# Best Practices in CCP Risk Management

LCH The Markets' Partner

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# 01. Executive Summary

Clearing houses play a systemically important and central role in Financial Market Infrastructure. As they come under increasing scrutiny from members, clients, and regulators, it is important that central counterparties (CCPs) continuously review and assess their risk practices, not only in line with regulatory requirements, but also with the continuously evolving market landscape.

This briefing document provides an overview of how LCH Group (LCH) approaches risk management, and the steps we have taken to ensure LCH leads the way towards a more resilient, reliable, and efficient marketplace for all participants.

In the paper, we highlight the four key lenses through which the LCH CCPs view and manage risk:

I. membership criteria

II. financial resources

III. the default management process

IV. the selection of products, which can and should be cleared

Along with an appropriate governance structure, they provide a framework for how CCPs can best manage the risks inherent in a vibrant, growing marketplace.



# 02. Background

In response to the 2008 Global Financial Crisis, world leaders committed to a a series of broad-based reforms at the G20 Pittsburgh Summit, that included mandates for OTC central clearing. These reforms have been implemented through regulatory requirements globally, including Dodd–Frank in the US and EMIR in Europe, and have broadly been based upon Principles for Financial Market Infrastructures (PFMIs). In the years since the 2009 G20 Pittsburgh Summit, market participants, including clearing houses, have made substantial progress in realising the vision and objectives set by the G20 to improve transparency in derivatives markets, mitigate systemic risk, and protect against market abuse.

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At LCH, we not only adhere to regulatory requirements, but we also leverage other events, such as the 2016 UK referendum on exiting the EU and US elections, and major clearing member defaults to improve and refine our market and liquidity risk management practices.

As a result, we adopt a continuous improvement approach to all our CCP risk management policies, practices, and operations, maintaining constant vigilance to ensure our standards are compliant in the jurisdictions within which we operate, but also are of the highest order expected by our members and clients across both LCH LTD and LCH SA.

These ongoing efforts are taking place while the industry continues to respond with updated recommendations on best practices in CCP risk management that encourage consistent, global implementation to minimise the impact and broader market contagion of potential defaults by members. These include ISDA's CCP Best Practices (January 2019) and the FIA's Central Clearing: Recommendations for CCP Risk Management (November 2018), as well as guidance from CCP12 and the European Association of CCP Clearing Houses.

# 03. Risk Management Philosophy

At LCH, we consider our core risk management philosophy through four key lenses: membership criteria, financial resources (including margins, CCP capital, and default fund contributions), the default management process, and the individual risk and liquidity characteristics by which products can and should be cleared. Applying risk management to the highest possible standards with appropriate governance across these areas ensures that risks within the CCP can be mitigated and managed through appropriate margin resources, default fund contributions, and tried and tested default management processes.

LCH's risk standards are upheld by a number of core guiding principles, which include:

01. Transparent, sound membership criteria and default management process (DMP)
02. Maintaining a 'defaulter pays' model, thus reducing the risk of mutualisation (i.e., utilisation of the default fund contributions) in a default scenario
03. Members' capital at risk to the CCP (i.e., default fund contribution) must be consistent with the risk being introduced
04. The right incentives must be in place to encourage the right member and CCP behaviours in a default scenario

The four risk management lenses can be summarised as follows:

### I. MEMBERSHIP CRITERIA

Membership criteria are the first line of defence for a CCP. At LCH, we use both quantitative and qualitative measures to ensure that prospective and existing members are not only able to meet their own financial obligations, but are able to play (where appropriate) an active role in the default management process. This could include participation in the auction process in the case of a fellow member default. It should be noted that while members are motivated to contribute to a successful auction — not least because they may be further assessed if the auction fails — there are additional incentives driving clearing member participation.

All new members must also attest to sufficient operational suitability, which would include their ability to meet margin payments as well as, where applicable, participate in 'driving tests' to ensure that the service-specific default management requirements are met. These tests are conducted at the time of onboarding to ensure members demonstrate their ability to receive and provide realistic bids on significant portfolios.

In addition, LCH maintains a very high credit standard among members in that no sub-prime equivalent counterparty is allowed to join as a member. If subsequently a member's rating slips to sub-prime, then additional margin is called to address the increased risk.

