

Central Counterparties

David Love*
Director Policy and International Affairs
Australian Financial Markets Association

Abstract

Perceived settlement risks in markets for over-the-counter (OTC) derivatives are widely considered by authorities to have significantly contributed to the 2008 financial crisis. The concern about systemic risk in these markets led to global calls for a revision of the regulatory framework for OTC derivatives. Several of these regulatory initiatives include a requirement for OTC derivatives contracts to be cleared through a central counterparty. This paper examines the nature of the risks being managed through central clearing and the proposed benefits of the regulatory initiatives for central counterparty clearing for OTC derivatives, and the factors that may limit the ability of a central counterparty to reduce the systemic risk resulting from OTC derivatives transactions.

Introduction

An outcome of the 2008 financial crisis has been the effort to improve the post-trade infrastructure for over-the-counter (OTC) derivatives transactions. The Financial Stability Board (FSB) has identified the need to further enhance the safety in the OTC derivatives market. This led G-20 Leaders to agree in September 2009 that all standardised OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties (CCP) by the end of 2012. As a result, authorities in key jurisdictions have put forward policy initiatives aimed at encouraging greater use of CCPs for OTC derivatives markets.

The proposition put forward by authorities is that a well designed CCP can reduce the risks and uncertainties faced by market participants and contribute to the goal of financial stability. Central clearing is intended to reduce settlement risks between two parties by taking on the risk of one of the parties failing, and offsetting it against its participants. However, there is an alternative possibility that needs to be considered and managed by policy makers. It is possible that forcing derivatives through CCPs could intensify risk in the system, because it does not remove risk from the financial system but centralises and concentrates risk into a central counterparty which is systemically critical to the well being of the system.

* The opinions expressed in this document are those of the author and do not necessarily reflect the views of the Australian Financial Markets Association.

Role of a CCP

The clearing house acts as a CCP when it interposes itself as a legal counterparty to both sides of a transaction. In legal form the original transacting parties substitute their contractual relationships with each other with contracts with the CCP, a process referred to as novation.

In derivative contracts, each party takes the credit risk of the other side in terms of performing their obligations. This is referred to as counterparty risk. A CCP does not remove counterparty credit risk from a market, but it manages and redistributes that risk by establishing rules as to who bears losses arising from a participant default. From the perspective of market participants, the credit risk of the CCP is substituted for the credit risk of the other participants. Novation replaces market participants' exposure to bilateral credit risks with a standard credit risk to the CCP.

The CCP's unique position of being a common, substituted counterparty to all trades in a centrally cleared market greatly simplifies the multilateral netting of trade obligations. Past studies have shown that multilateral netting can result in significant decreases in risk exposure relative to the underlying gross positions (Jackson & Manning 2007).

Policy Reform

To support implementation of the G-20 clearing policy objectives, at the initiative of the FSB, a working group led by the Committee on Payment and Settlement Systems and the International Organization of Securities Commissions (CPSS-IOSCO) in June 2009 to review the application of the 2004 CPSS-IOSCO risk management recommendations for central counterparties to reflect on the future clearing of OTC derivatives. Proposals are being developed to address five issues, namely: conduct of business and governance; risk standards; legal protection to collateral and positions; authorisation; and recognition of third-country CCPs.

In addition, the Basel Committee on Banking Supervision (BCBS) proposed changes to the Basel II framework in order to strengthen existing capital requirements and risk management standards for counterparty credit risk. Proposed rules would encourage banks to use CCPs for OTC derivatives contracts. Specifically, zero risk weighting for collateral and mark-to-market exposures to CCPs that comply with enhanced criteria to be published by CPSS-IOSCO.

CCP Risk Management

CCPs use a combination of risk management tools to mitigate credit and market risk in order to ensure it can meet its obligations to all its participants. A CCP's risk management needs to ensure that the CCP has at its disposal sufficient financial resources to cover the potential losses in case of a participant's default. To achieve this, CCPs may rely on a variety of risk management mechanisms. Broadly speaking, these mechanisms can be grouped according to two principles: the defaulter-pays principle and the survivors-pay principle. The defaulter-pays principle is typically implemented by requiring each participant to provide collateral in form of margins to cover its current risk exposure. In case of a participant's default, the CCP then relies on the margins provided by the defaulting party to cover potential losses. In contrast, the survivors-pay principle is typically implemented by establishing a pre-funded collective default fund. In case of a participant's default, the CCP then relies on the default fund to cover any losses.

