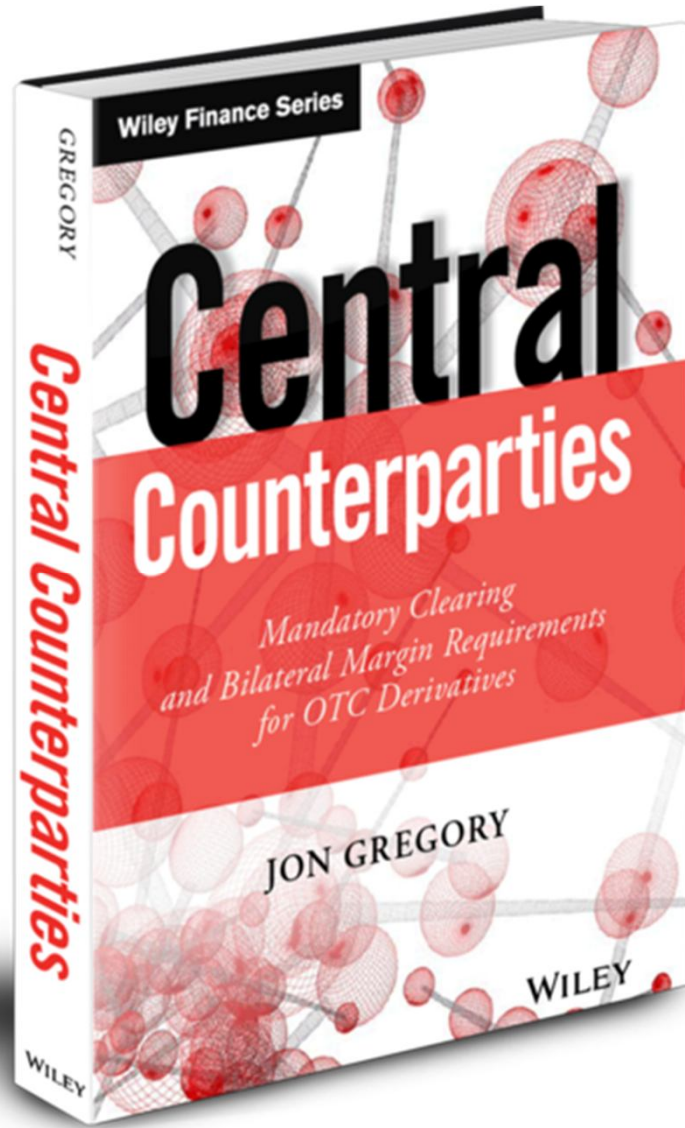


Exploring The Impact Of Increasing Collateral (Margin) Requirements

Jon Gregory



Mandatory Clearing and Bilateral Margin Rules

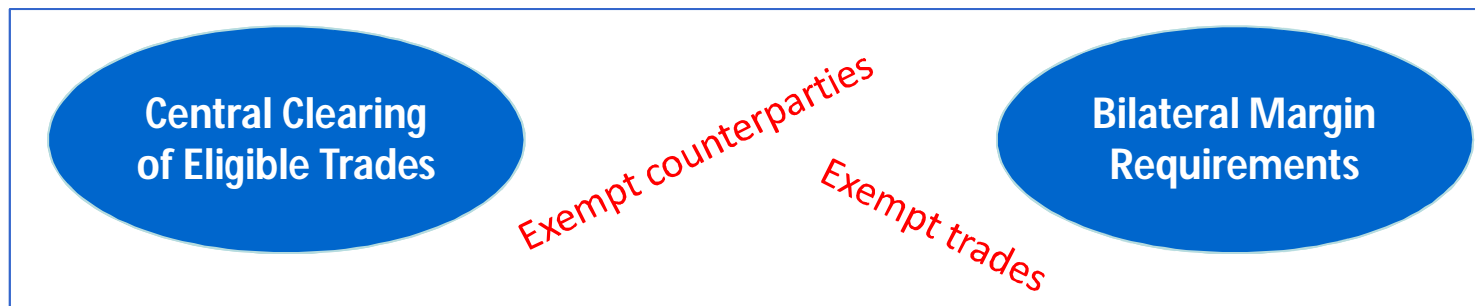
The Impact of Increased Margin Requirements

The Impact of Mandatory Clearing

Conclusions

Regulatory Response to the Crisis

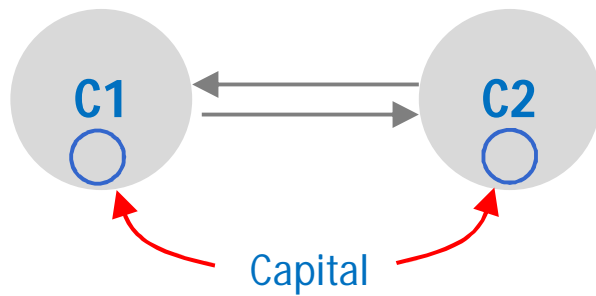
- **In order to reduce systemic risk, the G20 agreed in 2009 to require**
 - Central clearing of standardised OTC derivatives
 - All standardised OTC derivatives should be traded on exchanges or electronic platforms
 - Reporting of OTC derivatives to trade repositories
 - Higher capital requirements for non-centrally-cleared OTC derivatives
- **In 2011, the mandate was expanded to cover**
 - Bilateral margin requirements for non-centrally clearable derivatives



