

Central clearing: Risks and customer protections

Ivana Ruffini

Introduction and summary

Central clearing shifts risk, sometimes reduces it, but does not eliminate it. In the wake of the 2008 global financial crisis, the Group of Twenty (G-20) developed a regulatory reform program for derivatives contracts, with a stated goal of reducing systemic risk by requiring a market structure shift from a bilateral framework to a centrally cleared framework for standardized over-the-counter (OTC) derivatives (Group of Twenty, 2009).

OTC bilateral transactions are usually collateralized directly between the counterparties, while central clearing generally involves the use of one or more intermediaries in the clearing and settlement process.¹ Under a bilateral framework, the exposures that participants face can be dispersed across a large number of counterparties, while under the centrally cleared framework these risks are shifted to and concentrated in central counterparties (CCPs) and financial intermediaries, such as clearing members (CMs) and futures commission merchants (FCMs).²

In the United States, since 1936 the segregation of customer funds from intermediaries' house funds has been the key mechanism for customer protections in intermediated derivatives markets. After the 2008 financial crisis, as part of the overhaul of the financial regulatory system, regulators enacted rules aimed at improving systemwide management of counterparty risk. As a result, new customer protection frameworks and requirements for central clearing of standardized swaps were implemented. Although the lack of harmonization of these new rules between different jurisdictions may introduce additional complexities, the primary focus of this article is on the centrally cleared markets that fall under the regulatory authority of the U.S. Commodity Futures Trading Commission (CFTC).

This article examines the impact of the market structure change and associated customer protection

frameworks on risks faced by market participants, with a focus on the liquidity and credit risks that could arise in the aftermath of a potential FCM failure.

The article is organized into four sections. First, I provide a brief overview of central counterparty clearing. Second, I describe the salient characteristics of intermediation in centrally cleared markets. Third, I define the key risks associated with the failure of a clearing member and provide examples to illustrate the variability of exposures. Finally, I discuss customer protection frameworks that are used to mitigate the impact of the identified exposures.

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ISSN 0164-0682

Literature

This article investigates risks and common practices associated with intermediation in derivatives markets and the impact of customer protection frameworks. Such an investigation requires a multi-disciplinary approach.

Therefore, I connect such source documents as the MF Global bankruptcy trustee reports, the Bank of England report on the Barings Bank collapse, academic testimonies on customer protection frameworks to the U.S. House (of Representatives) Committee on Agriculture, with academic studies in fields of law, finance, and economics (see, for example, Culp, 2010; Duffie and Skeel, 2012; and Spulber, 1999). Additionally, the article draws on general terminology and concepts used by policymakers and regulators, such as the Basel Committee on Banking Supervision, the Futures Industry Association (FIA), the International Capital Market Association, and the U.S. Commodity Futures Trading Commission (CFTC).

A research literature that combines economics with policy also provides valuable insights into the risks in derivatives markets (see, for example, Duffie and Zhu, 2011; Brunnermeier and Pedersen, 2009; Cecchetti and Disyatat, 2010; Heckinger, Marshall, and Steigerwald, 2009; and Marthinsen, 2008). I supplement the academic and policy literature with information found in source documents, such as the final rules and comment letters published in the *Federal Register* (U.S. Government Publishing Office, available at <https://www.gpo.gov/fdsys/>).

Central counterparty clearing

Central counterparty clearing refers to the post-trade process of counterparty substitution, whereby a single counterparty (clearinghouse) replaces the original counterparties in all centrally cleared contracts and the clearinghouse becomes the sole counterparty to all CMs.³ This counterparty substitution results in an exchange of the credit risk exposure of the “original counterparties for the credit risk of the CCP” (Culp, 2010, p. 10).

Central counterparty arrangements for exchange-traded contracts evolved organically “when gains from the intermediated exchange exceed[ed] the gains from the direct exchange” (Spulber, 1999, p. xiii). Originally, CCPs were established by the CMs to facilitate clearing and settlements of trades and until fairly recently, CCPs were owned by their CMs. This mutualization required all CMs to comply with risk controls to limit the extent to which the trading activities of any individual CM could expose other CMs to potential losses. CCPs restricted membership in the

clearinghouse to those institutions that could comply with strict membership and risk-management criteria. Over the years, many CCPs have demutualized and become part of publicly traded companies. CCPs continue to enforce strict membership and risk-management standards and require CMs to contribute to the CCP guarantee fund (Murphy, 2013, p. 214).