LCH also takes the necessary steps to ensure that the Member Rulebook and the actions it takes pursuant thereto is enforceable and consistent with the local laws of each jurisdiction where it operates.



### II. FINANCIAL RESOURCES

Initial margin for all LCH services is calibrated to be sufficient to offset any losses under predominantly normal market conditions incurred during the close-out period of a clearing member default to a 99.7% confidence level. Additional margins are levied to cover position concentrations, wrong way risk, illiquid positions, and clearing members who exhibit a higher likelihood of default; this means that LCH margins are well above the regulatory minimum standard. The combination of the 99.7% confidence level for margins, plus the standard that only prime equivalent parties can join as members, means that each member's portfolio has a AAA equivalent facility rating.

Our margin models have look-back periods that are appropriate for the product. In some cases this period can be as much as 10 years, but in all cases, model parameters are subject to a 10-year floor. As evidence of LCH's prudent risk management philosophy, even though the Lehman Brothers collapse occured more than a decade ago, this stress period is still included in a set of permanent scenarios where appropriate.

The appropriateness of all margin models is independently validated, and the model performance is assessed daily through portfolio back-testing.

#### Skin in the Game

In the unlikely case in which a default takes place and the defaulter's assets at the CCP are exhausted (i.e., all initial/variation margin and available default fund contributions have been used across all services), LCH would turn to its own capital ahead of non-defaulting clearing member contributions. Otherwise known as 'skin in the game' (SITG), this forms part of the CCP default waterfall (reference diagram on page 8 and 9). In the rare event that the default uses both the defaulting member's resources and the LCH SITG, then LCH would move to the mutualised layer of the waterfall (the non-defaulting members' combined default fund).

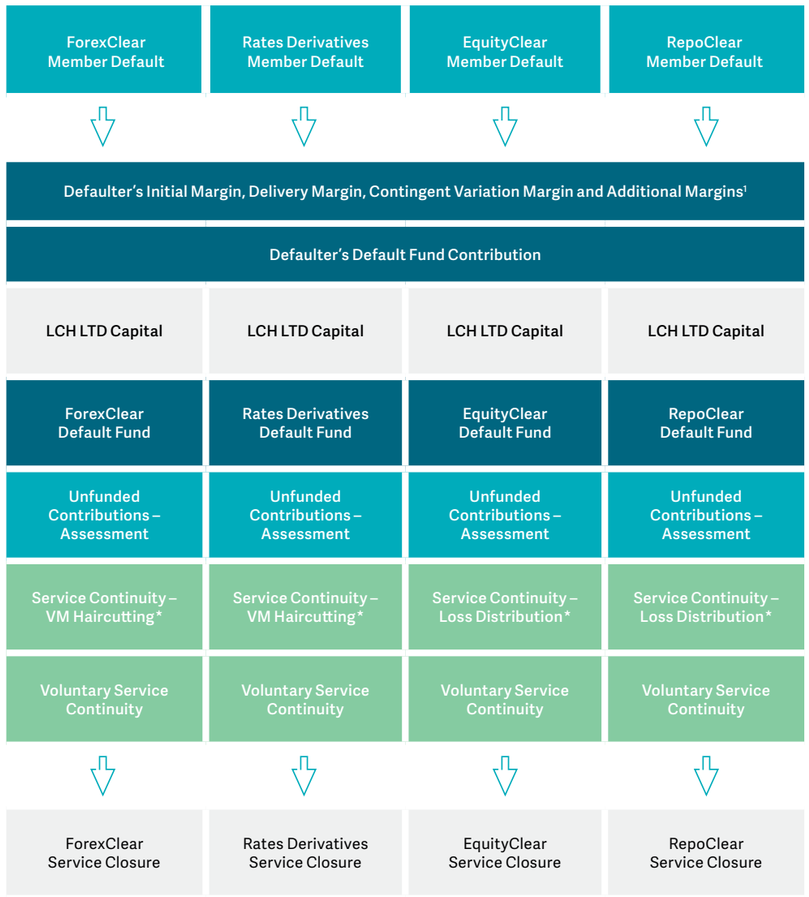
At LCH, we place 25% of our minimum regulatory capital as SITG, thus ensuring that the interests of CCP management are aligned with those of the clearing members. It is important that the CCP SITG is sized appropriately so that it is not considered a risk absorption layer.

