

CENTRAL COUNTERPARTIES

With perceived settlement risks in markets for over-the-counter (OTC) derivatives seen as a key contributor to the global financial crisis, revisions to the regulatory framework are being widely examined, including a requirement for these contracts to be cleared through a central counterparty. This paper examines the risks being managed through central clearing, the proposed benefits of 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 these transactions.¹



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Following the 2008 financial crisis, regulatory authorities around the world have sought 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 underlying proposition 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 forcing derivatives through CCPs could intensify risk in the system, because it does not remove risk but centralises and concentrates it into a central counterparty which is systemically critical to the well-being of the system.

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 for 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, but it manages and redistributes it by establishing rules as to who bears losses arising from a participant default. For market participants, the credit risk of the CCP is substituted for that 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).

An earlier version of this paper was presented to the 15th Melbourne Money and Finance Conference: 'Assessing the Impact of Changes in Financial Regulation'. The conference was held in June 2010 by the Melbourne Centre for Financial Studies, now the Australian Centre for Financial Studies.

Policy reform

A working group led by the Committee on Payment and Settlement Systems and the International Organization of Securities Commissions (CPSS-IOSCO) was established in June 2009 to review the application of the 2004 CPSS-IOSCO risk management recommendations for central counterparties and to reflect on the future clearing of OTC derivatives. Proposals are being developed to address five issues: 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 related changes to the Basel II framework. Proposed rules such as zero risk weighting for collateral and mark-to-market exposures to CCPs, which comply with enhanced criteria to be published by CPSS-IOSCO, would encourage banks to use CCPs for OTC derivatives contracts.

CCP risk management

CCPs use a combination of risk management tools to mitigate credit and market risk in order to ensure they can meet their 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 the form of margins to cover its current risk exposure. In the 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 to cover any losses from a participant's default.

CCPs generally have three lines of defence in risk management whose relative importance will depend on its business model.

> **Admission criteria:** The most fundamental risk management measure is a CCP's admission criteria for clearing participants. Admission criteria that set higher minimum financial standards of the firms with which a CCP will do business reduce the probability of exposure to a clearing participant insolvency.

> **Margining:** After admission, the most important tool 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:** Examples of additional defences to ensure viability if margin is insufficient to cover losses of a participant's default 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, beyond loss of their equity investment, 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.

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', monitor the positions of participants and may periodically require additional collateral (a 'variation margin') following market movements to re-establish an acceptable cushion against which to prevent a build-up of market losses. 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. It is common practice for CCPs to also monitor participants' positions intraday, and they 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.

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.

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 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.

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The CPSS-IOSCO has noted that CCPs clearing OTC derivatives may need more complex models and methodologies to calculate risk exposure and margin requirements. It also 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. 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, and margin accounts of participants with opposite positions 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 what, if any, access CCPs should have to central bank credit facilities to limit systemic risk arising from liquidity problems due to the failure of one or more participants. Currently, such facilities are generally not in existence in many jurisdictions.

Default process

Most CCPs would use an auction-like process to sell off a defaulting dealer's portfolio, but the auction may fail to shift the entire portfolio, particularly if there is no liquidity in the market. In this case, 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.

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.

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.

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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 could not 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. A number of issues remain unresolved which prevent access and interoperability between CCPs. At a minimum, standards in forthcoming regulation requiring centralised clearing in the United States, Europe and Asia should ensure CCPs adhere to the same standards wherever they are located.

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 attention to this issue as they reform the OTC derivatives market.

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 of the complex nature of the interactions within the financial system.

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Note

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

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