What is a CCP?

- CCP stands for Central Counterparty. It
  - Act as seller to every buyer and buyer to every seller.
  - Insures clearing members against counterparty losses by taking on the positions of the defaulted member.
  - Nets down payment obligations across all the cleared contracts to one payment obligation to the CCP per member.
  - Takes in collateral to guarantee contractual performance.
  - Enables risk mutualization among its members through a guaranty fund/default fund.

- CCP is a key element of the post-trading process and an integral part of payment and settlement systems.
Benefits of a Central Counterparty

**Benefits of Clearing Beyond Counterparty Risk Reduction**

- Improved overall transparency: 50%
- Better market-to-market pricing: 49%
- More efficient OTC derivatives market: 47%
- Ability to execute trades through a greater list of counterparties: 44%
- Standardization of CSAs: 43%
- Prevention of uncollateralized positions: 35%
- Other: 8%
- None: 1%

Note: Based on 72 respondents in 2014. Source: Greenwich Associates 2014 Systemic Risk and the Impacts of Central Clearing Study
Benefits of a Central Counterparty (cont.)

- Counterparty Risk / Guarantee
- Improves Capital Allocation
- Efficient Banking Arrangements
- Reduces Operational Costs
- Risk Management
- Increases Trading Opportunity
- Facilitates Anonymity
- Multilateral Netting: Eliminates Bilateral Relationships
LCH.Clearnet Group

- The world’s leading multi-national clearing house.
- Serves major exchanges and platforms as well as a range of OTC markets.
- Provides the markets with exceptional levels of protection through its world-class risk management framework.
- Proven record of successfully managed defaults; the only Clearing House to have managed a significant OTC default - Lehman Brothers.
- Majority owned (c. 57%) by the London Stock Exchange with the remainder being owned by its clients and other exchanges.
Markets Served by LCH

ICAP Electronic Broking
BGC
ETCMS
MTS
tpRepo
Luxembourg Stock Exchange
BondMatch
Galaxy

MarkitSERV
TradeWeb
Bloomberg
SEFs
BGC Deriv Mkts
ELX Futures

MarkitSERV
Turquoise
LMAX
Oslo Bors
Aquis Exchange
OTC Equities
BATS Chi-X Eur
Borse Berlin Equiduct Trading
Euronext
LSE
SIX Swiss Exch

FEX
Euronext Deriv Market
Nasdaq OMXNLX
LSEDM
Nodal Exchange
Baltex
Cleartrade Exch
FFABA Brokers
OTC Brokers

Euroclear UK and Ireland Ltd
Euroclear Belgium
Euroclear France
Euroclear NL
Euroclear Bank
SIX SIS
Clearstream International
Clearstream Frankfurt
VPS
NCSD
Interbolsa
Monte Titoli
IberClear
VP - Vaerdapincentraien
BanqueNationale de Belgique
Commodities
Cash
DTCC

This diagram may not reflect markets that have recently been introduced. LCH.Clearnet may not clear all contracts on the markets listed.
LCH – Global Reach

- LCH.Clearnet Ltd is a regulated entity:
  - as Recognised Clearing House (RCH) by the Bank of England in the UK.
  - as Designated Clearing House (DCO) by the CFTC in the USA.
  - Licensed by ASIC to offer IRS clearing directly to Australian entities.
  - Recognised as a clearing agency by the Ontario Securities Commission (OSC).
  - LCH.Clearnet’s SwapClear services designated as systemically important by the Bank of Canada.

- LCH.Clearnet LLC is regulated as a DCO by CFTC in the USA and permitted to clear for Ontario-based clearing members by OSC.

<table>
<thead>
<tr>
<th>Holding Company</th>
<th>LCH.Clearnet Group Limited (Incorporated in UK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Entities</td>
<td></td>
</tr>
</tbody>
</table>
| LCH.Clearnet LLC | LCH.Clearnet LLC ¹  
Location: New York  
Organized in Delaware  
DCO regulated by CFTC |
| LCH.Clearnet Limited | LCH.Clearnet Limited ¹  
Location: London  
Incorporated in UK  
Recognised Clearing House regulated by BOE, DCO by CFTC |
| LCH.Clearnet SA | LCH.Clearnet SA ²  
Location: Paris  
Incorporated in France  
DCO application in progress |
| Clearing Services |                                             |
| SwapClear US | SwapClear ³  
Other Services  
RepoClear, EquityClear, ForexClear, Exchanges, … |
| SwapClear | CDS Clear  
Other Services |

¹ Regulated as a Derivatives Clearing Organization subject to CFTC rules & regulations
² Regulated as a Compagnie financière by the Commission Bancaire (France)
³ No current plans for interoperability between SwapClear US and SwapClear
LCH – Global Membership
LCH Risk Management and Default History

LCH.Clearnet’s aims are to:
- Provide efficient and cost-effective services to its users.
- Have risk management policies and actions which protect the integrity of the cleared markets and the interests of participants.