However, if initial margins are set to a reasonable and appropriate level, then there should be a lower likelihood that the CCP SITG will be utilised at all. LCH has never depleted initial margins posted by a member in default; the amount utilised during the 2008 financial crisis was well below half of the defaulted member's margin.

Our paper "CCP Conundrums" considers in more detail the core principles of the SITG and also other CCP risk conundrums on liquidity management.

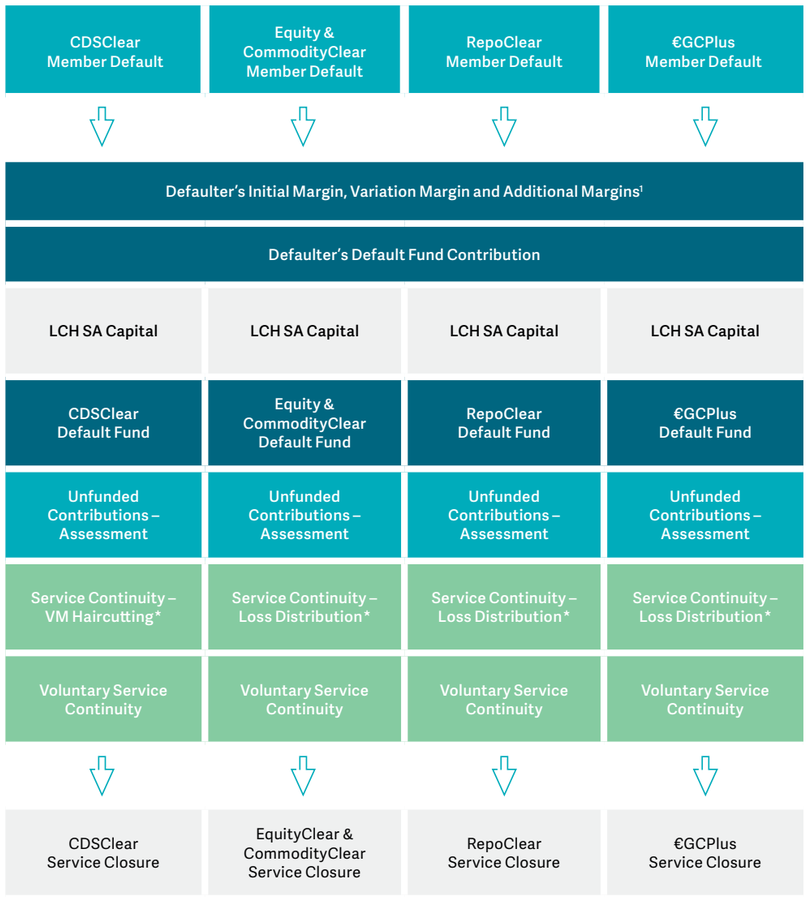
## LCH LTD Default Waterfall

*Further resources are available in the service continuity phase as determined by the LCH LTD Rulebook.




## LCH SA Default Waterfall

*Further resources are available in the service continuity phase as determined by the LCH SA Rulebook.



### Stress Testing

Each LCH default fund is sized to a 'cover 2' standard and so must have enough financial resources to cover the largest two members' simultaneous defaults during the most extreme but plausible market stress. Moreover, the stress scenarios used to size the default funds are based on historical events over 30 — and in some cases 40 — years ago, as well as referencing both hypothetical and antithetical stress scenarios. This is to ensure that as much relevant default history as possible is included. In addition, hypothetical moves are introduced to supplement history with extreme but plausible moves.

LCH also imposes a limit on individual member usage of the default fund such that no individual member can consume more than half of the default fund. This is based on a fairness principle and enables LCH to control concentrations in usage of the mutualised resources. Indeed, the limit on a member's allowable usage falls sharply as credit quality falls below sub-prime.

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Stress test models at CCPs can vary and must consider the asset class and products being cleared, but also consider the individual risk appetite at the CCP. As a result, this lack of standardised stress testing framework can make it challenging for regulators and clearing members to understand and compare CCPs' aggregate risk exposures. Regulators, through industry bodies such as CPMI IOSCO, have been setting out principle-based frameworks for stress testing, and our paper "Stress This House" discusses in more detail how they are looking to solve this problem. The paper also sets out and suggests a framework and the key elements required to construct the standardised CCP stress-testing framework.

