

Access, Competition and Risk in Centrally Cleared Markets

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- Central counterparties manage and mitigate counterparty credit risk in order to make markets more resilient and reduce systemic risk. Better management of counterparty risk can also open up markets to new participants, which in turn should reduce concentration and increase competition. These benefits are maximized when access to central counterparties is available to a wide range of market participants.
- In an over-the-counter market, there is an important trade-off between competition and risk. Concentrated, less competitive markets are more profitable and thus participants are less likely to default. But a central counterparty that provides sufficient access can improve this trade-off, since the gains from diversification—which will become greater as participation grows—can simultaneously reduce risk and increase competition.
- Regulators have developed, and central counterparties are implementing, new standards for fair, open and risk-based access criteria. Such standards will, among other things, counter any incentives that might exist for members of a central counterparty to limit access in order to protect their market share.

Greater use of central counterparties (CCPs) for over-the-counter (OTC) markets is a key element of the G-20 response to the financial crisis of 2007–09. A CCP mitigates and manages counterparty risk in a market by standing between the original counterparties and guaranteeing they will meet their obligations. During the crisis, CCPs played an important role in supporting the continued functioning of markets under stressful conditions.¹ Hence, in 2009, the leaders of the G-20 countries agreed that all standardized derivatives should be cleared through CCPs.² CCPs are also being introduced in other markets, such as the market for repurchase agreements.³ Greater use of central clearing could improve the safety and resilience of the financial system, help control systemic risk, and limit the problems caused by institutions considered “too big to fail” (Chande, Labelle and Tuer 2010). Central

¹ The Global Association of Central Counterparties (CCP12 2009) describes how CCPs supported the operation of cleared markets through the Lehman default, in contrast to the bilaterally cleared market for credit default swaps that largely froze up.

² Wilkins and Woodman (2010) discuss the role of CCPs in the international agenda to reform OTC derivatives markets.

³ Chatterjee, Embree and Youngman (2012) review the Canadian initiative to introduce a CCP in the market for repurchase agreements.

clearing may also open up markets to greater competition. In the wake of the crisis, international standard-setting bodies have put in place new principles for open access to CCPs.

This article describes how the introduction of a CCP can change the structure of a cleared market in two opposite ways. The ability of a CCP to effectively manage counterparty credit risk makes it easier for new entrants to participate in the market, leading to more-intense competition. But CCPs also need to have strong access rules in place to control risk. The article describes the model of Fontaine, Pérez Saiz and Slive (2012), which explains how the trade-off between risk and competition in OTC markets determines the optimal level of market access and how the introduction of a CCP can fundamentally change this trade-off. In the model, clearing members may have incentives to favour access and risk controls at a CCP that limit direct participation below the socially optimal level. Alternative ways to access clearing services—through indirect clearing arrangements and linked CCPs—may have similar challenges. These findings help to explain why the regulatory community has developed, and CCPs themselves have been implementing, principles to support more-open access to CCPs.

Improving Risk Control and Competition Through Central Clearing

The objective of a CCP is to centralize and manage counterparty credit risk by acting as the counterparty for every transaction cleared. The CCP establishes risk controls, including membership requirements and default-management procedures, which allow the CCP to honour its commitments in the event of the default of a member. The default-management framework includes risk sharing, or mutualization, among members: if a member defaults and the resources it has provided prove insufficient, other members may be required to absorb the cost of honouring the defaulting member's outstanding trades.

Central clearing has the potential to both reduce risk and improve competition in OTC markets. The risk reduction comes from several sources. First, risk sharing in the CCP provides benefits from diversification similar to those created by an insurance company (Koepl and Monnet 2010; Biais, Heider and Hoerova 2012). In addition, by centralizing the management of counterparty credit risk and simplifying a complex network of counterparty exposures, a CCP improves the transparency of the cleared market, which allows for more-effective management of counterparty risk (Acharya and Bisin 2010). A CCP can also reduce counterparty exposures and collateral requirements through multilateral netting: amounts owed to one counterparty can be offset by amounts due from another counterparty (Jackson and Manning 2007; Duffie and Zhu 2011). Overall, the ability of a CCP to effectively manage counterparty credit risk can lead to a reduction in systemic risk. By decreasing the risk of counterparty defaults and managing effectively those defaults when they do occur, a CCP lowers the probability that one default will lead to another and reduces the likelihood of market disruptions, thereby ultimately increasing the resilience of the financial system.