→ Mitigation and Management of Risk is central to what we do.

A cornerstone of our risk management is how we manage a clearing member’s default.
- Our default management framework guides our handling of defaults and it is regularly tested in internal fire drills.
- The rules on default management, including an outline of LCH’s powers and obligations, are included in LCH’s rulebooks that are public available on our website.

There have been seven defaults in LCH.Clearnet’s history:
- Drexel Burnham Lambert (1990)
- Woodhouse, Drake and Carey (1991)
- Barings (1995)
- Griffin (1998)
- Lehman Brothers (2008)
- MF Global UK Ltd (2011)
- Cyprus Popular Bank Co Ltd (2013)

In all cases, the defaults were successfully managed without any knock-on impact on any of LCH.Clearnet’s other clearing members or on its cleared markets.
Default Management Principles

Maintain ongoing performance of LCH.Clearnet obligations vis-à-vis all other non-defaulting clearing members

• LCH.Clearnet continue to meet its obligations, including those of the defaulter, such as meeting payment and delivery obligations (if any).

Preserve LCH.Clearnet capital and default fund(s)

• LCH.Clearnet will seek to preserve the LCH “Skin-in-the-Game” capital and mutualized resources contributed by non-defaulting members to the default fund(s).

Manage the transfer of all segregated client positions

• LCH.Clearnet will seek to facilitate the transfer of the defaulting member’s client positions and segregated collateral to other clearing members.
LCH Default Waterfall

• The LCH Default Waterfall stipulates a specific order of usage based on the “defaulter pays” principal.

• Defaulter’s financial resources will be used first, the CCP’s capital (skin in the game) next, followed by the non-defaulting members’ prefunded default fund contributions.

• Initial margins posted by non-defaulting members will never be used.

• Non-defaulting members will be assessed for further default fund contribution on if the total losses exceed the prefunded financial resources and the CCP’s capital.

• The loss attribution process will commence only if all the funded and unfunded contributions are completely exhausted.
LCH Default Funds

- All LCH default funds are fully prefunded and sized to Cover 2 factoring in extreme but plausible market conditions.

- Each default fund is calibrated monthly and tested daily to ensure Cover 2 compliance.

- Separate default funds for each asset class minimise the risk of contagion between asset classes.
Default Management Phases

1. Identification and activation
   - Objective: Based on day to day operations, identify unusual events and escalate to the crisis management team for a potential activation of the default procedure.

2. Analysis of situation
   - Objective: Collect all required information to assess the situation and be able to declare a default.

3. Declaration of default
   - Objective: Make decision and communicate to the defaulting clearing member and all appropriate third parties (including regulators).
   - Additional: Extract final file of positions to be transferred/liquidated.

4. Stabilisation and close out Preparation
   - Objective: Prevent the defaulting clearing member and all its clients/TMF from any trading and clearing actions.

5. Liquidation and/or transfer
   - Objective: Choose scenario and perform appropriate transfers to a new CMF and/or liquidation with brokers or direct offer counterparts.

6. Operational & financial reconciliation
   - Objective: Reconcile settlements and calculate financial impacts of the default for the member, the clearing fund and the clearing house.

7. Closing
   - Objective: Close last open issues, terminate agreement with the defaulting member and make a final report.

---

Pre-default

Post-default
Default Management Group (DMG)

- DMGs are convened within the first few hours of the Default Notice being served and are responsible for the day-to-day management of the default process.
- Members of the DMG may include seconded trading representatives from clearing members in advisory roles.
- Example of activities conducted by a DMG:

  - Determine the defaulting member’s assets and liabilities and LCH’s risk and liquidity exposures
  - Determine the hedging strategy to neutralize material market risks associated with the defaulter’s position
  - Determine the client porting strategy
  - Determine the wind down strategy (hold auction and/or liquidate the remaining positions)
In sum...