CCPs generally have three lines of defence in risk management. A CCP may place different emphasis on specific measures depending on its business model.

- *Admission Criteria:* The most fundamental risk management measure is a CCP's admission criteria for clearing participants. Admission criteria set the minimum financial standards of the firms with which a CCP will do business. Higher financial standards for admission result in a lower probability of exposure to a clearing participant insolvency.
- *Margining:* After admission, the most important tool used by a CCP to manage its exposure to a participant's default is the calculation and collection of margin from the participant. Margin is put up by a clearing participant to cover the amount of potential loss to the CCP if it defaulted and the CCP had to fulfil its obligations at prevailing market prices. The CCP prescribes what types of assets are acceptable as collateral.
- *Waterfall protections:* A CCP would have various safety nets to ensure its own continued viability should a participant default and the margin calculated and collected from that participant is insufficient to cover the CCP's losses. Examples of these additional defences are the retained earnings or equity of the CCP, loss-sharing among the surviving participants through their contribution to a loss-sharing mechanism such as a default fund, an insurance policy, and financial guarantees from a third party or a parent. CCPs have rules on the order in which they invoke these waterfall protections should the need arise.

CCPs usually apply a combination of the defaulter-pays and the survivors-pay principles to cover the losses from a participant's default. A common practice is to set margin requirements to cover the losses incurred should a participant default under normal market circumstances, while a default fund would account for the losses in excess of the margins. As a consequence, the default fund contributions would typically only be used if a participant defaults in highly volatile market conditions.

CCPs mutualise default risk. CCPs use loss-sharing arrangements to cover any additional losses incurred beyond those covered by a defaulting trader's collateral. However mutual arrangements tend to encourage moral hazard and risk taking. Mutualisation may encourage market participants using a CCP to trade more and establish larger positions, increasing the potential risk for the CCP. CCP design decisions concerning loss allocation procedures have distributional effects that must be considered when developing the loss-sharing arrangement.

This leads to a central issue that needs to be addressed by authorities regarding the optimal ownership structure and governance of a CCP to provide the best incentives for risk monitoring and risk management. In theory there are five feasible types of governance models for a market infrastructure institution: the non-profit, cooperative, for-profit, public utility, and hybrid models (Lee 2010).

Owners of a for-profit CCP will typically not be its participants and so will not bear the direct costs of a large-scale clearing failure. Shareholders may therefore not have as strong an incentive to ensure the financial stability of such an institution compared with user-owners. A CCP under user ownership and governance has a stronger, reciprocal incentive to monitor and control risks incurred by its participants due to the mutualisation of losses through loss-sharing rules. It would deliver higher risk and operational efficiency benefits, setting margins and returns at the right level to reflect users' pricing of mutual risk. Majority exchange control or influence over a CCP and profit maximising financial models may also raise concerns about the fee structure as they enable the extraction of higher than normal profits from customers of a CCP which has monopoly market power.

Against the background of the competing objectives, it is difficult to be overly prescriptive about the optimal ownership model and governance of a CCP. The decision will be taken by the institutions themselves, in accordance with the regulatory framework that is currently being developed by authorities. But it is important for underwriters of the risk taken on by the CCP to have at a minimum a say in its governance and risk steering committees.

Collateral Management

The most common tool used to manage risk is collateral. Rules are established dictating what assets are allowed to serve as collateral, how much of a 'haircut' should be given to specific assets in determining their value as collateral, and how often margin calls should take place.

CCPs typically hold collateral as an 'initial margin' from each market participant to serve as a cushion against adverse market fluctuations. The CCP monitors the positions of participants and may periodically require additional collateral following market movements to re-establish an acceptable cushion against to prevent a build up of market losses. This is referred to as a 'variation margin. Payments equalling the 'mark-to-market' from a recent settlement price, often the closing price from the previous trading day are made to the CCP by those traders whose positions have lost value as a result of market fluctuations.