In this section, I explain how central clearing arrangements benefit CMs and end-users through multi-lateral netting, collateralization of positions, transparent pricing, and default management. Nevertheless, these benefits can be costly and some contend that “the fact that not all OTC derivatives have flooded into a CCP is a strong indication that there are both costs and benefits associated with central clearing” (Culp, 2010, p. 15).

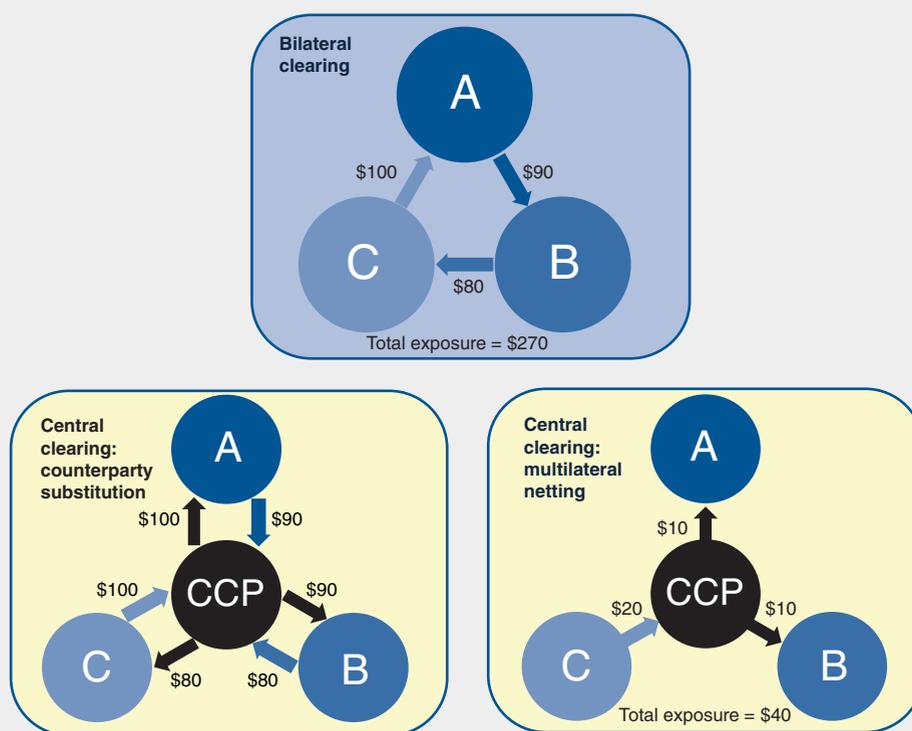
Multilateral netting allows for the aggregate offset of positions and the termination of economically redundant obligations. Multilateral netting offsets obligations between multiple parties as opposed to bilateral netting, which offsets obligations between only two counterparties. A shift in counterparty exposures to a centralized structure allows for this multi-lateral netting of obligations, often resulting in a reduction of counterparty credit risk and the liquidity risk borne by CMs. Figure 1 illustrates the mechanism of counterparty substitution and the impact of multilateral netting.

The change in the exposure between bilaterally and centrally cleared trades can be significant. Figure 1 shows that the exposure of \$270 is reduced to \$40 as a result of multilateral netting. In this example, the multilateral netting reduces counterparty credit and liquidity risk exposures by replacing the bilateral obligations between counterparties with a new obligation between each clearing member and the CCP. However, multilateral netting may not always be more efficient than bilateral netting. On a global scale, central clearing is fragmented across legal jurisdictions and as a result of such fragmentation, multilateral netting can sometimes actually increase the expected exposures compared with bilateral netting arrangements. For example, Duffie and Zhu present a case involving credit default swaps (CDS), in which “clearing the U.S. and European CDS separately increases expected exposures by 9% relative to bilateral netting” (Duffie and Zhu, 2011, p. 87).