The improved management of counterparty credit risk at a CCP opens markets to greater participation, which can increase competition. In OTC markets that are cleared bilaterally, participants are directly exposed to the risk that their counterparties may default and therefore have an incentive to restrict trading to counterparties that are known to be creditworthy. When a

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CCP with strong risk controls takes on the management of credit risk, however, participants can feel more secure trading with others—even anonymously—since the CCP guarantees that the terms of the trade will be honoured.

The CCP’s ability to provide multilateral netting also reduces the incentive to trade with only a limited number of counterparties. With bilateral clearing, amounts owing can be offset by amounts that are due only when both transactions have the same counterparties. Netting is therefore maximized when transactions are concentrated among a small number of counterparties. Under multilateral netting, all trades cleared at a CCP will be offset, regardless of the counterparty.

Central clearing can therefore reduce the incentive to trade with only the largest dealers, thus opening the market to more participants. For example, one of the earliest CCPs cleared trades in the cotton market at Le Havre, France, in the late nineteenth century. It proved so successful in increasing participation and trading that commodity markets across Europe had little choice but to introduce their own CCPs or lose market share (Norman 2011).

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Strong but Appropriate Access and Risk Controls

To fully realize the benefits of reduced risk and improved competition in the market, CCPs themselves must be robust. A strong CCP is particularly important since, in taking on the management of counterparty credit risk, a CCP reduces the incentive for market participants to monitor their own counterparties and to enforce the same level of market discipline as they would in a bilateral market (Koepl 2012).⁴ CCPs must therefore have strict procedures for managing credit, liquidity, settlement and operational risks.

CCPs also require access controls to help ensure that only institutions that have the ability to manage risks in the clearing system become clearing members. The CCP must be able to replace the portfolio of a defaulted member in order to honour its commitments to the defaulted member’s counterparties. Since defaults are rare, a CCP does not typically maintain the technical capacity to directly enter the market to close out positions (though it must hold the financial resources to do so). To reduce the financial stress caused by a default, the CCP counts on the surviving members to provide the technical support to execute the necessary transactions, as well as the financial resources to carry out its default-management responsibilities. A CCP’s access controls should ensure that participants are able to assist in managing the default of a member. Thus, direct participation is appropriately limited to members with adequate financial and technical resources.⁵

If access controls are too strict, however, they may limit participation, which, in addition to potentially reducing competition, may work against the objective of controlling risk by increasing concentration. If direct access to a CCP was limited to the largest dealers, their systemic importance would increase, potentially exacerbating the “too-big-to-fail” problem and preventing the CCP from providing the full benefits of diversification. Limited access could also make mid-tier institutions more vulnerable in times of stress and slow the transition to central clearing (Slive, Wilkins and Witmer 2011).

⁴ Members will have incentives to protect the safety of the CCP because of their role in mutualizing risk.

⁵ The requirement to assist with a default does not necessarily exclude smaller institutions from CCP membership. Small members may be able to contribute to the default-management process in proportion to their size if they are given the appropriate incentives (Duffie 2010). As well, some regulators require that CCPs allow members to outsource the technical obligations to assist in default management (Commodity Futures Trading Commission rule 17 CFR 39.16(c)(2)(iii)).

Indirect clearing—where market participants obtain clearing services as clients of clearing members—is an alternative but, as will be discussed, it does not necessarily eliminate all of these concerns.

Regulators have recognized the importance of having robust CCPs with rules that promote open access to clearing while maintaining strong risk controls. The Financial Stability Board identified fair and open access to CCPs as one of four safeguards needed to establish a safe environment for clearing OTC derivatives (FSB 2012).⁶ The Committee on the Global Financial System identified the need for broad access to CCPs (CGFS 2011), while the Committee on Payment and Settlement Systems and the Technical Committee of the International Organization of Securities Commissions made fair, open and risk-based access to CCPs one of their new Principles for Financial Market Infrastructures (CPSS-IOSCO 2012). The model discussed in the next section helps to explain further why regulators have focused on the issue of access.

