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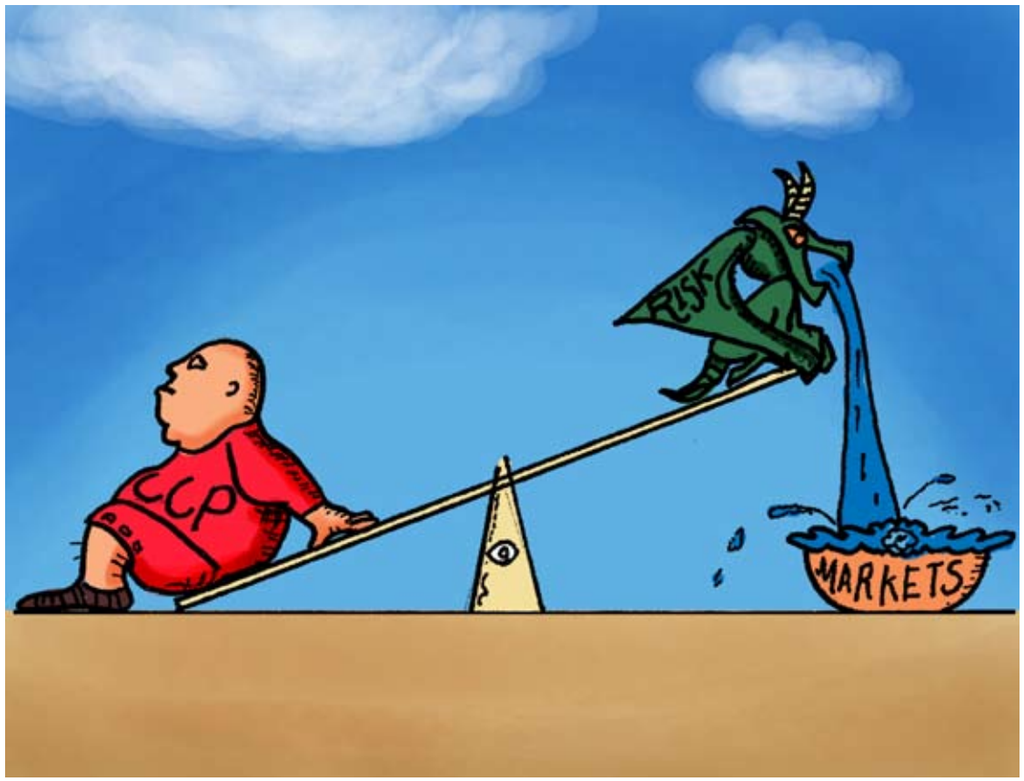
Tranquilizer Solutions: Part 2 – CCP Risk Taming

This two-part paper deals with a key element of derivative market reform – the CCP (Central Counter Party). The first part looked at the idea behind the CCP and how it is designed to work. This second part looks at the risk management of CCPs



The key element of derivative market reform is a central clearinghouse, the central counter party ("CCP"). Under the proposal, standardized derivative transactions must be cleared through the CCP that will guarantee performance.

The CCP is designed to reduce and help manage credit risk in derivative transactions – the risk that each participant takes on the other side to perform their obligations (known as "counterparty risk"). The CCP also simplifies and reduces the complex chains of risk that link market participants in derivative markets.

However, the proposal relies on the ability of the CCP itself to manage risk.

Risque matters…

The CCP holds the credit risk of cleared derivatives. All participants in the clearing system have exposure to the CCP, specifically its risk management systems.

The basic methodology is that used in exchange-traded derivatives. The CCP receives an initial margin or deposit from all parties to a transaction that acts as surety or a security bond against performance. The contract is marked to market daily or more frequently, if market conditions dictate, to establish gains and losses. Parties must post margins to cover the losses on open positions. If a party fails to meet a margin call then the CCP closes out the position, replacing it in the market. The CCP will use the margin it is holding to cover the replacement cost.

The CCP is reliant on risk models and the ability to value contracts. There are significant issues in pricing and valuing contracts and, for some products, reliance on complex models.