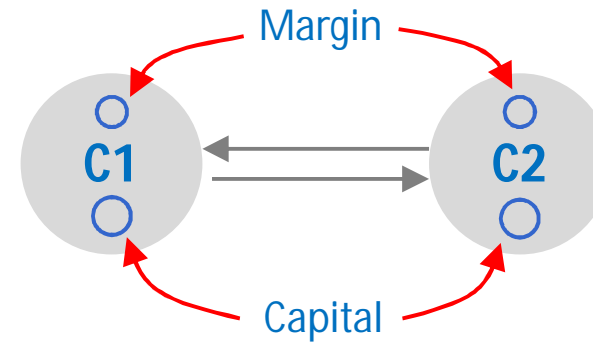
G20 Pittsburg Summit Declaration, www.g20.utoronto.ca/2009/2009communique0925.html

High Level Impact of Bilateral Margin Rules and CCPs

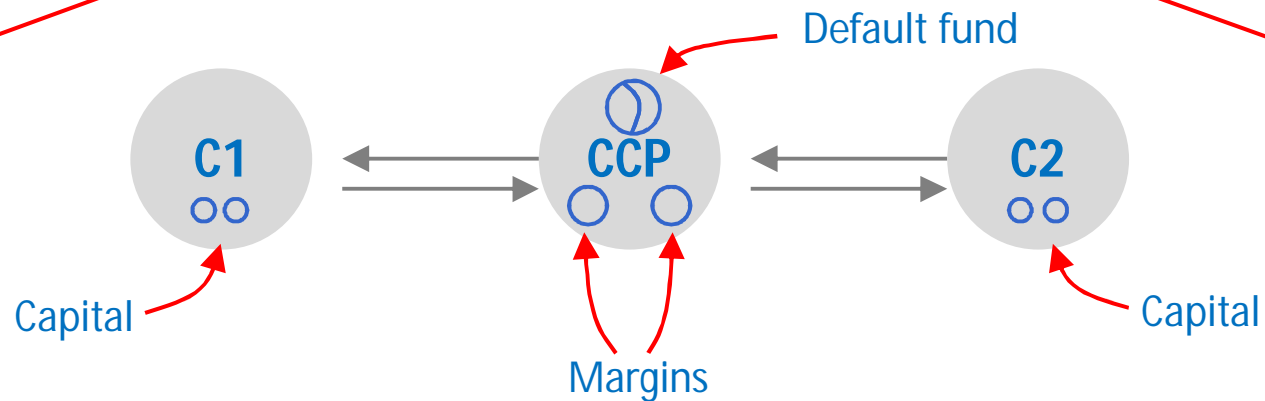
Bilateral Clearing (no margin)



Bilateral Clearing (with initial margin)



Central Clearing



Traditional View vs. Clearing and Mandatory Margining

	Traditional bilateral clearing (no initial margin)	Central clearing (or bilateral clearing with initial margin)
Model	Survivor pays	Defaulter pays
Margining	Variation margin or none	Variation and initial margin
Loss absorbency	Capital (and variation margin)	Initial margin (and default funds and capital)
Risk horizon	~1-year	~5-days
View	Long-term (e.g. based on fundamental credit analysis and ratings)	Short-term (e.g. dependent on short-term market volatility)
Credit quality sensitivity	Strong	Weak
Market risk sensitivity / procyclicality	Small	Potentially large (although reduced by using stressed data, for example)
Incentive	Losses aligned to risks	Loss mutualisation and potential moral hazard
Default close out	Uncoordinated bilateral close out	Coordinated auctions

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Variation Margin Potentially Creates Liquidity Risk

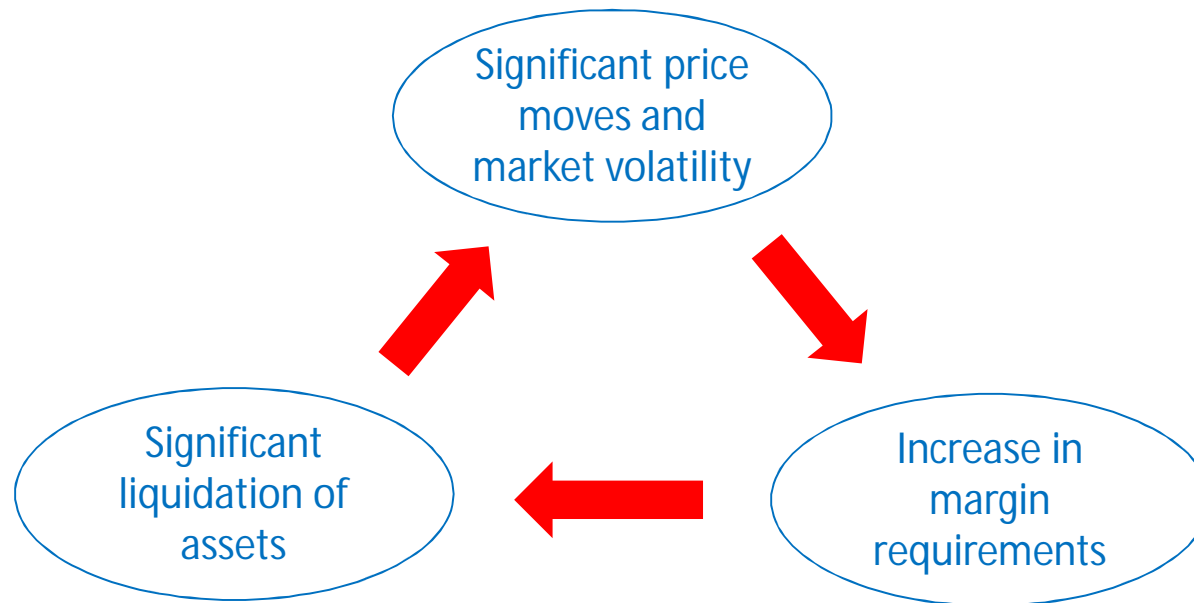
“In the case of variation margin, the BCBS and IOSCO recognise that the regular and timely exchange of variation margin represents the settlement of the running profit/loss of a derivative and has no net liquidity costs given that variation margin represents a transfer of resources from one party to another”
BCBS-IOSCO (2013)