Collateralization of positions refers to the practice of posting collateral to the counterparty in a derivatives transaction to ensure compliance with the counterparty margin requirements. Margining of positions collateralizes the risk exposure of the CCP to CMs and of CMs to market participants. However,

FIGURE 1

Counterparty substitution and multilateral netting example



Source: Federal Reserve Bank of Chicago.

those who post margin may face liquidity and credit risk exposure, as I discuss in more detail later.

There are different types of margin requirements—some can be satisfied with securities and others only with cash. For example, in centrally cleared markets, market participants must deposit collateral (initial margin) with the FCM to open a margin account and participate in the marketplace. FCMs keep their own funds in a “house” account and are required to keep customer margin in the customer segregated account. Also, they are required to extend the segregation framework to the CCP in the way they transfer customer margin assets with the CCP.

CCPs set minimum initial margin requirements. CMs guarantee their clients’ positions to the CCP and may require their clients to post more collateral than the CCP requires. Initial margin is required for all open derivatives positions and reflects the margin period of risk, the CCP’s best estimate of the number of days that it would likely take the CCP to liquidate or auction a portfolio of positions. Variation margin is the periodic mark to market of positions that effectively restores margin to its original level. In this way, a CCP can

operate prudently with initial margin levels that only reflect a reasonable margin period of risk. Variation margin is always paid with cash.

Transparent valuation of margined assets and positions is a feature of centralized clearing that limits “disputes about collateral valuation” (Culp, 2010, p. 16) and thus reduces the likelihood of procyclical liquidity shocks, such as those observed during the 2008 global crisis in OTC CDS markets. Compared with the bilateral arrangements in which collateral requirements and valuations can vary from counterparty to counterparty, CCPs have a common approach to collateralization and valuation that is consistent across all CMs. The CCP rulebooks are public documents that specify rules of conduct and consequences that follow certain actions or changes in exposures. Furthermore, CCPs also communicate methodologies for the calculation of margin requirements and settlement obligations with their CMs. Additionally, the consistency with which CCPs apply the rules across all CMs further eliminates uncertainty about the value of collateral pledged to support cleared positions, facilitating CM management of liquidity risk exposure.

Default management, loss allocation, and default waterfall are specified in the CCP rulebooks and facilitate orderly management of CM defaults. CCPs set aside some of their own capital to cover a portion of a loss incurred by the CCP as the result of a CM default. CCPs also collect guarantee fund contributions from each CM to fund their mutualized guarantee pool, generally commensurate to the risk that individual CMs pose to the CCP. Regulatory requirements set the minimum standards for determination of the guarantee fund size.⁴ The CCP is responsible for the variation margin obligations of the defaulter's positions until those positions have been liquidated or assumed by a solvent CM. Any potential financial loss associated with doing so would initially be covered by liquidation of the defaulter's margin deposits and the defaulter's contribution to the CCP's guarantee fund. If the losses were to exceed the value of the defaulter's assets at the CCP, the remaining loss would be absorbed by a combination of the CCP's capital and guarantee fund, which includes the contributions of the nondefaulting CMs.

While the surviving CMs may have an indirect exposure to a failed CM, any customer margin assets of the surviving CMs are not involved in the default process and thus are protected from such indirect exposures. However, the customer assets and positions of the defaulted CM are not protected, as the CCP stands only as counterparty to the CM (the financial intermediary). A CM's client assets are not exposed to this default risk unless the default occurs in the customer origin. CCPs only guarantee the performance of CMs to the other CMs.

Financial intermediation

Financial intermediaries are an integral part of the clearing structure. Intermediation helps CCPs manage their counterparty risk exposure by limiting direct access to the clearinghouse to its members. Membership criteria are demanding, and many market participants don't qualify to become CMs. For that reason, many CMs serve as financial intermediaries to market participants.

All CMs must contribute to the CCP guarantee fund and comply with various regulatory, capital, risk-management, and operational requirements. Additionally, CMs must agree to guarantee and assume responsibility for all trades that they submit for clearing (CME Group, 2015). It is important to highlight that counterparties to a centrally cleared transaction are only a CCP and a CM—market participants that are not CMs have no direct claim upon the CCP. In other words, a CCP only guarantees that it will honor its contractual obligations to its CMs.