The CCP risk management process assumes

availability of market prices. In the OTC market, not all instruments trade with liquidity and reliable market prices may not be available. In 2009, Robert Pickel, then Chief Executive of the derivative industry body ISDA (International Swaps & Derivatives Association), told members of the US House Agriculture Committee that some derivative contracts trade infrequently even if they have standardized economic terms.

Under the CCP, only a few instruments will be capable of being marked to market against *actual* prices. For some instruments, it will be *mark-to-model* based on inputs that may be validated from market prices. In other cases, especially more complex products, it will be a case of *mark-to-make-believe* or *mark-to-myself*.

For exotic products, the risk of inaccurate market prices is significant. There may be no agreement on pricing models and inputs, further complicating valuation. David Goldman, a former credit strategist, described quotes for credit default swap (CDS) prices in the following terms: "*The business looks like the window of a Brezhnev-era Soviet butcher shop. Mouldy scraps hanging in the window. Old women lining up at 4am to try and buy credit protection on General Motors. What are reported as trades are really ways to establish prices to satisfy the auditors.*"[1]

CCP risk managementt relies on models that are variants of the Value at Risk (VAR), to establish the level of initial margin consistent with risk. The models are based on historical data and also assume price behavior of assets inconsistent with actual performance under conditions of stress. These are the same class of models that proved problematic in the GFC.

Some products present special modeling challenges. Small changes in market prices may have large valuation effects; for example, in knock-in and knock-out options or digital options. Similarly, CDS contracts are triggered by defaults. Unexpected and rapid deterioration in the credit condition of an entity can trigger large changes in value – known as *jump to default* risk. Such rapid changes in value are difficult to model and capture in risk management systems.

These problems mean that initial margins may be too low, increasing the risk that the CCP is inadequately protected against counterparty default. Alternatively, the initial margin may be set too high, creating disincentives for legitimate risk management activity.

Where a margin is not paid, the mechanics of close-out assume the ability to replace the defaulted contract with a new counterparty at current market prices. This assumes an active market with liquid trading. In the aftermath of the Lehman Brothers' bankruptcy filing, market liquidity diminished sharply and price volatility increased. It was practically difficult to replace contracts. Market prices and valuations were significantly different from model valuations. It is not clear how these risks will be managed by the CCP.

The CCP will, it is assumed, aggregate all positions across instruments and asset classes for each clearing party. Margins will be based on netting and cross-margining across the portfolio of trades. The CCP risk models will need to incorporate correlation between different asset classes and products.

There are important differences between different products and asset classes. For example, a CDS is different from an equity option. The CDS, a form of credit insurance, provides a binary outcome conditional upon default of the reference entity. In contrast, equity prices and the behavior of equity options more closely approximate a continuous distribution of outcomes.

These differences create modeling problems for formal relationships between asset classes, products, and price distributions. Relationships are also likely to be highly unstable. Tractable correlations developed under benign and stable conditions may prove misleading under conditions of stress. These risks may undermine, perhaps severely, the ability of the CCP to manage its risks. Lack of liquid markets in many OTC products may distort prices and compound the problem.

The CCP also requires high-quality operational systems to manage its trading, payments, collateral management, and risk oversight. All market participants subject to clearing will also need commensurate operational capabilities to manage liquidity demands and the collateral management processes.