“The following discussion of CME cash flows emphasizes variation margin payments because, as will be discussed, these payments placed the greatest stress on the financial system during the week of October 19.”
Brady (1988)

Initial Margin Potentially Creates Additional Problems

Variation margin	Initial margin
Parties pay what they owe to each other	Parties pay more than what they owe
Calculation relatively straightforward and objective (for vanilla products certainly)	Calculation highly subjective and difficult (e.g. VAR models, confidence level and margin period of risk)
Typically has to be in cash (CCPs)	Liquidity securities can be used
Perfect variation margining leads to standard pricing results (OIS discounting, Piterbarg 2010)	Initial margin is "imperfect" in this sense as parties will bear funding costs in relation to paying and receiving initial margin
Netting of offsetting margins is natural	Netting is not natural
No major problems with re-hypothecation and segregation	Re-hypothecation and segregation issues have to be resolved

Margining Can Cause Feedback Loops



- **Some key points**

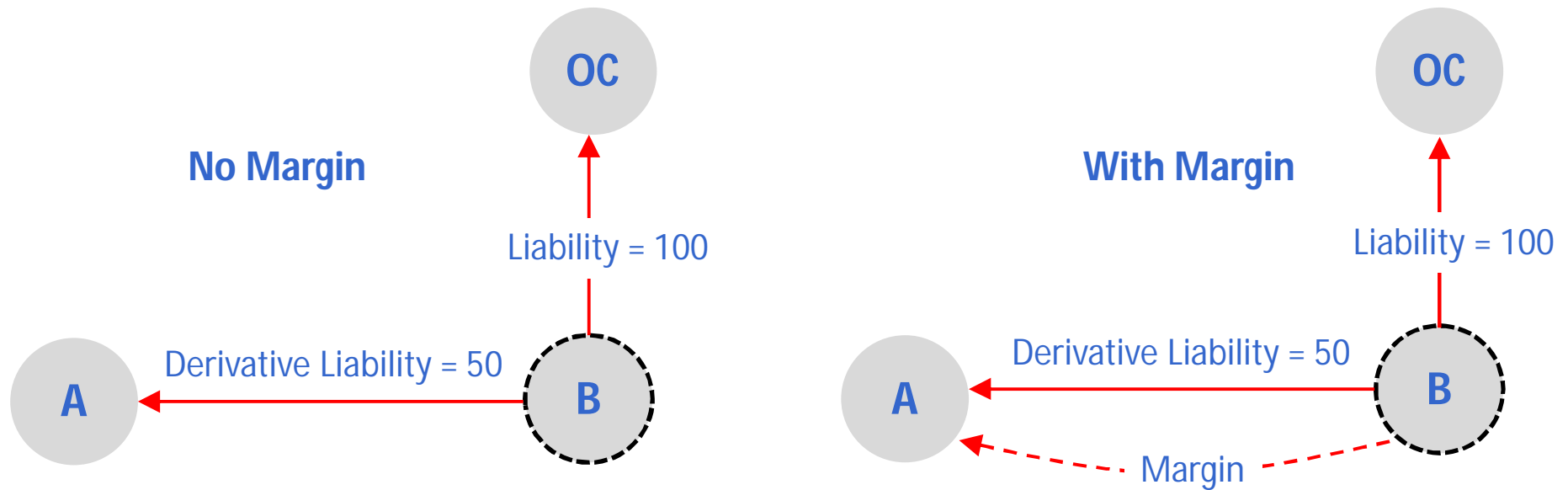
- Initial margin methodologies by their nature can be procyclical
- Variation margin risks increase in a more highly coupled system and more volatile market conditions

Margin Redistributes Risk (it doesn't make it disappear)

- Suppose B has assets of 100

	Derivatives			Other creditors
	Margin	Recovery	Total recovery	Total recovery
No margin	0	33	33 (67%)	67 (67%)
+ Variation margin	50	0	50 (100%)	50 (50%)
+ Initial margin	75	0	75 (100%)	25 (25%)