In the U.S. derivatives and futures markets, trade intermediaries that handle customer assets must be registered with the CFTC as futures commission merchants (FCMs). They may serve as brokers, custodians, and guarantors for their clients' transactions.⁵ FCMs do not have to be clearing members; and when they are not, they require another layer of intermediation—FCM (D) in figure 2 is an example of an FCM that is not a clearing member. FCMs hold customer assets and margin collateral in commingled customer segregated omnibus⁶ accounts as depicted in figure 2. CFTC rules permit operational commingling of customer assets through an omnibus account structure. In general, CFTC rules prohibit the use of the margin assets of one client to offset a potential margin deficiency (or any obligation) of another client in a customer segregated account. Still, the intermediation and pooling of all customer assets/collateral in one account can expose the non-defaulting customers to potential losses in the event that fellow customers and the FCM fail and the aggregate customer margin assets fall short of the total claims of customers on the failed FCM's pool of customer segregated assets (Culp, 2013).

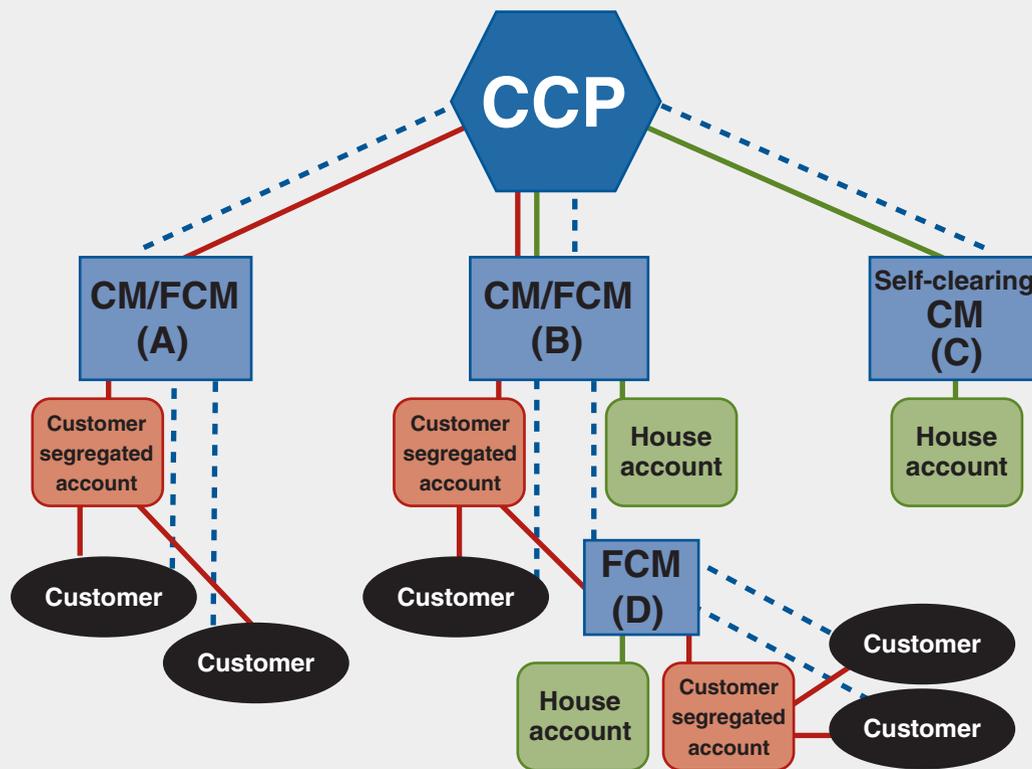
FCMs that clear trades for themselves and their customers have a house account for their own trades and a customer segregated account for their customers. The blue dotted line in figure 2 represents the flow of transactions submitted for central clearing, while the red and green lines represent customer and house payment flows, respectively.

FCMs routinely extend intraday credit to their clients, because FCMs are typically required to complete settlements with the CCP before they settle with their individual clients. Most customer accounts are not prefunded. FCMs transfer house funds to supplement any potential shortages in their customer segregated accounts. This practice is encouraged by the regulators (Futures Industry Association, 2013). Once the required customer margin payments are received (and any deficiencies covered), the FCM returns their funds to their house account. FCMs often simply maintain a surplus of house funds in their customer segregated funds accounts for ease of operation, known as their residual interest.