Gross and net of it…

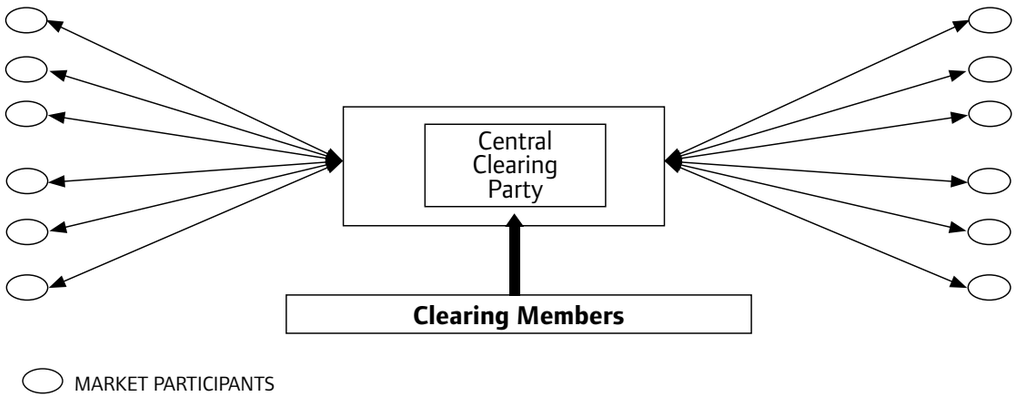
There are two possible clearing models, with different risks. In the first, all participants deal with the CCP directly, lodging margins with the designated clearing entity ("gross clearing"). The second entails non-clearing participants dealing via a CCP clearing member (also known as a clearing broker or, in the USA, a futures clearing merchant) ("net clearing"). In net clearing, non-clearing members have no direct relationship with the CCP when trading. They lodge margins with the clearing member who deals with, and is accountable to, the CCP for payments and contract performance.

The CCP sets standards for and regulates clearing members. In a net margin arrangement, the relationship between clearing members and clients is entirely negotiated. Key elements agreed include the level of margins, the form of collateral permitted, netting of positions, the timing for meeting margin calls and the clearing fees. Clearing members may also provide credit facilities, funding margin calls on behalf of clients, enabling trading without credit enhancement.

Commercial negotiations focus on the margin levels and type of permitted collateral, including haircuts on securities. Clearing members may cover some or all of the margin requirements on a client's behalf, based on its own internal offsets with the CCP. It may also rely on offsets with the client, cross-margining other transactions such as futures, bilateral trades, and prime brokerage business. It may also rely on revenues from other business with the client, pricing the clearing function on a holistic basis. Competition between clearing members may reduce risk management standards, reducing the effectiveness of the CCP.

A net margin arrangement creates complex inter-relationships between cleared and uncleared trades as well as different margining and netting models. Assume a transaction involving a cleared OTC derivative and a related uncleared non-standard derivative over it. The cleared derivative requires a CCP margin. Where the two transactions are transacted through a dealer who also acts as a clearing member, the dealer may not require collateral on the

Diagram 3. CCP structure with net clearing



uncleared derivative using its own risk model to offset the two positions. This does not result in a lower margin requirement on a client's cleared transaction, but cuts the total margin paid across cleared and uncleared trades.

Most existing futures exchanges use net clearing. This reflects the administrative and operational complexity of gross clearing. Dealers also favor net clearing, as it creates a profitable business for them clearing non-member trades. In existing exchange-traded markets, most of the profits from futures broking come not from execution but clearing, including crucial access to client funds that can be reinvested at a profit.

Dealers will push aggressively for net clearing, enabling them to develop a significant business clearing OTC derivatives trades for non-clearing parties. They will argue that this is essential to offset the losses from moving OTC derivatives trading to the CCP.

Net clearing means that the CCP structure will resemble that set out in Diagram 3. In practice, this means that there will be two separate layers of risk – one at the level of the CCP and one at the level of the clearing members.

Given that most inter-dealer OTC derivative trading is already collateralized to a substantial degree, the CCP arrangement only formalizes these arrangements. For other OTC derivative participants that trade through clearing members, the risk remains with these entities. Given the dominant position of a few firms in OTC derivatives trading and eventually in clearing, this may not reduce risk concentrations significantly – as sought.

ISDA argues that the CCP's ability to clear contracts is conditional upon liquidity and availability of market prices

Risk taming…

ISDA's case against the CCP is based on the fact that OTC products are difficult if not impossible to clear. ISDA argues that the CCP's ability to clear contracts is conditional upon liquidity and availability of market prices. Pickel, on behalf of ISDA, testified that this made "*it difficult for* [the CCP] *to calculate collateral requirements consistent with prudent risk management*."