CCPs commonly mark-to-market participants' positions at the end of each day, and calculate gains and losses accrued since the last mark-to-market. The actual procedure for settling daily gains and losses may differ to some extent between CCPs. Some directly adjust participants' margin account balances to reflect the gains and losses on participants' positions. If the funds in a member's margin account balance fall below a specified level the member receives a margin call. This instructs the member to increase the funds in its margin account back to the level of initial margin within a specified grace period. It is common practice for CCPs to also monitor participants' positions intraday and may make margin calls if large intraday price moves threaten to exhaust the funds in a clearing member's margin account.

The failure to meet a margin call will result in the member being declared in default and its positions being closed out. The quicker the CCP is able to close out a defaulter's positions, the less likely it is that prices will move further against the defaulter, and result in a risk exposure for the CCP.

Because CCPs create a single point of failure, and a concentration of risk there is less diversification of the risk of errors. Counterparty risk and credit enhancement techniques are predicated on the same models used for pricing and valuation. Use of collateral relies on the accuracy of valuations and risk models. It also relies on certainty of enforceable legal rights in respect of collateral and proper management of the cash and security lodged.

There are significant differences in the complexity of the models and the ability to verify and calibrate inputs. More complex products use sophisticated financial models based on mathematical and statistical methodology. There are frequently differences in choice, exact factorisation and even numerical implementation of the models. Some required inputs for the models are available from markets sources. The nature of the OTC market and the limited trading in certain instruments mean that key input parameters must frequently be implied from available data. Model variations and small differences in input can frequently result in large changes in values for some products. The models make numerous assumptions including the ability to borrow at market rates for unlimited amounts, unrestricted ability to enter into transactions and abundant trading liquidity.

If a CCP's risk model for evaluating performance risk is flawed because of incorrect methodology, assumptions or information, the problems that flow from this will be systemic in nature because the pricing of risk in a fundamental part of the market infrastructure is wrong. On the other hand, when multiple parties are evaluating each others' performance risks using different models or different information, errors will be less correlated.

The CPSS-IOSCO has noted that CCPs clearing OTC derivatives may need more complex models and methodologies to calculate risk exposure and margin requirements. Additionally it considered that the margin methodology should be reviewed periodically by a qualified, independent internal group or third party.

Liquidity

A core issue for derivative markets at present is potential liquidity risk which flows in large part from the desire to reduce counterparty risk through credit enhancement techniques, such as collateral management. Where derivative contracts are marked-to-market daily and any gain or loss covered by collateral to minimise performance risk, movements in market rates can trigger large cash requirements. In the event of a failure of a large dealer in the OTC market, the traders who need to make variation margin payments are likely to sell assets. This could create a positive feedback mechanism with serious negative effects, by accelerating and exaggerating asset price declines, thereby necessitating additional margin payments.

These requirements may be unanticipated. If there is a failure to meet a margin call then the position must be closed out and the collateral applied against the loss. This may leave the parties unhedged against underlying risks or on offsetting positions creating the risk of additional losses.

CCPs may also be exposed to liquidity risk if participants do not meet margin calls in a timely fashion. Although no member may formally be declared in default, a failure to pay margin calls promptly would leave a CCP with liabilities to participants who hold the opposite positions and whose margin accounts must be credited. If the CCP has insufficient liquidity to meet these demands, it may have to delay making repayments.

One important but as yet unresolved question is whether CCPs should have access to central bank credit facilities and, if so, in what circumstances. Keeping a CCP liquid in the face of the failure of one or more participants requires that liquidity be available to it from somewhere. Central banks are the most likely source of such liquidity. Accordingly, a systemically important CCP would need to have intraday/overnight access to central bank money in the currency it operates in to be in a position to rapidly and securely obtain the necessary liquidity for it to limit systemic risk. Currently, this is generally not the case in many jurisdictions.