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Clearing Rules and Incentives for Market Participants

Although final approval of rules always rests with regulators, large global dealers have historically influenced the rules at CCPs that clear OTC derivatives. CCP participants have a legitimate interest in ensuring that a CCP's rules and controls—including, for example, membership requirements, margin requirements, indirect clearing arrangements and the nature of any links among CCPs—do not place undue risk on those who share risk at the CCP and do not undermine the robustness of the CCP itself. Participants therefore should have an influence over CCP rules, either through their ownership of the CCP or through their participation in a risk committee that determines the rules. But if these rules lead to an excessive concentration of risk among a small number of clearing members, they may actually increase the risks to the CCP and to the market.

Because market participants could influence CCP rules, it is important to understand the incentives of participants. Fontaine, Pérez Saiz and Slive (2012) examine these incentives and their relationship to risk and competition at a CCP (**Box 1**). Their model analyzes two groups of market participants: hedgers (for example, non-financial corporations, pension funds or investment managers) and dealers, who can reduce some of the risk in a hedger's portfolio through trading. Dealers also face shocks that may cause them to default, leaving hedgers exposed to the initial risks.

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If there is no CCP in a market, then increasing the number of dealers has both advantages and disadvantages for hedgers. More dealers will mean greater competition, decreasing the price that hedgers will pay. But the more-intense competition also decreases the revenue of dealers, leaving them with a smaller buffer to withstand financial shocks and raising the probability of their default, all else being equal. Together, these effects create a trade-off between competition and risk much like the one found in a number of studies of bank regulation (Vives 2010). It is good to have enough dealers to encourage competition, but not so many dealers that they do not have sufficient revenue to survive an external shock to their businesses.

⁶ The other three safeguards for CCPs are co-operative oversight arrangements, recovery and resolution regimes, and appropriate liquidity arrangements in the currencies they clear.

Box 1

A Model of an Over-the-Counter Market with a Central Counterparty

In the model constructed by Fontaine, Pérez Saiz and Slive (2012), hedgers reduce the risk to their assets by trading with dealers who offer a swap contract that exchanges the hedger's uncertain payment for a certain payment. The dealers can transfer the risk to other markets or investors. But the risk from the swap contract cannot be entirely passed on, and dealers retain a residual risk to their cash flows. Depending on whether the size of the shock from the swap exceeds their revenues, dealers may default, leaving hedgers unprotected, since dealers have limited liability and do not fully internalize the consequences of their default. However, hedgers understand that dealers may default, and this possibility is reflected in the price they are prepared to pay to enter a swap contract. (Under the swap contract, hedgers cannot default.)

Dealers have market power because they are differentiated (as in Salop (1979)): each dealer offers a menu of services that is aligned with the needs of only some hedgers. For example, dealers may offer swaps to hedgers who are clients of their commercial loans or prime brokerage businesses. A rise in the number and diversity of dealers in the market increases competition, reduces the price that hedgers pay to dealers and also decreases the revenue of each individual dealer. Among a small number of dealers, each is a local monopoly with respect to their most-aligned clients. Once enough dealers are in place to remove the local monopoly, the result already noted holds. The discussion, however, focuses on markets without local monopolies.

Fontaine, Pérez Saiz and Slive (2012) introduce central clearing to this type of market. A central counterparty (CCP) will improve efficiency by diversifying the risk of default of an individual dealer, as in Koepl and Monnet (2010). In the Fontaine, Pérez Saiz and Slive model, the CCP establishes two rules: (i) an access rule that limits the number of dealers that can clear through the CCP, and (ii) a dealer risk limit that controls the probability that dealers will default by limiting the trades each dealer can take on. These are a reduced form of a more realistic set of CCP rules, which typically impose resource and performance requirements, in addition to other fixed costs, on members and margin requirements on trades.