The UK Financial Services Authority (FSA) also argues that some OTC derivatives may not be capable of clearing. In its December 2009 report *Reforming OTC Derivative Markets: A UK Perspective*, the FSA did not support *mandatory* clearing because "*the clearing of all standardised derivatives could lead to a situation where a... CCP... is required to clear a product it is not able to risk manage adequately, with the potential for serious difficulties in the event of a default*."

The CCP's ability to manage risk effectively is questionable, at least for all products. This reflects the lack of availability of prices, limitations of market liquidity, and inherent product attributes that may be difficult to model and mitigate. Rejecting the trading of CDS on the futures exchanges, Howard Simons, a Chicago exchange trader, identified the problems of risk management of certain OTC derivatives: "*The clearing members of the CME [Chicago Mercantile Exchange] think trading this stuff is the stupidest idea in the world. I didn't work my whole life so some investment bank can take all our capital. Do I look like Hank Paulson?*" [2]

Where products can be cleared, commercial CCPs may undercut each other on margins and initial deposit requirements to gain market share, in the process undermining the stability of the system itself. Riccardo Rebonato, an experienced risk manager at Royal Bank of Scotland, noted: "*In a world where CCPs are competing for an undifferentiated product – clearing – the main differentiating factor for an outsider is going to be the margin and some CCPs may be tempted to compete on margin. But margin must be compatible both with the systemic resilience of the new hub-and-spoke system and with considerations of commercial viability.*[3] LCH.Clearnet chief executive Roger Liddellrecently criticized newer US rival International Derivatives Clearinghouse for "*reckless*" behavior in setting low margin to win business. [4]

On May 12, 2010, the Basel-headquartered Committee on Payment and Settlement Systems (CPSS) and the Madrid-based International Organization of Securities Commissions (IOSCO) published 15 recommendations for CCPs. The guidelines were vague on risk management issues, only stating the need for "*more complex models and methodologies*" to calculate risk exposure and margin requirements and requiring methodologies to "*be reviewed periodically by a qualified, independent internal group or third party*."

CCP risk management may be based on the

attributes identified by poet e. e. cummings: "all ignorance toboggans into know and trudges up to ignorance again."

Water world…

Margins on cleared contracts will significantly change liquidity and cash flows within the financial system. Derivative traders will need to post initial margin and may experience volatile cash flows as a result of changes in values of positions. As these requirements will have to be financed, counterparty risk will morph into liquidity risk.

The risk is not insignificant. Under its bilateral collateral arrangements, AIG's CDS contracts were subject to the provision that if the firm was downgraded below AA–, then the firm would have to post collateral. In October 2008, when AIG was downgraded below the nominated threshold, this triggered a collateral call rumored to be in excess of $14 billion. AIG did not have the cash to meet this call and ultimately required government support.

As an intermediary, trades by derivative dealers will generally be reasonably closely matched. The margin calls on the net position should be modest, as payments and receipts will be matched. In addition, dealers, especially where they are part of large financial institutions, have ready access to liquidity and also greater experience in managing variability in cash positions.

The liquidity risk for clients is different. Where a company is hedging, a margin call on its derivative hedge will generally not be matched by an offsetting cash flow on the underlying exposure. Unleveraged investors will generally have the underlying asset or cash being hedged, but the precise cash flows may not match. Leveraged investors will be affected as they use derivatives to increase the size of their positions. Large margin calls may force them to liquidate the position or sell other assets to finance the payment.

Industrial corporations have been critical about the liquidity risk of CCP-cleared derivatives, as one of the primary reasons for resistance to being required to clear trades. Lufthansa claimed that clearing would "*cause severe cash and liquidity risks*." During the GFC, the company claimed that cash flow requirements from margining derivative contracts "*would have erased many corporations with a domino effect reaching every… corner of business activity*."