Assume all of the initial margin is used in closeout costs



Mandatory Clearing and Bilateral Margin Rules

The Impact of Increased Margin Requirements

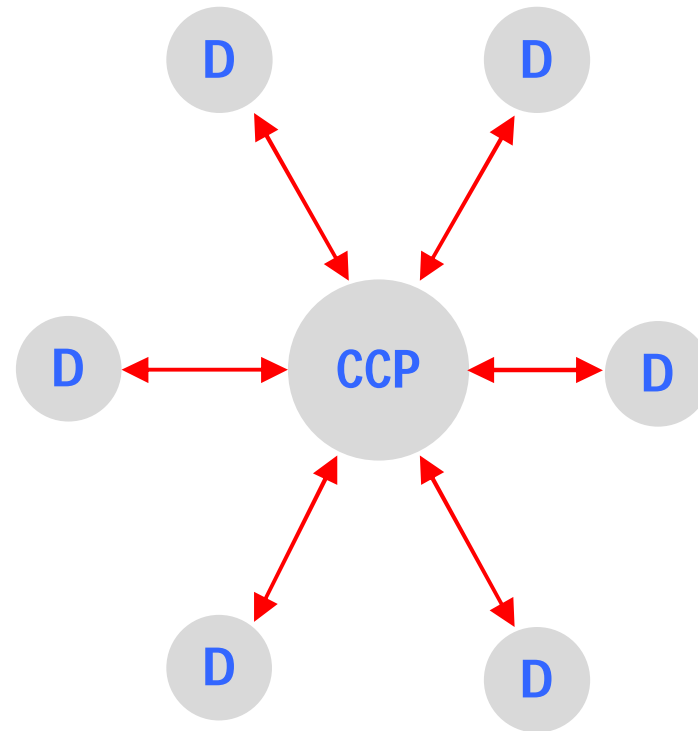
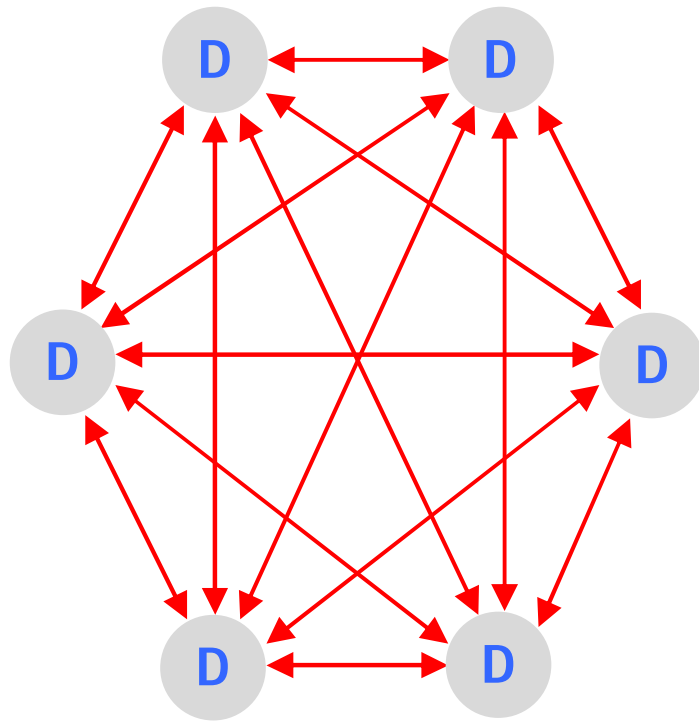
The Impact of Mandatory Clearing

Conclusions

CCP Margin Requirements are Stronger and One-Sided

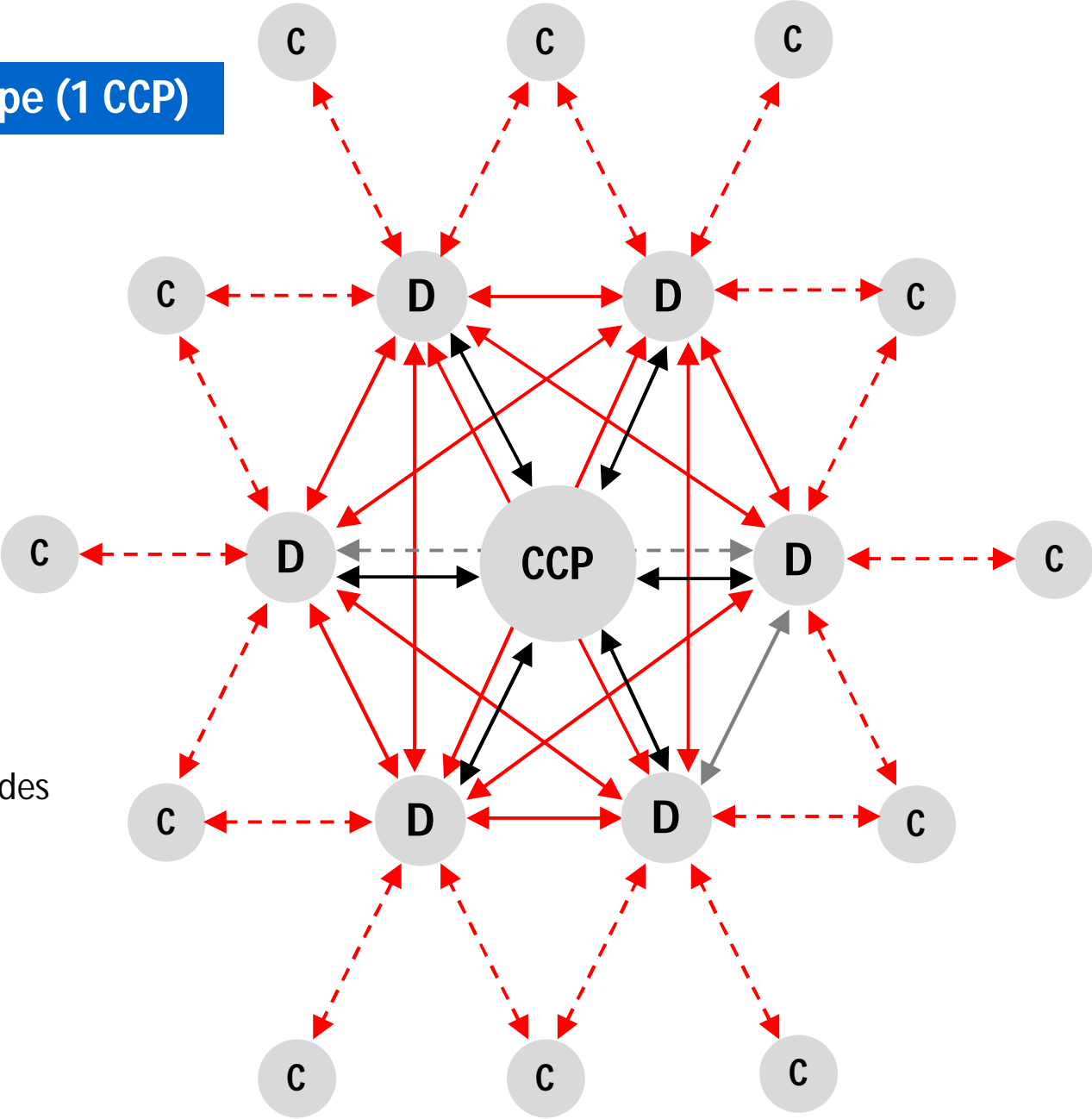
	Bilateral CSA	CCP
Frequency	Daily (or sometimes less frequently)	Daily (and intradaily in volatile markets)
Symmetry	Generally symmetric - can be asymmetric (e.g. thresholds)	Asymmetric in favour of the CCP
Type (variation)	Relatively flexible	Cash only (for most CCPs)
Type (initial)		Cash and other (but less flexible)
Disputes	Common and resolved bilaterally	None (CCP is essentially calculation agent)
Negotiation	Bilateral	CCP rule book
Changes	Must be negotiated and agreed by both parties	CCP can change rule book
Initial margin posting	Bilateral	Unilateral (only CCP)