## III. DEFAULT MANAGEMENT PROCESS (DMP)

LCH has detailed default management plans for each service/asset class in place, which provide clear criteria for when to call a clearing member into default and the steps to be followed for managing a default.

The DMP ensures the market can continue to operate without interruption in the event of a clearing member default. If a clearing member default occurs, LCH acquires the defaulted member's portfolio onto its own books and must exit these positions to bring the CCP back to neutral risk profile.

For OTC products, the portfolio is auctioned to non-defaulting members. LCH has incentives in place that can prioritise a member's default fund contribution during an auction to cover any losses if it is viewed as being insufficiently competitive. For listed products, liquidation is either achieved through an auction or by directing the portfolio to the relevant exchange to close out using a default broker.

As noted above, SITG provides a strong incentive for the CCP management to control risk exposure, thereby protecting the mutualised clearing member default fund contributions. This also helps to ensure that the interests of members and the management are closely aligned.

More recently, there has been an increasing focus on strengthening CCP Recovery and Resolution frameworks. These frameworks look at how CCPs can continue to operate and/or recover should all the CCP financial resources be utilised and how they can return to a matched book. They also focus on how CCPs recover from non-default scenarios but also the in extremis scenario of how a CCP would close. At LCH, we are continually informing this critical policy debate; our "Recovery & Resolution – A Framework for CCPs" paper sets out in more detail how we consider CCP recovery given different scenarios, and how resolution regimes need to consider relevant jurisdictions and their respective insolvency regimes.



### Fire Drills

In addition to the driving tests given at the time of membership (see Membership Criteria section), LCH conducts several 'fire drills' every year to test its own and its members' ability to handle a default by hedging and liquidating a defaulter's portfolio in a timely manner. Fire drills simulate a live default of a clearing member and, depending on the asset class, may require traders from the Default Management Group (DMG) to test the risk neutralisation processes of the portfolios.

