as the MAS considers necessary to maintain or restore the safe, efficient, fair, orderly and transparent operation of the markets and facilities operated by such CCPs, as the case may be. What constitutes an “emergency” for these purposes depends on the type of CCP – for example, in the case of approved or recognised clearing houses, section 81S(4) of the MAS Act defines “emergency” to mean any threatened or actual market</p>

Tools	Availability in Singapore
	<p>manipulation or concerning (which, more generally, also includes any undesirable situation or practice which, in the opinion of the MAS, constitutes an emergency).</p> <p><u>C. Recognition of foreign resolutions</u></p> <p>Division 5A of the MAS Act also provides for the recognition of foreign resolutions in Singapore. It should be noted, however, that this generally involves a multi-step process which may be difficult to navigate in practice, as follows:</p> <ul style="list-style-type: none"> (a) a foreign resolution authority must make a request to the MAS to recognise a foreign resolution in relation to a “foreign financial institution” by the foreign resolution authority; (b) the MAS must make a determination as to whether the foreign resolution should be recognised (and if so, whether in whole or in part). The MAS may only make a determination that the foreign resolution should be recognised in whole or in part if it is satisfied that the conditions in section 94(3) of the MAS Act are fulfilled (this includes, <i>inter alia</i>, that the recognition would not be contrary to the national interest or public interest); (c) upon making the determination, the MAS must then submit the determination to the Minister of Finance for approval; (d) if the Minister of Finance approves that determination, then he must, as soon as practicable, by order in the <i>Gazette</i> declare that the foreign resolution is to be recognised; and (e) thereafter, the MAS may from time to time issue such directions to any person regulated by the MAS (e.g. by way of approval, authorisation, licence etc.) under the MAS Act or other specified legislation including <i>inter alia</i> the Banking Act and the SFA, as the MAS considers necessary for the purposes of giving full effect to the order mentioned in paragraph (d) above. <p>In this context, “foreign financial institution” means a financial institution incorporated, formed or established outside Singapore that has a Singapore branch or subsidiary that is regulated by the MAS (e.g. by way of approval, authorisation, licence etc.) under the MAS Act or other specified legislation including <i>inter alia</i> the Banking Act and the SFA. A “foreign resolution” is also widely defined to mean any action by a foreign resolution authority to maintain financial stability and/or deal with any serious problem in a “foreign financial institution” which affects the ability of the latter to continue its business or operations and which (if not dealt with) may cause that financial institution to be no longer able to continue its business or operations as a financial institution.</p>

Tools	Availability in Singapore
	<p>Whilst Division 5A of the MAS Act does not expressly limit the types of resolution actions that can be recognised in this manner, our counsel's view is that the MAS may be reluctant to give effect to a foreign resolution to the extent that the MAS does not have an equivalent power in Singapore.</p>
<p>Bridge CCP tool</p>	<p>Yes.</p> <p>Divisions 2 and 2A of Part IVB of the MAS Act empower the MAS to make a determination that the whole or any part of the business of a "pertinent financial institution" be transferred to a transferee, subject to the approval of the Minister of Finance.</p> <p>Subsequently, at any time after such transfer of business, the MAS may make a further determination that the whole or any part of the business be either transferred back to the original "pertinent financial institution" or transferred onward to another transferee. This is also subject to the approval of the Minister of Finance.</p> <p>For completeness, Divisions 3 and 4 of Part IVB of the MAS Act also contain provisions empowering the MAS to make determinations for the compulsory transfer of shares of the "pertinent financial institution", and for the compulsory restructuring of share capital of the "pertinent financial institution".</p>
<p>Write-down-and-conversion tool</p>	<p>No.</p> <p>Division 4A of Part IVB of the MAS Act grants the MAS certain bail-in powers (including cancelling, modifying or converting debt and equity instruments) in respect of "Division 4A financial institutions", which are defined to include only banks incorporated in Singapore, and Singapore-incorporated holding companies of such banks.</p> <p>In its Response to Feedback Received on Proposed Regulations to Enhance the Resolution Regime for Financial Institutions in Singapore dated 26 October 2018, the MAS stated that its approach for bail-in would be to start with Singapore-incorporated banks and bank holding companies, and that it would continue to monitor international developments on bail-in regimes for non-bank FIs for the time being.</p>
<p>Variation margin gains haircutting</p>	<p>Yes.</p> <p>Under section 53(1) of the MAS Act, the MAS has the power, if it considers it to be in the interests of the public or participants, to make an order prohibiting a "specified financial institution" (which includes a "pertinent financial institution") from carrying on its "significant</p>