The Impact of a CCP

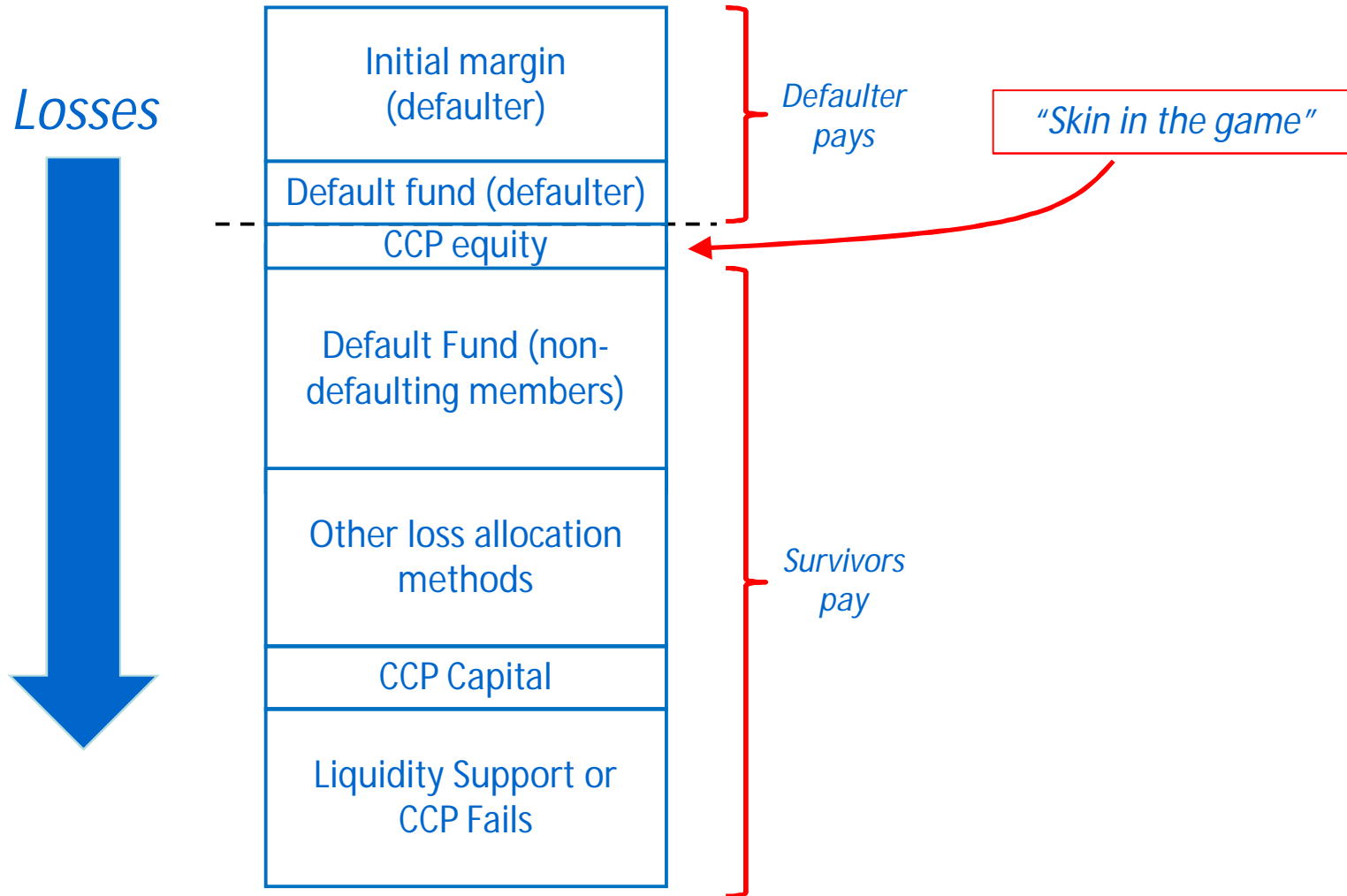


The Real CCP Landscape (1 CCP)