Dealers can offer a swap contract only if they are members of the CCP. Hedgers are not members but can be thought of as indirect participants clearing through dealers (see the section "Alternative Pathways to Clearing in Over-the-Counter Markets" on page 20).

Fontaine, Pérez Saiz and Slive (2012) show that, when a CCP is introduced into a market, the classic trade-off between competition and risk may be fundamentally altered. In their model, trades are cleared through a CCP that implements access rules and places risk limits on participants. Under central clearing, increasing the number of dealers still lowers prices but the effect on the risk is less pronounced. The CCP helps to diversify default risk. It therefore creates a new trade-off between the greater default risk arising

Box 2

Regulatory Requirements for Fair and Open Access

At the request of national regulators, central counterparties (CCPs) had begun to implement open, risk-based access requirements even before the new Principles for Financial

Market Infrastructures (CPSS-IOSCO 2012) took effect. An example from an interest rate swap CCP—LCH.Clearnet’s SwapClear—is provided in **Table 2-A**.

Table 2-A: Changes to the membership requirements of LCH.Clearnet’s SwapClear (2012)

	Former requirements	New requirements
Minimum capital	US\$5 billion	US\$50 million (scaled to the amount of risk assumed)
Minimum book size	US\$1 trillion	None
Credit rating	“A” or equivalent from Moody’s, Standard & Poor’s, or Fitch Ratings	CCP assesses members based on a number of criteria, including credit ratings, financial ratios, market-implied ratings (e.g., from credit default swaps), support of parent companies and operational capabilities.
Performance	Members must prove their operational capacity to assist in the orderly unwinding of a defaulting member’s portfolio through a default-management “fire drill.”	Members must prove their operational capabilities in the event of a default and their ability to provide the CCP with live, executable prices in currencies they clear, through “fire drills”; however, they can outsource these responsibilities to a third party, subject to the CCP’s approval.

from the lower revenue earned by each dealer and more diversification inside the CCP from the growth in membership. Hedgers prefer more-open access in a CCP compared with the non-centrally cleared market.⁷

The preferences of dealers in the model do not reflect the competition-risk trade-off. Since dealers have limited liability, they do not internalize the costs of default and therefore will always favour low participation in order to increase prices and profits. A CCP tilts hedgers’ preferences toward more open access, but does not affect the incentives of dealers. If dealers can influence the rules of a CCP, they will favour access rules that are stricter than those favoured by hedgers. This creates an important role for regulators to ensure that access rules reflect both sides of the competition-risk trade-off.⁸

◀ *If dealers can influence the rules of a central counterparty, they will favour access rules that are stricter than those favoured by hedgers*

Even if open access is required (Box 2), the model predicts that dealers will have incentives to influence other rules of the CCP to limit competition. By implementing strict risk controls (for example, position limits or margin requirements), a CCP can reduce the effect of competition on prices, thereby lowering the supply of swap contracts in the market and increasing profits for dealers. The model predicts that risk limits can act as a coordination device, allowing dealers to enforce a lower level of competition. When reviewing the appropriateness of CCP rules, regulators should therefore consider how a stricter rule (for example, access criteria) could influence incentives for setting other rules (for example, per-member risk controls).⁹

⁷ Other CCP rules and actions that are not directly modelled here (such as performance or technical requirements) also limit the effect of competition on default and tilt the hedgers’ preferences toward greater access.

⁸ The model does not fully incorporate other risk-management benefits of a CCP, including enhanced transparency and multilateral netting, nor does it take into account external changes affecting systemic risk. On one hand, for example, open access might result in increased defaults, which could have harmful effects on uncleared markets where the defaulter participates. On the other hand, open access could reduce the prominence of systemically important financial institutions, which might help to reduce the systemic-risk externalities resulting from defaults.

⁹ Pirrong (2000) makes a similar point in the context of stock exchanges: regulating a market can be particularly challenging when competitive forces interact with complex governance structures.

Alternative Pathways to Clearing in Over-the-Counter Markets

Investors can access clearing services without being direct members of CCPs. Alternatives include tiered access to clearing and the presence of multiple—possibly linked—CCPs clearing the same market. But competition in the cleared market may affect these alternative pathways as well, and their existence does not eliminate the need to consider market structure and concentration when setting CCP rules.