The centrally cleared market structure does not eliminate counterparty risk. The market structure change does not just concentrate the counterparty risk in the CCP, but it also introduces new counterparty risk exposures. The FCM intermediaries introduce some new exposures to both fellow customers and the FCM itself. Quantifying such exposures is complicated and somewhat obscured by the different levels of intermediation inherent in the centrally cleared market structure.

FIGURE 2

Simplified centrally cleared market structure



Source: Federal Reserve Bank of Chicago.

Customer risks

CMs guarantee all matched trades that are submitted for clearing and act as a secured custodian over client margin assets to ensure financial performance of their customers in the aggregate. When a financial intermediary (FCM) fails, the customers are exposed to liquidity and credit risk. Customers may incur losses due to a delay in immediate availability of funds/assets or a direct loss of money/assets.

Liquidity risk

Liquidity is the ability to fund, satisfy commitments in a timely manner, and transact in financial markets without suffering severe losses (BIS, 2004). In general, uncertainty about the financial health of counterparties has a negative effect on their liquidity (Afonso, Kovner, and Schoar, 2010; Heider, Hoerova, and Holthausen, 2009; Freixas and Jorge, 2008; and Flannery, 1996). Liquidity risk can propagate and magnify market and counterparty credit risks, thereby spreading liquidity shocks throughout the financial system. Most central banks serve as “lenders of last resort” in order to curb this propagation of liquidity

shortages and foster financial stability (Cecchetti and Disyatat, 2010). There are many different types of liquidity, but two that best capture customer exposure to liquidity risks inherent in intermediated derivatives markets are market liquidity and funding liquidity.

Market liquidity refers to the market’s capacity for trading large quantities of assets without an uncharacteristic price impact or “the ease with which an asset can be converted into means of payment” (Cecchetti and Disyatat, 2010, p. 30). The 2008 financial crisis is a perfect example of the impact of market illiquidity. At times during the crisis, there was no market at all for certain assets such as mortgage-backed securities (MBS). This lack of a market at any price led to uncertainty. Market participants that held MBS experienced distress as it became increasingly difficult to accurately revalue their MBS holdings without a functioning secondary market.

It is important to realize that in centrally cleared markets, a decline in the market liquidity of a particular asset class can precipitate a decline in the post-haircut value of margin collateral for market participants that have pledged such assets. The FCM

intermediaries would likely request additional collateral from affected clients to provide the additional margin as required by the CCP.

Another type of liquidity risk exposure that is magnified in centrally cleared markets is the lack of funding liquidity. Funding liquidity refers to the existence of abundant and diverse sources of cash for market participants. One example of funding liquidity is “just-in-time” liquidity, which represents the ability of market participants to make payments that specify location, currency, and “a precise time frame measured not in days, but in hours or even minutes” (Heckinger, Marshall, and Steigerwald, 2009). Trading in futures and cleared swaps markets involves the use of funds necessary to satisfy margin requirements (Brunnermeier and Pedersen, 2009). Margin collateral is valued multiple times during the day, and any shortage is required to be funded as part of the next clearing cycle.

Market and funding liquidity exposures are not mutually exclusive. Changes in market liquidity can negatively impact the value of margin collateral and put pressure on financial intermediaries to provide funding. This, in turn, can negatively impact funding liquidity and result in broader uncertainty in the marketplace. Uncertainty can cause a disruption in just-in-time liquidity, as market participants take extra time to evaluate their contractual obligations, leading to a systemic shortage of liquidity:

A systemic shortage of both funding and market liquidity ... is potentially the most destructive. It involves tensions emanating from an evaporation of confidence and from coordination failures among market participants that lead to a breakdown of key financial markets. (Cecchetti and Disyatat, 2010, p. 31)

In centrally cleared markets, the customers of a failed FCM face uncertainty with respect to their ability to transfer trades and margin to another (solvent) FCM. Also, customers of failed FCMs may face direct losses due to a shortage in the value of the aggregate pool of customer segregated assets.