- ↔ Direct clearing
- ↔ Client clearing
- ↔ Bilateral dealer trades



CCP Loss Waterfall

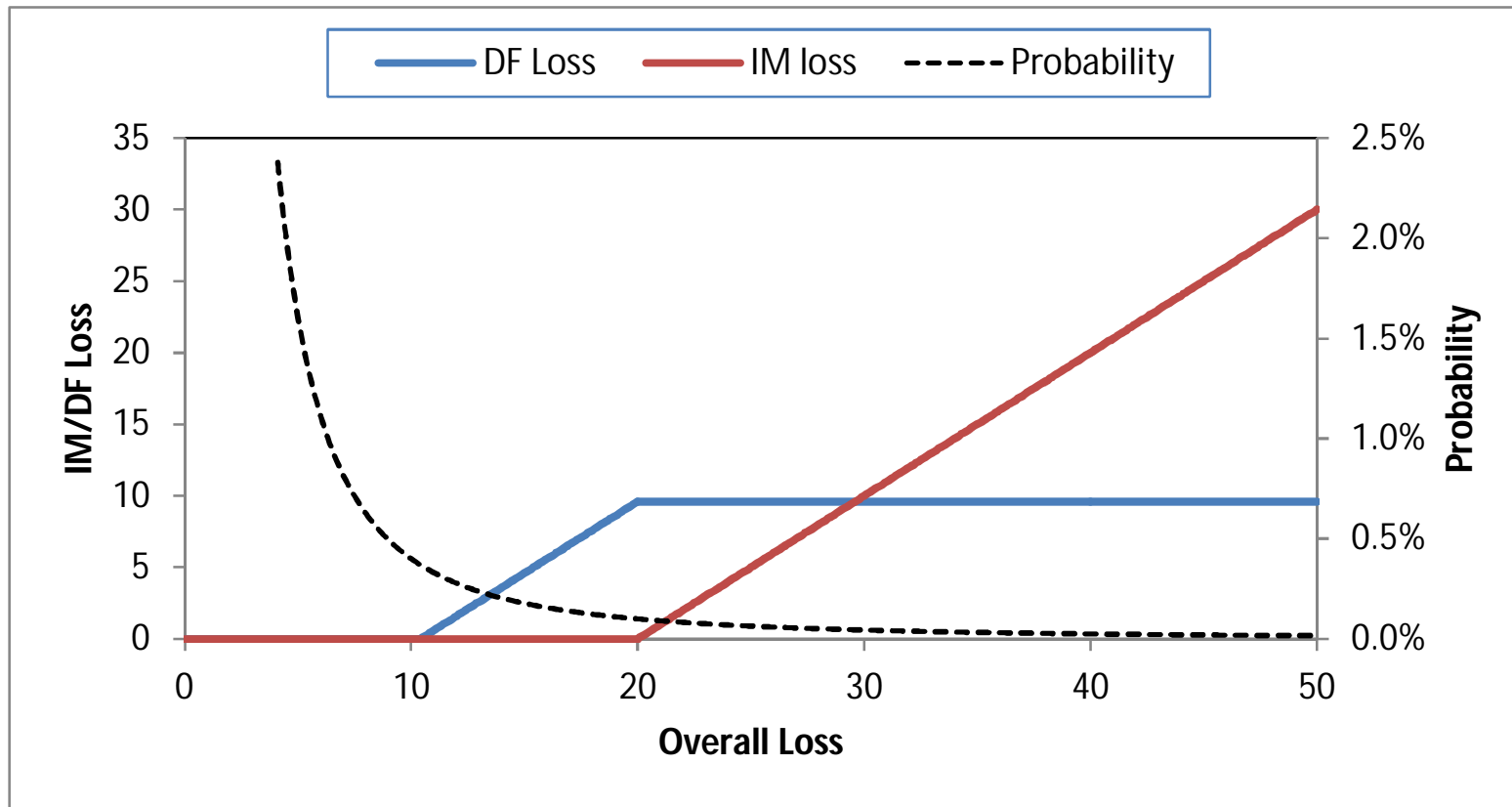


What is my Exposure to a CCP?

- **Initial margin exposure**
 - Lost if the CCP defaults (hopefully unlikely)
- **Default fund exposure**
 - Can be hit without the CCP defaulting (more likely)
- **Exposure to loss allocation**
 - Might represent a simple and bounded increased default fund exposure (e.g. rights of assessment capped at 100%)
 - Or possibly a unbounded exposure (e.g. VMGH and tear-up)