Indirect clearing

Indirect clearing offers an alternative means of accessing central clearing for those who do not qualify for direct membership or do not wish to be members. In some CCPs, an investor can clear indirectly as the client of a direct clearing member. With this kind of tiering, a CCP can rely on its direct clearing members to control the risk of their indirect clearing clients, which can be an efficient way to manage risk. But it may result in risk being concentrated in a small number of direct clearers, making it more difficult for the CCP to manage the failure of its largest members (Galbiati and Soramäki 2012).¹⁰

Indirect clearing arrangements, by themselves, are unlikely to eliminate the competition effects illustrated in the model of Fontaine, Pérez Saiz and Slive (2012). The suppliers of indirect clearing services are the direct clearers, suggesting that limited access to direct clearing could, without appropriate regulatory intervention, give rise to market power over indirect clearing services. In addition, indirect clearing could be more expensive than direct clearing and it could raise risk-management challenges (Slive, Wilkins and Witmer 2011).

Multiple central counterparties and links among them

Clearing a single market or product through several CCPs could reduce the ability of the members of one CCP to influence competition, as described by Fontaine, Pérez Saiz and Slive (2012). Competition among CCPs might lead to a lower concentration of risk and less influence for individual CCP members. For example, if a group of smaller dealers were excluded from a CCP, they could set up their own, separate CCP. But dividing clearing among several CCPs introduces the possibility of substantial costs and risks: CCPs might lower risk controls in order to compete for market share, and increasing the number of CCPs reduces the efficacy of multilateral netting, since exposures cleared at one CCP typically cannot be offset by exposures at a different CCP. Clearing at multiple CCPs therefore increases risk exposures as well as the cost of collateralizing these exposures across the financial system as a whole. Like other market infrastructures, CCPs are also subject to economies of scale that encourage participants to concentrate clearing in a single location.

Links among CCPs could make multiple CCPs more efficient, but they could also result in cross-border and other legal and regulatory problems that may be difficult for both CCPs and regulators to resolve. Links could allow two market participants that belong to different CCPs to clear trades between the CCPs, or multiple CCPs to net the exposures of their common members (Mägerle and Nellen 2011). In either situation, multilateral netting could be enhanced, thereby reducing the costs of clearing. Such links,

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◀ *Clearing at multiple central counterparties increases risk exposures as well as the cost of collateralizing these exposures across the financial system as a whole*

¹⁰ A CCP can attempt to transfer the clients of a failed clearing member to another clearing member, but this too will be more challenging if indirect clearing services are concentrated in a few large direct clearers, since there could be more clients to transfer and fewer surviving members to accept them.

however, create risk exposures among CCPs that may be difficult to manage; regulators must be assured of adequate management of these exposures before agreeing to the link. In addition, if dealers have the incentives to restrict competition that were modelled in Fontaine, Pérez Saiz and Slive (2012), these incentives would discourage them from agreeing to links that could create more competition. The European Commission has addressed this issue in relation to cash equity markets by putting in place requirements that CCPs accept linking arrangements. But these requirements are less feasible for CCPs that clear less-liquid markets such as OTC derivatives. In these markets, two linked CCPs would need extensive coordination to deal with defaults. Such coordination might be difficult to maintain when the link is based on a legal obligation rather than the incentives of participants.

Conclusion

CCPs can improve the management of risk and increase competition in OTC markets. In the model constructed by Fontaine, Pérez Saiz and Slive (2012), the incentives of dealers place pressure on CCPs to adopt overly restrictive rules that do not maximize safety and efficiency. Moreover, open-access rules alone may not be sufficient to correct this problem, since other controls such as margin requirements or position limits may also unduly limit competition.

The model helps to explain why regulators have created international standards, including the Principles for Financial Market Infrastructures (CPSS-IOSCO 2012), that recognize the importance of market structure and access issues in the creation of robust rules for CCPs. Recognizing the potential importance of competition when determining CCP rules is necessary, not only because of the direct benefits of efficient markets, but also because a less-concentrated market may be more effective in controlling systemic risk.

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