FCMs are also permitted to invest customer funds. If such investments suffered a decline in value, and if at the same time the FCM failed, it is conceivable that customers could incur a loss. Furthermore, in times of liquidity stress, if an FCM fails, the customers’ margin assets might not necessarily be immediately accessible, and those clients themselves could default or even become insolvent as a result.

Credit risk

Prior to the failure of MF Global and Peregrine Financial Group (PFG), many underestimated the risks

associated with intermediation in centrally cleared markets. Some assumed that customer segregation meant that their funds were segregated both from other customers and from the FCM house account. In financial markets, commingling serves valuable purposes of streamlining operations, funding the business, and reducing day-to-day costs for customers. However, such benefits come at a cost of exposure to risks, primarily in the form of credit exposure to financial intermediaries and to fellow customers of such intermediaries.

Failures of intermediaries are quite rare, and customer losses resulting from such failures are rarer still. Historically, inadequate management of operational exposures, including fraud, has been the primary cause of many FCM failures.

As an example, in 1995 Barings Bank failed when a rogue trader accumulated substantial proprietary trading losses. Global futures customers did not suffer loss of margin as Barings Bank was purchased by the Dutch bank, ING, which assumed all of Baring’s liabilities (Bank of England, 1995).

In contrast, a more recent failure of an FCM, PFG, did result in substantial customer losses. Fraudulent behavior was uncovered in 2012. For several years, PFG management had been fabricating audit confirmation replies that were sent to its regulator in order to conceal an ongoing embezzlement of customer segregated funds. According to the bankruptcy trustee, PFG had embezzled about \$200 million of its customer segregated funds (Peterson, 2014). PFG was not a CM of any CCP and thus not subject to the audit regimen of a major CCP.

Customers can also be exposed to losses due to the failure of other customers of the same financial intermediary FCM. Historically, such losses have been so uncommon and so small that sometimes exchanges have opted to make clients of failed FCMs whole, even though they were not contractually obligated to do so:

The Commodity Exchange in New York said Monday that it plans to advance \$4.1 million to ensure that customers of the failed Volume Investors Corp. receive the money owed them. ... The repayment plan had been a face-saving move for the Comex, which faced a barrage of industry criticism following the failure last March of Volume Investors, a Comex member. The incident was the first time customers stood to lose money because of the demise of a member of a futures exchange. (Cohen, 1985, p. 1)

In other instances, customers did lose money as a consequence of the failure of another customer. The case of Griffin Trading is one example. Griffin Trading filed for bankruptcy in 1998, because John Ho Park,

one of Griffin's European customers, "sustained trading losses ... and neither Park nor Griffin Trading had enough capital to cover these obligations."⁷ Griffin's solvent European customers lost a portion of their margin assets because Griffin management used funds in the omnibus customer segregated account of Griffin's UK FCM to fund a margin call on Park's trades.

The failure of MF Global illustrates a different problem. In the MF Global case, customers suffered losses because MF Global mishandled customer segregated funds. Customers of MF Global who waited until the end of the resolution of the estate actually received all of their funds back. Still, many other customers realized losses because they sold "their claims on MF Global to hedge funds and banks for roughly 90 percent or more of face value" (Protess, 2014, p. 1).

Fraud and a lack of operational robustness can expose FCM clients to considerable risk. Such risk can be realized as a loss in cases where there is a shortfall in a customer segregated account even if customer assets are held in an appropriate account. Surviving customers may incur losses not only due to a delay in the return of margin assets but also face the risk that the assets may not be recovered in full. In the United States, regulations and policies designed to protect customer margin assets are based on the segregation of such assets from the proprietary assets of the financial intermediary. However, these regulations can be constrained by countervailing provisions of §766(h) of the U.S. Bankruptcy Code. In cases of undersegregation of customer funds, the U.S. Bankruptcy Code would treat all surviving customers as the same class, regardless of whether their assets are in an omnibus account structure or individually segregated. Consequently, the surviving customers would share in the shortfall in the segregated funds on a pro rata basis (Futures Industry Association, 2012). To further limit such risk exposures, the CFTC enforces two customer protection frameworks.