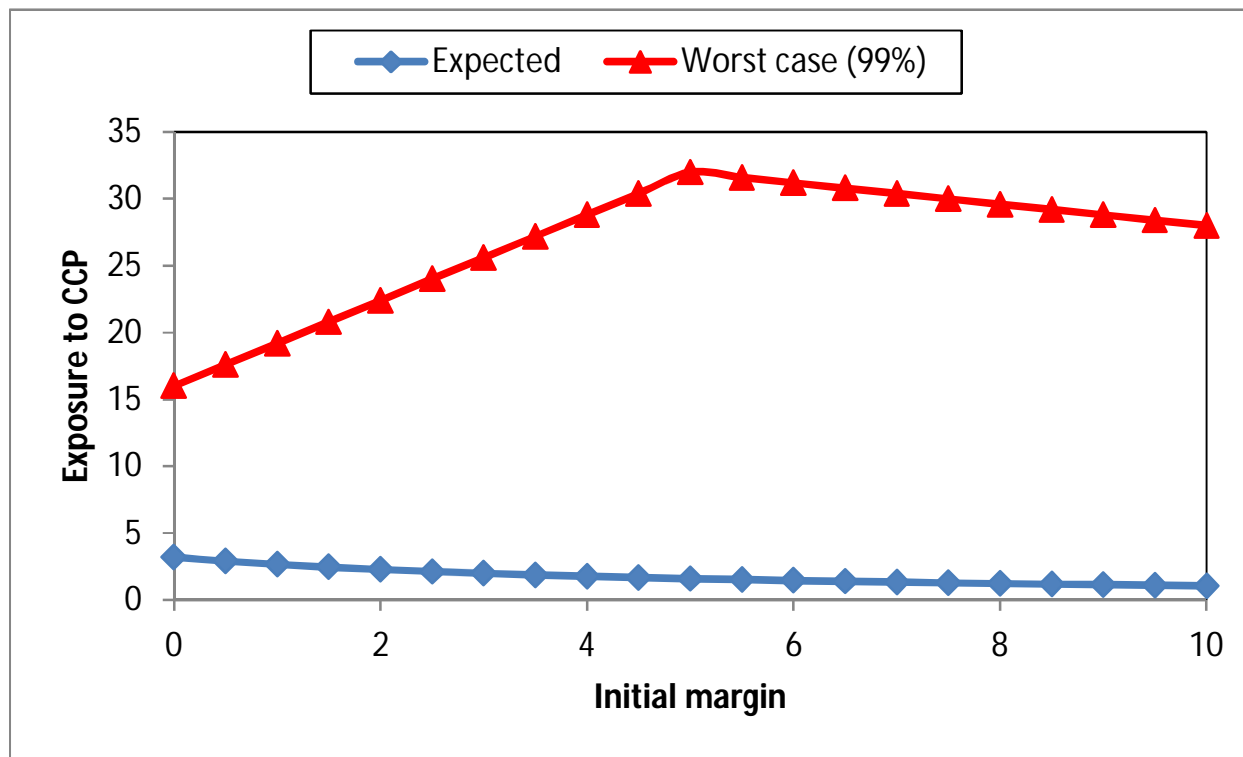
Basic Initial Margin and Default Fund Exposure

- Probability is assumed to follow an extreme value distribution



What is my Exposure to a CCP?

- **Increasing initial margins creates two effects in opposite directions**
 - The risk of loss mutualisation reduces (as the CCP has more IM from the defaulter)
 - But the total contribution to the CCP increases (since IM is more expensive than DF)



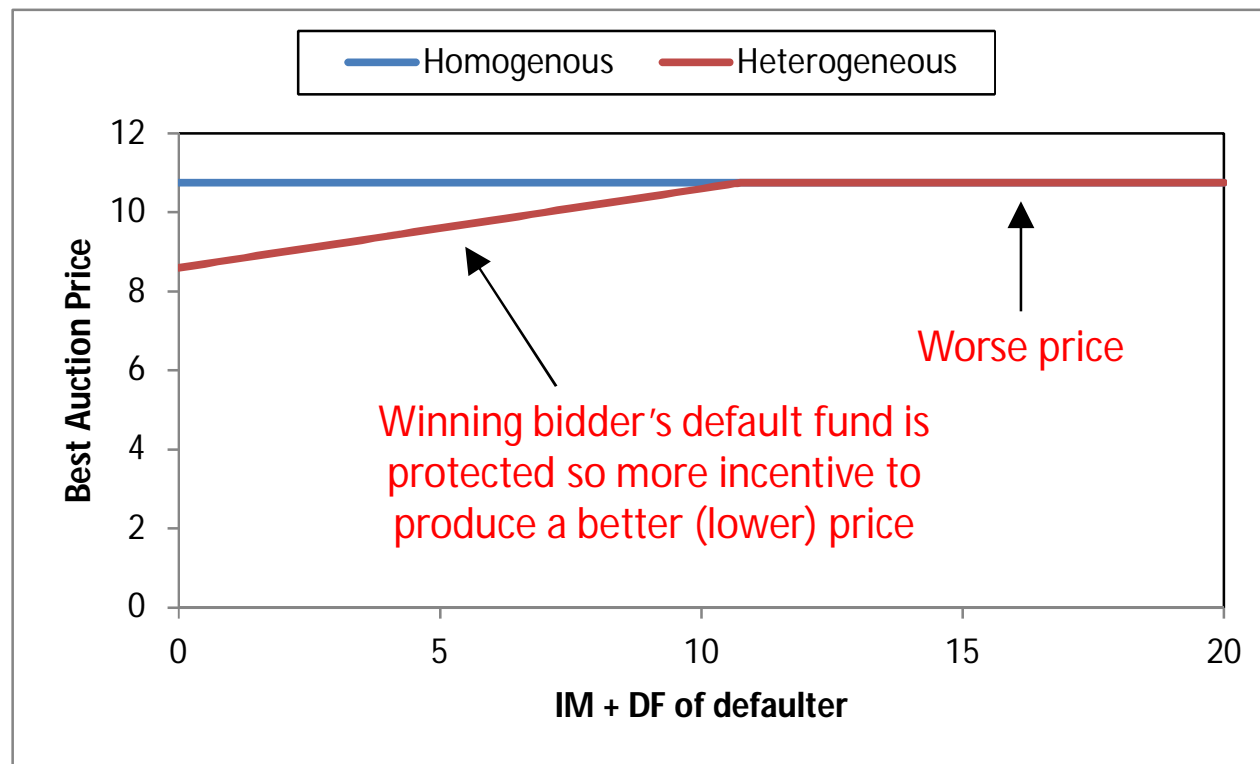
Default Funds and the “Prisoner’s Dilemma”

- **Impact of Prisoner’s Dilemma**
 - Members may not bid competitively in the auction
 - Methods such as AIPs and forced allocation encourage participation



Auctions and Heterogeneous Loss Allocation

- Clearing members will bid based on their
 - Risk aversion and assessment of the value and risk of the portfolio(s)
 - Loss allocation in relation to their bid (e.g. default fund tranching)
 - Large initial margins make such loss allocation less relevant



The scandalous Lehman CME auction

By Felix Salmon | April 14, 2010

less than half their value — handing a \$1.2 billion windfall to Barclays, DRW Trading, and — you knew this was coming — Goldman Sachs.