Some elements of liquidity risk already exist under present credit enhancement arrangements. Lower-rated customers and even better-rated firms with large derivative exposures are already subject to bilateral collateral provisions. The posting of collateral (cash or government securities) enables these companies to access derivative markets. The arrangements are generally customized between the parties but impose potential liquidity claims on the client. The CCP merely formalizes this arrangement. Companies with bilateral collateral arrangements have generally been able to manage their liquidity without the severe consequences claimed.

A client concerned about volatile liquidity demands could always negotiate a line-of-credit from the dealer to cover its potential funding requirements. This would transfer the liquidity risk to a dealer, but at a cost.

CCP clearing of derivatives may increase hedging costs to users of derivatives and their liquidity requirements to support trading. This points to a fundamental existing problem – the chronic and systematic under-pricing of counterparty risk in financial markets.

Problems of risk are difficult to resolve with no cost to market participants. The additional liquidity requirement is effectively the cost of reducing the risk of derivative trading. This cost and the risk of liquidity shortfalls may affect levels of hedging. The diversion of liquidity to support risk may also restrict availability of financing for other purposes.

As in the old Jewish proverb, the CCP may be like a pessimist who – confronted with two bad choices – selects both.

Clearing the house…

Risk conservation means that risk in financial markets never decreases. Risk can be altered and reconstituted in infinite combinations and transferred between participants. In aggregate, the risk remains constant. Alternatively, a risk is converted into a different, sometimes more dangerous exposure. The CCP is a good example of this phenomenon.

The CCP is designed to reduce systemic risk but in reality, the CCP may become a node of concentration. The clearing arrangement centralizes contracts in a ***single*** entity – the CCP. This increases risk concentrations within financial markets. The CCP is the ultimate case of "*too big to fail*." Riccardo Rebonato observed correctly that: "*We are moving away from a network system that can survive the failure of a single thread, to a hub-and-spoke system that must be 100% resilient. If the hub is ever allowed to fail, the aftermath of Lehman's default is going to look like a picnic. So we are placing a lot of reliance on regulators to get these standards right and ensure CCPs are really robust*." [5]

The credit quality of the CCP is crucial. Currently, private clearing houses are contemplated. The CCP's capitalization and financial resources – as well as the risk management systems – will be important in ensuring its credit standing. The specific criteria and detailed oversight arrangements are unclear. Commercial motivation (for market share and profit) may conflict with risk management requirements. It is not immediately apparent how these competing pressures will be accommodated.

US regulators propose limits on bank ownership of the CCP. Clearing house members, exchanges, and SEFs will be limited to 20% and aggregate bank interest to 40%. While addressing conflicts of interest, it obscures the fact that these entities are the natural shareholders. It is not clear who other potential shareholders, with the required capital resources and expertise, may be.

If, as is likely, net clearing is used, the credit quality of clearing members is important in managing the risk of the entire CCP structure. Here, competing considerations may prove irreconcilable in practice. For example, the CFTC currently proposes that capital requirements for individual clearing should be scalable and proportionate to risk, with a $50 million cap on any minimum capital requirement set by clearing houses for membership. Regulators want to encourage competition and broaden the range of clearing houses. However, inadequately capitalized smaller members would increase risk for other members and the CCP, in the event of a collapse of a member. Predictably, large highly capi-

talized banks favor higher capital requirements, ensuring their dominant position.

Maximization of benefits of central clearing requires a single clearing house. Currently, multiple CCPs appear likely, as different commercial clearing houses compete for the latest frontier land grab in financial markets.

National prejudices, inherent mutual distrust, promotion of national champions, as well as feared loss of sovereignty and control of financial markets will mean multiple CCPs located in different jurisdictions. This will require, if feasible, inter-operability, cross-margining, and clearing arrangements between exchanges and jurisdictions. Instead of decreasing risk, this may create new and complex exposures.

International agreement on clearing and the CCP may prove elusive. Regulators in major jurisdictions support the concept of clearing. However, there are significant differences between the positions of individual countries. For example, international regulators are yet to agree on the definition of a standardized contract or the market participants required to transact through the CCP. It is also not clear who will regulate and oversee the system, especially where it transcends national boundaries.