Customer protections

In the United States, exposure to FCM risk is somewhat mitigated by the regulation of market intermediaries and the implementation of two customer protection frameworks.⁸ The traditional U.S. futures segregation framework applies to futures markets. The legally segregated operationally commingled (LSOC) framework applies to centrally cleared swaps markets. These frameworks rely on rules that govern segregation of customer assets held by intermediaries and CCPs.

U.S. futures segregation model

Segregation requirements for customer margin assets in U.S. futures markets are largely set out in

section 4d(a)(2) of the Commodity Exchange Act and CFTC regulation 1.20.⁹ The section states that in a case of an FCM insolvency, the customer segregated funds at depository institutions are protected from the "banker's right of setoff." This would remove customer segregated funds deposited by an FCM or by a CCP from a bank's right of setoff against any debts owed to that bank by that FCM or CCP.¹⁰

In the case of an FCM bankruptcy, customer segregated funds are meant to repay customer claims. When the aggregate amount in customer segregated accounts equals what customers are owed, the customers are made whole. If there is an aggregate excess in the FCM's customer segregated accounts, customers are again made whole and the excess (residual interest) margin that does not belong to customers is returned to the estate of the FCM. Conversely, if the aggregate pool of customer segregated assets is less than the aggregate claims of customers on the segregated pool, customers' claims are distributed pro rata with all customers incurring the same percentage loss.

It is important to highlight that an undersegregation condition is a violation of CFTC rules and generally occurs due to fraudulent activity or operational problems (Culp, 2013). The U.S. futures segregation model does not attempt to address potentially fraudulent activity or operational failures. It is not designed to offer any additional protections to customers of insolvent FCMs with regard to the aforementioned risks.

Legally segregated operationally commingled (LSOC)

In the United States, segregation requirements for customer margin assets for cleared swaps markets are set out in section 4d(f) of CFTC regulations 22.2 and 1.22.¹¹ LSOC is significant as it precludes the option of a CCP to utilize the initial margin assets of nondefaulting cleared swaps customers of a failed FCM to offset the financial loss of one or more defaulting cleared swaps customers of that FCM. It also differs from the traditional U.S. futures segregation framework in that it does attempt to reduce the risk of operational failures that might result in an undersegregated condition.

Under the LSOC framework, an FCM that clears swaps for customers is required to transmit account-level margin and position information to the CCP on a daily basis (U.S. Commodity Futures Trading Commission, 2012). Additionally, the CCP is required to validate and attest to the accuracy of that account-level information on a daily basis (U.S. Commodity Futures Trading Commission, 2012). These requirements significantly improve operational controls and

expand oversight over customer segregated funds to include the CCP. This practice reduces operational risks and reduces the potential for fraudulent behavior on the part of an FCM. Perhaps more importantly, LSOC has the potential to greatly facilitate the prompt and orderly transfer of the positions and the margin assets of the uninvolved cleared swaps customers of a failed FCM because the CCP would have the relevant account-level information in hand, before the fact. LSOC represents a departure from the traditional U.S. futures segregation model but remains constrained by §766(h) of the U.S. Bankruptcy Code.

LSOC “only explicitly protect[s] the collateral value attributed to each customer as reported by FCMs” (CME Group, 2012, p. 2) to CCPs. Additionally, any excess in customer margin deposited with the CCP for cleared swaps receives full protection under the LSOC framework in the case of an FCM default. Any excess margin would not be returned to the FCM’s estate, but would either be transferred together with the client positions to another FCM or returned to the swaps clearing market participant (U.S. Commodity Futures Trading Commission, 2012). Furthermore, any FCM residual interest in the cleared swaps customer segregated origin of the failed FCM at the CCP would be treated as customer segregated assets and would be protected under the LSOC framework (U.S. Commodity Futures Trading Commission, 2012).

Still, LSOC has its limitations. Section 766(h) of the U.S. Bankruptcy Code provides that “non-defaulting customers in an account class that has incurred a loss, e.g., the Customer Segregated Account, will share in any shortfall, pro rata” (Futures Industry Association, 2014, p. 9). An FCM’s customers remain exposed to potential pro rata losses should their FCM fail:

- (i) if the bankrupt FCM’s books and records are inaccurate; (ii) in the event of a shortfall in the Cleared Swaps Customer Account arising from FCM fraud or mismanagement; or (iii) in the event a bankruptcy trustee incurs losses in liquidating collateral held in the Cleared Swaps Customer Account in which the FCM had invested in accordance with Commission Rule 1.25. (Futures Industry Association, 2014, p. 7)

Conclusion

During the 2008 financial crisis, uncertainty about the financial health of counterparties resulted in gridlock in the marketplace. Failure of bilateral counterparties to assess and address counterparty exposures increased systemic risk and had a negative impact on the broader economy. The central clearing mandate and LSOC were meant to reduce systemic risk, but it was not entirely eliminated.