Key benefits of CCPs
- Reduction of counterparty credit risk.
- Stringent and consistent risk management.
- Risk reduction and collateral savings through netting.
- Additional safety buffer through risk mutualisation and CCP’s own financial resources dedicated to central clearing.
- Fostered market transparency, e.g., through daily mark to marketing.

However, CCPs are not without their own risks
- Systemic risk due to financial risk concentration → too-big-to-fail, “super-systemic”?
- Moral hazards, increase in risk taking.
- Monopoly concerns regarding access and efficiency.
- Others?

And since their own failure is very unlikely unless one or more systemic members failed, CCPs --- especially those clearing globally traded instruments --- can be thought of as super-systemic.

Risks of a Clearinghouse Fail

Financial Resources

Does the major clearinghouse currently have adequate financial resources to deal with a major multiple bank default?¹

- Yes: 69%
- No: 31%

What can be done to limit the likelihood that a clearinghouse will fail?²

- Access to central bank liquidity: 63%
- Better capitalized/clearinghouses having "more skin in the game": 56%
- Higher default fund requirement: 25%
- Higher quality collateral requirements: 24%
- More stringent membership requirements: 24%
- Higher margin requirements: 22%
- More members: 21%
- Risk models with longer look back period: 10%
- Other: 10%
- More stringent product selection criteria: 7%
- Nothing beyond current practices: 3%
- Fewer members: 1%

Note: ¹Based on 62 respondents in 2014. ²Based on 72 respondents in 2014.
Source: Greenwich Associates 2014 Systemic Risk and the Impacts of Central Clearing Study
A Clearing Member is put into default and/or the CCP’s has incurred a non-default loss.

Prefunded resources are **not** sufficient to manage a clearing member default and/or non-default loss.

CCP enters into **Recovery** and exercises the recovery tools.

Recovery measures have failed or the resolution authority determines that the CCP’s recovery measures are not reasonably likely to return the CCP to viability.

CCP enters into **Resolution**
### Key elements in CCP Recovery and Resolution

<table>
<thead>
<tr>
<th>Recovery</th>
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<tbody>
<tr>
<td>• CCP should have pre-established tools and rules for recovery that are</td>
</tr>
<tr>
<td>transparent and predictable.</td>
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<tr>
<td>• The recovery tools should be developed with inputs from clearing</td>
</tr>
<tr>
<td>members and their clients.</td>
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<tr>
<td>• The tools should allow CCP flexibility to deal with the particulars of</td>
</tr>
<tr>
<td>any given situation.</td>
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<tr>
<td>• There should be certainty and transparency around the size of non-</td>
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<tr>
<td>defaulting member’s contingent liabilities.</td>
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<table>
<thead>
<tr>
<th>Resolution</th>
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<tbody>
<tr>
<td>• Resolution authority will be required to step in to ensure that</td>
</tr>
<tr>
<td>trading/markets are not disrupted.</td>
</tr>
<tr>
<td>• CCP resolution will be most effective if it is led by the home</td>
</tr>
<tr>
<td>resolution authority.</td>
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<tr>
<td>• There should be close cooperation with the resolution authorities of</td>
</tr>
<tr>
<td>the jurisdictions where the CCP provides clearing services.</td>
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</tbody>
</table>

For further information see LCH’s white paper on CCP Risk Management, Recovery & Resolution: (http://www.lchclearnet.com/documents/731485/762448/final+white+paper+version+three.pdf/1d1700aa-a1ae-4a6c-8f6f-541eec9b7420)
Central Counterparty Clearing – Looking Ahead

**Current**
- Already widely used for listed securities and derivatives.
- Spreading use for OTC products (e.g. interest rate and credit derivatives).
- Implementation of central clearing requirement for OTC derivatives.
- Revised and enhanced international standards.
- Strengthened supervision and oversight.

**Future**
- Strengthened legal frameworks in major jurisdictions.
- Increased focus on CCP Risk Management, including Recovery & Resolution.
- Increase transparency and disclosures: e.g, CPMI-IOSCO PFMI assessment, standardized stress tests.
LCH White Papers

• CCP Risk Management, Recovery & Resolution
  http://www.lchclearnet.com/documents/731485/762448/final+white+paper+version+three.pdf/1d1700aa-a1ae-4a6c-8f6f-541eec9b7420

• Stress this House – A Framework for Standardized Stress Testing for CCPs
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