Default Process

Most CCPs would use an auction-like process to sell off a defaulting dealer's portfolio in an organised way, but dealers have concerns about what would happen if the auction failed to shift the entire portfolio, particularly if there is no liquidity in the market. In the case of a failed or partially completed auction, some CCPs would use a process known as 'forced allocation', which would see remaining clearing participants mandated to take on a portion of the remnants of the portfolio. The potential to incur unknown losses has emerged as a possible stumbling block for dealers trying to move to central clearing.

The next layer of protection after collateral is for a CCP to have access to additional default resources, which may be used if margin proves insufficient to meet losses. Many CCPs maintain a mutual guarantee or default fund, to which participants make an initial contribution when joining the CCP. Insurance policies may provide further cover, and some CCPs have the power to assess participants for funds if other default resources prove insufficient.

If the money required to hit the bid for a portfolio is not there, and the guarantee fund is inadequate, the losses effectively get pushed back to the clearing participants rather than the CCP. That can be a problem because the level of losses that might be incurred is unknown.

Adoption of central clearing tends to redistribute the burden of default losses from end users who are not CCP participants to financial intermediaries who are participants in the CCP. The result is that central clearing tends to increase the default losses borne by systemically important financial institutions.

Multiple CCPs and Interoperability

It is more efficient to have a single CCP that jointly clears various classes of derivative than to have separate CCPs that clear the respective classes. Adding a CCP for a class of derivatives such as credit default swaps reduces netting efficiency, leading to an increase in average exposure to counterparty default. Clearing two or more different classes of derivatives in separate CCPs increases counterparty exposures relative to clearing the combined set of derivatives in a single CCP (Duffie & Zhu 2010).

Links between CCPs could provide the basis for a systemic crisis because of contagion risk. The weakest link in the chain could bring others down if it were involved in a default and was insufficiently capitalised to meet margin calls. Even if covered by collateral, inter-CCP exposures could give rise to liquidity risk, if a CCP cannot find the necessary liquidity to cover the collateral call.

In the foreseeable future, there is little likelihood of a single derivatives CCP clearing across assets classes. Attempts to link together CCPs in the European Union have proved highly complex in the case of cash equities, and interoperability for derivatives is a much greater challenge. However, there are no internationally agreed standards for inter-CCP risk management. A number of issues remain unresolved which prevent access and interoperability between CCPs. This means that interoperability of CCPs is a major issue for consideration and resolution. At a minimum standards forthcoming regulation requiring centralised clearing in the US, European and Asian should ensure CCPs adhere to the same standards wherever they are located.

Conclusions

Globally authorities assume that centralised clearing reduces systemic risk by making the CCP, rather than one dealer, the counterparty to each transaction. Making clearinghouse participants stand behind each cleared trade is the core justification for requiring OTC trades to be conducted through a clearinghouse. But since the CCP is counterparty to each cleared transaction, the failure of the CCP would itself pose a systemic risk; such risk will increase with the volume of trades the CCP clears. CCPs significantly reduce total potential insolvency losses by increasing netting; requiring the segregation of accounts; having

standardised two way margin programs; establishing capital requirements for the clearinghouse and its participants; managing transfers of collateral; and generally increasing transparency, which is an important public good. All of these improvements reduce externalities and, taken as a whole, may be quite important to reducing systemic risk.

CCPs are being promoted as a cornerstone of financial market infrastructure for OTC derivatives on the policy assumption that they will reduce systemic risk. As with a number of other developments in market regulation this assumption is more a matter of faith than demonstrated fact. Market participants are likely to adjust their behaviour in response to the new regulatory environment and newly available CCP infrastructure, which means that there is no reliable information on which to estimate the equilibrium effects of the move to centralised clearing. Centralised clearing is likely to have significant behavioural effects on the allocation of risk, the total amount of risk in the system, and the incentives of firms and individuals to take on, manage, and monitor risk. The cumulative effect of the changes is difficult to predict because the complex nature of the interactions within the financial system.

The move to centralised clearing in order to reduce systemic risk by mutualising the losses that would result from the insolvency of individual derivatives dealers or other market participants will be of benefit only if it is greater than the increase in systemic risk posed by the prospect of a CCP becoming insolvent. Authorities need to pay close to this issue as they reform the OTC derivatives market.

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