Central clearing reduces risk through multilateral netting, collateralization of positions, pricing, and default management practices. However, central clearing also concentrates risk into a CCP, and financial intermediation introduces new risks. The concentration of risk in CCPs must not be underestimated, as CCP failures, while rare, do happen.¹² Furthermore, while some failures of financial intermediaries, such as Lehman in 2008 and Refco in 2005, were successfully managed by central counterparties (Culp, 2010), other failures have resulted in customer losses. Such losses occurred when customer funds were misused by intermediaries—MF Global in 2011 and PFG in 2012; and when a customer defaulted—Griffin Trading in 1998.

Central clearing does not protect customers of a defaulting FCM. Customer protection frameworks are intended to mitigate such exposures. However, the protections offered under the traditional U.S. futures customer segregation and LSOC are somewhat limited. Both frameworks rely on segregation of customer funds to protect customer assets. However, under the U.S. Bankruptcy Code even individually segregated customer funds are treated as if they were held commingled in a single omnibus account.

NOTES

¹Direct clearing members that clear their own trades don't go through an intermediary.

²I use the acronym FCM here to mean a financial intermediary for customers that want to transact in centrally cleared markets, although this use is an oversimplification because FCMs are not necessarily direct clearing members.

³A complete list of CFTC registered participants and organizations, including derivatives clearing organizations (DCOs), derivatives contract markets (DCMs), and swap execution facilities (SEFs), is available on the CFTC's website at <http://www.cftc.gov>.

⁴The Bank for International Settlements' document, *Principles for Financial Market Infrastructures* (PFMI), outlines general requirements for guarantee fund calculations; however, regulations vary based on the interpretations of the PFMI by different regulatory authorities. It is available at <http://www.bis.org/cpmi/publ/d101a.pdf>.

⁵FCMs facilitate trade execution for their clients; they serve as custodians of customer property and are responsible for the collection and transfer of margin assets between customers and CCPs; and they guarantee the performance of their clients to the CCP. See <http://www.nfa.futures.org/NFA-registration/fcm/index.HTML>.

⁶Omnibus accounts are customer segregated accounts held at an FCM and include the commingled funds (cash, assets, and/or securities) of all customers of a particular FCM. The CFTC regulation 1.20 (17 CFR 1.20) states that all customer segregated funds are allowed to be placed in a single or omnibus account as long as the name of the account reflects that the funds are being held for the benefit of the CM's customers. See <http://www.cftc.gov/ConsumerProtection/EducationCenter/CFTCGlossary/index.htm> and <http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=9726fa13fed92e969b82107deef0e6cf&rgn=div8&view=text&node=17:1.0.1.1.1.0.4.19&idno=17>.

⁷*Inskeep v. Griffin Trading Company*, No. 10–3607, 2012 U.S. App. FINDLAW (7th Cir. June 25, 2012), p. 1, available at <http://caselaw.findlaw.com/us-7th-circuit/1604470.html>.

⁸Insurance solutions have been contemplated that can mitigate the losses that arise from the failure of a clearing member. Some insurance products are currently offered but have not been adopted by CCPs.

⁹See <http://www.cftc.gov/ucm/groups/public/@Irfederalregister/documents/file/2012-26435a.pdf>.

¹⁰See <http://www.cftc.gov/IndustryOversight/Intermediaries/FCMs/fcmsegregationfunds>.

¹¹See <http://www.cftc.gov/LawRegulation/FederalRegister/FinalRules/2012-1033>.

¹²Over the past 50 years, there have been several CCP failures associated with a market crisis—Paris, 1974; Kuala Lumpur, 1984; and Hong Kong, 1987 (Rehlon and Nixon, 2013).

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