" data-share-img="" data-share="twitter,facebook,linkedin,reddit,google" data-share-count="true">

It was one of the least transparent and most underpriced asset sales since the days of Russian privatizations. In the chaos of the immediate aftermath of the collapse of Lehman Brothers, the CME Group auctioned off Lehman's derivatives assets for [less than half their value](#) — handing a \$1.2 billion windfall to Barclays, DRW Trading, and — you knew this was coming — Goldman Sachs.

Lehman may act against Goldman

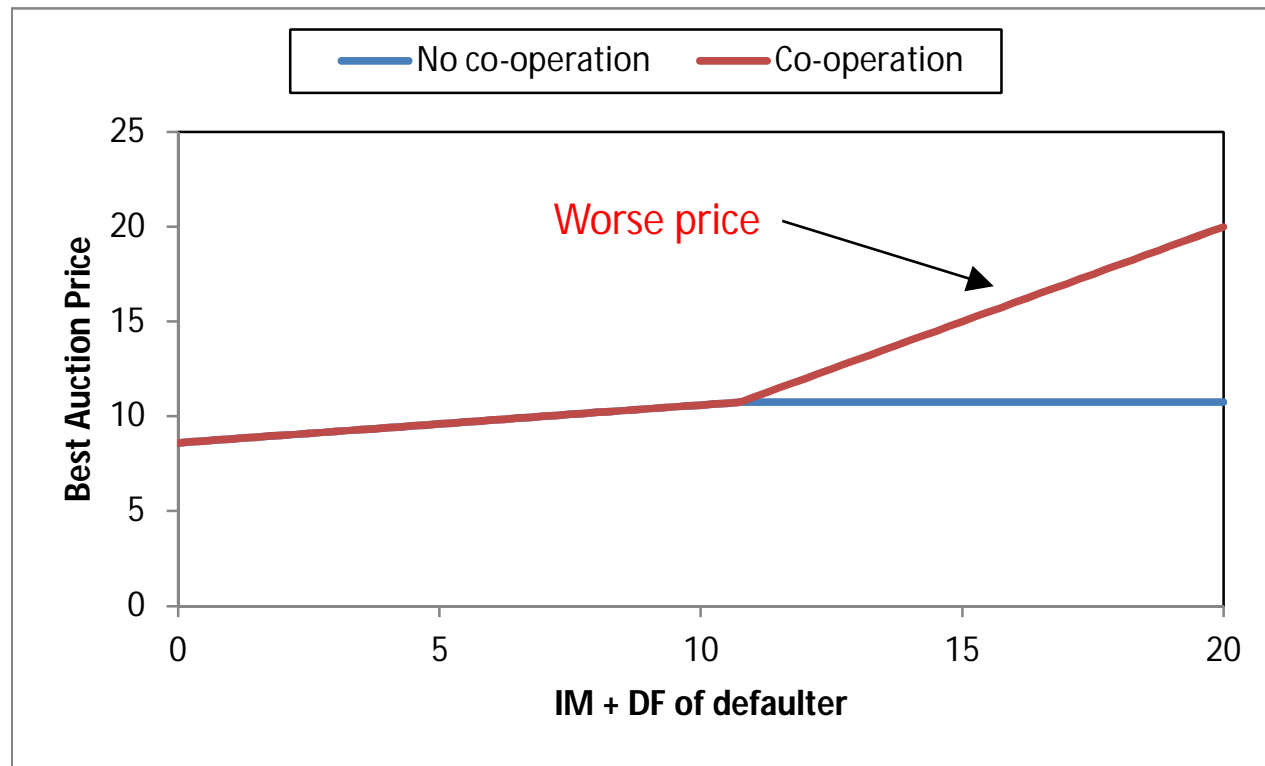
Bloomberg Apr 16, 2010, 04.23am IST

NEW YORK: Lehman Brothers Holdings may have grounds to sue Goldman Sachs Group and Barclays after they demanded \$1.2 billion in additional margin to assume trading positions auctioned by a Chicago exchange, bankruptcy examiner Anton Valukas said.

Goldman Sachs was the high bidder for Lehman's equity derivatives at options and futures exchange CME Group Inc., and took \$445 million of those assets at a private auction in September 2008, according to previously censored details of Valukas's March 11 report. Barclays was the high bidder for Lehman's energy derivatives and took \$707 million in assets from CME.

Auctions and Co-operation

- Assuming clearing members co-operate
 - Then they bid less aggressively as initial margins increase
 - This suggests large initial margins can actually be dangerous



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Conclusions

- **Bilateral margin rules and the clearing mandate create a more complex OTC derivatives landscape where loss absorbency exists in multiple places**
 - How to define initial margins and default funds?
 - How to regulate CCPs and set capital requirements for clearing members?
 - How to incorporate bilateral initial margins in bank capital requirements ?
- **Increases in margin (variation and initial) is costly and may create liquidity risk**
 - And such risks and costs may increase in turbulent market conditions
- **Margin does not reduce risk but does *redistribute* risk**
 - We cannot claim (for example) that clearing reduces systemic risk but at best that it reduces systemic risk in OTC derivative markets
- **CCPs give rise to a number of important effects**
 - CCP exposure (as a CM) is more complex to assess than traditional counterparty exposure
 - Highly conservative initial margins are not necessarily a good idea as they discourage good bids in the auction and make default fund tranching ineffective