The CCP will be most effective if all instruments and participants are covered. In a 2009 paper, Darrell Duffie and Haoxiang Zhu examined whether a CCP would reduce counterparty risk, concluding that a CCP for some but not all classes of derivatives can actually increase risk and liquidity demands. Duffie and Zhu also concluded that it is inefficient to introduce more than a single CCP for the same class of derivatives.[6] However, a single CCP covering all products and market participants seems unlikely to be achieved.

Victorious defeat…

Superficially, there are attractions and potential benefits of moving OTC derivatives onto a clearing platform. The details are intricate and little understood by non-practitioners.

Attempts to regulate derivatives trading are complicated by existing entrenched interests and complex benefits and costs. The five largest US derivative dealers generate annual revenues of around $60–$70 billion from trading derivatives and cash securities. Global revenues are probably two to three times that number. Dealers will defend their business franchises.

If required to clear through the CCP, industrial companies would suffer from lower hedging flexibility, cash requirements for collateral, and additional operational demands. They may face problems in meeting existing hedge accounting requirements if only standardized products were available. On the other hand, they would gain from greater transparency of pricing, lower costs (tighter bid–offer spreads), and perhaps increased liquidity.

A framework for clearing OTC derivatives will emerge, if only because finance ministers, central bankers, and regulators have invested too much political capital in the proposals. Whatever is implemented may be reminiscent of French philosopher Jean Paul Sartre's words: "*Once you hear the details of victory, it is hard to distinguish it from a defeat.*"

Interestingly, the position of major dealers will be strengthened, rather than weakened. This is at odds with the dire predictions emanating from leading banks, arguing that the CCP and other regulations will cripple trading and also decimate profitability.

Dealers will extend their control of OTC derivatives trading, through *de facto* control of SEFs and the clearing process. The ability of dealers to determine success or failure of SEFs and CCPs by directing volumes to or away from specific concerns will enable them to control developments.

The heavy investment required to establish the infrastructure to clear trading platforms and contracts through the CCP will mean that a few large derivative dealers will quickly dominate the business. Other dealers will inevitably be forced to clear and settle trades through these dealers, creating counterparty credit risk, perversely increasing systemic and concentration risk. This corresponds to the experience in exchange-traded futures and options markets.

Lower profit margins from any increased transparency and liquidity will be offset by new revenue flows, from investments in SEFs and CCP, earnings from clearing on behalf of clients, and efficient cash arbitrage of client margins and collateral.

The CCP does not address the real issues of derivatives or the risk they pose to financial markets

The CCP is not a comprehensive solution – *a magic silver bullet*. It is likely to disappoint and create different but equally potent risks. The CCP is consistent with the observation by journalist and columnist Max Lerner: "*What is dangerous about tranquilizers is that whatever peace of mind they bring is packaged peace of mind. Where you buy a pill and buy peace with it, you get conditioned to cheap solutions instead of deep ones.*"

The CCP does not address the real issues of derivatives or the risk they pose to financial markets.

About the Author

Satyajit Das is author of *Extreme Money: The Masters of the Universe and the Cult of Risk* (forthcoming in Q3 2011) and *Traders, Guns & Money: Knowns and Unknowns in the Dazzling World of Derivatives* – Revised Edition (2006 and 2010).

Notes

1. See John Dizard, "Put the credit default swaps market out of its misery," *Financial Times*, December 9, 2008
2. See Joel Clark, "Waiting for CCP standards," *Risk*, April 30, 2010.
3. See *Risk*, May 2010, p. 9.
4. See Joel Clark, "Waiting for CCP standards," *Risk*, April 30, 2010.
5. See Darrell Duffie and Haoxiang Zhu, "Does a Central Clearing Counterparty Reduce Counterparty Risk?" Rock Center for Corporate Governance Working Paper No. 46, Graduate School of Business Research Paper No. 2022, February 27, 2009.