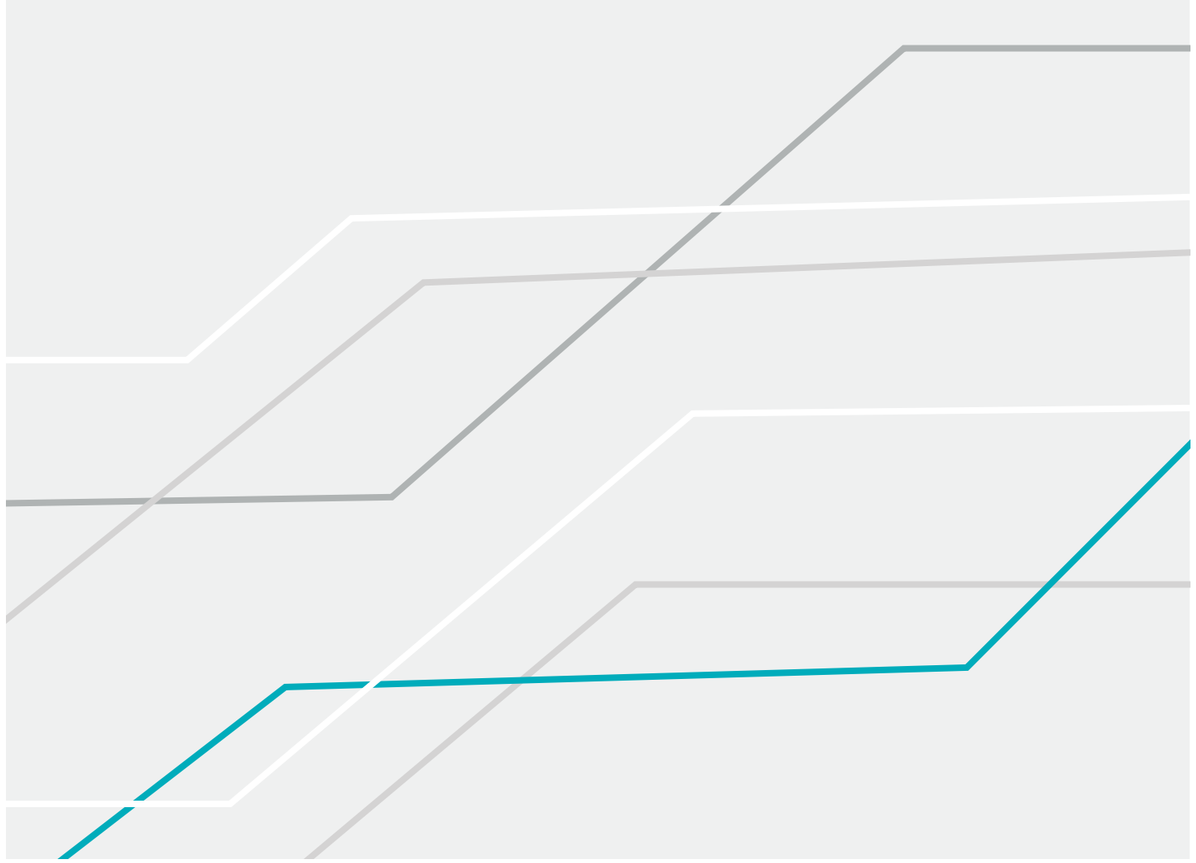
## IV. CLEARABLE PRODUCT DETERMINATION

LCH carries out detailed and lengthy due diligence before any new product is deemed eligible to be cleared at one of our CCPs. At the heart of this analysis is the question of whether the CCP can easily manage a particular risk position in the event of a clearing member default, which requires an examination of key factors such as depth of dealer liquidity, levels of trading activity, and availability of market data. These factors are then continually assessed with action taken to mitigate any potential risks should there be any significant changes in market conditions. New products, such as Non-Deliverable Interest Rate Swaps, are also subject to driving tests to ensure members can manage the DMP.

Current regulations make a distinction between clearing of OTC derivatives and exchange-traded derivatives (ETD), with OTC derivatives subject to stricter requirements given their non-standard product characteristics. However, our risk management requirements are based on the risk profile of each product and the complexity of the DMP, rather than the product's status as OTC or ETD.

While calculating margins on a portfolio basis across similarly correlated clearable products and asset classes can provide members and clients of CCPs margin efficiencies, it is critical that the CCP considers a robust methodology to capture the correlations (or the lack of correlations) across a range of market conditions. Our paper "On the Margin" examines in more detail some of the key issues underlying portfolio risk management and proposes an industry standard that can reliably consider the correlations during times of stress.

Representatives of clearing members and clients form an integral part of these committees, which are involved in all matters relating to LCH's risk management framework and play a critical role in risk governance.



# 04. Governance Considerations

In addition to the four risk management aspects mentioned above, LCH is committed to the highest standards of governance; this includes the role of the LCH CCPs risk committees. Representatives of clearing members and clients form an integral part of these committees, which are involved in all matters relating to LCH's risk management framework and play a critical role in risk governance.

The LCH CCPs risk committees are advisory committees to the LCH CCPs Boards, and ensure that LCH complies with the highest standards of risk management, providing independent oversight to all LCH risk and operational policies upon which the CCP operates. LCH is highly regulated and is subject to regulatory oversight in multiple jurisdictions including in relation to its governance framework.

In addition to the risk management framework, LCH seeks regulatory non-objection for new products, changes to its risk model, its governance and updates to its rules and procedures, which are applied consistently across all markets. LCH also undergoes regular assessments by our regulators, to evaluate its compliance with local and international standards for CCPs. By satisfying these stringent requirements, LCH demonstrates that its CCPs remain fit for the purpose of mitigating risk in markets globally.

# 05. Conclusion

It is essential for the smooth running of the global derivatives markets that there is complete trust in the integrity and soundness of the system. At the heart of this ecosystem sits the clearing house, delivering both the security of systemic risk management and a 'fairness' approach that is based on the obligations of the participants being in proportion to the risk they introduce to the CCP.

At LCH we also pride ourselves in working closely with the markets, partnering with our members and their clients to optimise the value of clearing for all stakeholders. LCH pays attention to detail, building on our extensive experience in clearing derivatives products to hone our approaches to risk management — fine-tuning a pragmatic model that delivers best practices while ensuring that participants globally can benefit from the efficiencies that a sizeable liquidity pool can offer. With diligence, there is no reason why this model should not endure, while our market partners continue to take advantage of all the benefits that central clearing offers.



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