Tools	Availability in Singapore
	<p>business” (i.e. the usual business of a financial institution of that class) or from doing or performing any act or function connected with its significant business or any aspect thereof as may be specified. This is wide enough to obtain, for example, a direction preventing the relevant CCP from making variation margin payments to its members that it would otherwise have been obliged to make.</p> <p>Separately, there are certain general powers that may be used to cover this point:</p> <ul style="list-style-type: none"> (a) under section 53(2) of the MAS Act, the MAS may, if it considers to be in the interests of the affected persons of a “specified financial institution” (which includes a “pertinent financial institution”), apply to the court for certain orders, including <i>inter alia</i> an order that no steps shall be taken by any person, other than a person specified in the order, to sell, transfer, assign or otherwise dispose of any property of the “specified financial institution”; (b) the MAS can apply to court to request for a court order ordering compliance with the rules of an approved exchange, approved clearing house or a licensed trade repository (see our comments under ‘cash calls’, above). This statutory power only applies where any person is under an “obligation” to comply with, observe, enforce or give effect to the business rules of the approved exchange, approved clearing house or licensed trade repository, so this could depend on how the rules are structured. For instance, if the CCP has no power to cancel or reduce variation margin payments, this would not be applicable; (c) the MAS may invoke certain emergency powers under sections 46AA, 46Y and 81S of the SFA (see our comments under ‘cash calls’, above); and (d) it is possible for a foreign resolution to be recognised in Singapore under Division 5A of the MAS Act (see our comments under ‘cash calls’, above).

Regulatory framework of CCPs in India

CCPs are regulated by the Reserve Bank of India (“RBI”) through the Payments and Settlement Act, 2008 (“PSS Act”). Only one CCP, i.e., Clearing Corporation of India (“CCIL”) was authorised by the RBI in 2009 under the PSS Act. In July 2013, CCIL was designated as a critical Financial Market Infrastructure (“FMI”) for oversight considering its systemic importance in financial markets regulated by RBI, and in 2014 RBI granted the status of a Qualified Central Counterparty (“QCCP”) to CCIL.

To regulate CCPs RBI has issued direction and policy documents which are as follows:

1. RBI released a policy document in 2013 on Regulation and Supervision of Financial Market Infrastructures (“Policy on FMI Regulation”); and
2. RBI in October 15, 2018 issued directions for CCPs under Section 18 read with Section 10(2) of the PSS Act (“Direction for CCPs”).

As per Policy on FMI Regulation, a FMI should maintain sufficient financial resources not only to cover its credit exposure to each participant but also maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that is beyond the default of the participants.

As per the Direction for CCPs, a CCP should have a risk management committee which shall advise the board of the CCP on any arrangements that may impact the risk management of the CCP, which also includes default procedures.

Please note that apart from the above, none of the RBI directions or guidelines provide any guidance on the tools to be used for resolution in case of non-default losses of a CCP.

By-laws, Rules and Regulation of CCIL India

Regarding non-default losses, CCIL’s disclosure on Compliance with Principles for Financial Market Infrastructures to committee on Payment and Market Infrastructures, Board of the International Organisation of Securities Commission on June 2019 states as follows:

1. In order to meet the losses that arise out of non-default events such as failure of settlement bank, failure of banks where investments are made, operational risks events etc. a contingency reserve fund (“CRF”) is maintained. Further, policies are in place to select settlement banks, banks providing lines of credit and other banking services. These institutions are also closely monitored on a real time basis.
2. To meet non-default losses and losses on account of operational risk events, CRF is appropriated out of profits of CCIL.
3. As on March 31, 2019 CRF balance was INR 5,522.96 million.

Apart from the CRF, CCIL’s bye laws, rules or regulations do not provide for any other resolution tool to deal with non-default losses.

Trade Associations Contacts

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About ISDA

Since 1985, ISDA has worked to make the global derivatives markets safer and more efficient. Today, ISDA has over 925 member institutions from 75 countries. These members comprise a broad range of derivatives market participants, including corporations, investment managers, government and supranational entities, insurance companies, energy and commodities firms, and international and regional banks. In addition to market participants, members also include key components of the derivatives market infrastructure, such as exchanges, intermediaries, clearing houses and repositories, as well as law firms, accounting firms and other service providers. Information about ISDA and its activities is available on the Association's website: www.isda.org. Follow us on Twitter, LinkedIn, Facebook and YouTube.

About FIA

FIA is the leading global trade organisation for the futures, options and centrally cleared derivatives markets, with offices in Brussels, London, Singapore and Washington, D.C.

FIA's mission is to:

- support open, transparent and competitive markets,
- protect and enhance the integrity of the financial system, and
- promote high standards of professional conduct.

As the leading global trade association for the futures, options and centrally cleared derivatives markets, FIA represents all sectors of the industry, including clearing firms, exchanges, clearing houses, trading firms and commodities specialists from more than 48 countries, as well as technology vendors, lawyers and other professionals serving the industry.