

FINADIUM

CCPs and the Business of Collateral Management

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Sponsored by



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Executive Summary

Central Counterparties (CCPs) have become increasingly public actors in the global marketplace as new financial regulations, including Basel III, Dodd-Frank and EMIR, reinforce their role as risk managers. These changes put a spotlight on how CCPs approach collateral management, which is a central mechanism for mitigating risk in financial markets.

CCPs control at least US$400 billion in collateral assets, according to data collected from the most recent CCP annual reports. Upcoming changes however suggest that the amount of collateral they hold will rise from anywhere between US$100 billion to US$2 trillion, depending on the amount of OTC derivatives that move onto CCP platforms. This potentially dramatic increase of collateral on CCPs means that investors, banks and clearing members should understand the policies, procedures, and the risk models that CCPs use to run their businesses.

This report looks at the challenging world of CCP collateral management from the perspective of CCPs themselves. We conducted detailed interviews with major CCPs worldwide including several in emerging markets to hear how they view the role of collateral for both risk management and as a potential competitive lever in the marketplace. The report also looks at how CCP goals are being achieved from an operations and technology standpoint. As CCPs work to evaluate their new responsibilities in the post-Lehman era, this report serves as a benchmark guide for understanding CCP rules, roles and rationale for decision-making in the collateral management space.

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CCPs in the Spotlight

Key Points:

- *CCPs are working to harmonize the demands of regulators that are emphasizing the safety of CCPs with the realities of managing risk across a variety of product types and a diversity of users.*
- *Risk management, including the collection, investment and reporting of collateral, is a public and contentious part of CCP operations today.*
- *CCPs are a heterogeneous group of organizations worldwide with diverse ownership and do not conform well to the desires of regulators seeking to impose one framework for operations and risk management.*

Central counterparties (CCPs) have emerged as critical players in the new financial markets environment. From Basel III to CRD IV to Federal Reserve Notices of Proposed Rulemakings, CCPs are promoted as a remedy for the serious financial ills that plagued the industry in 2008 and 2009. Some CCPs are now labeled as "systemically important," a designation that brings both additional requirements and an implicit government financial guarantee. Basel III encourages banks and brokers to conduct additional trades on CCPs by allowing a 2% percent capital risk weighting. While regulators push the idea of CCPs into the center of financial markets, the actual business requires substantial risk management; it is up the CCPs themselves to figure out how to best manage their expanding roles and responsibilities.

New rules for CCPs, as well as banks, create the most challenges and opportunities in collateral management. How a CCP manages collateral for counterparty trades affects every market participant and can cause consternation, relief or even a firm's sudden failure, as in the case of MF Global. CCP members must post collateral on behalf of their clients, and in turn require

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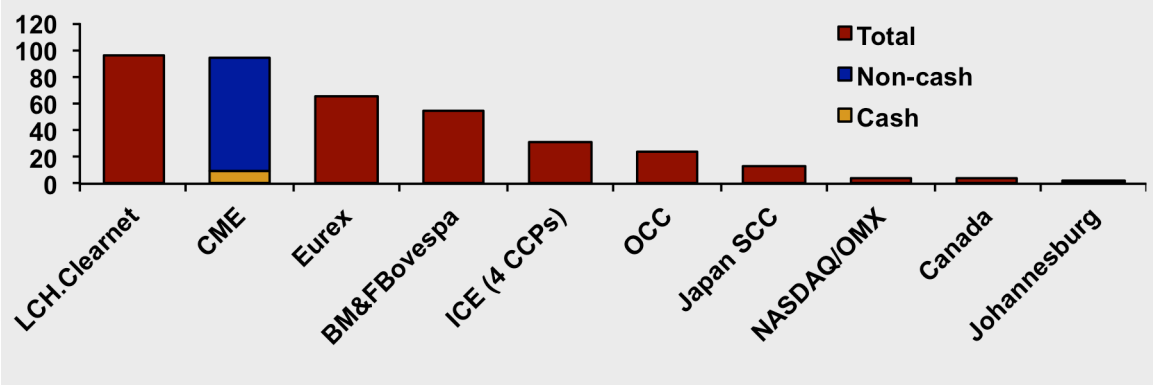
clients to provide collateral themselves. Notwithstanding the appropriate use of haircuts and liquidity management, the lower or more flexible the collateral requirements, the easier it is for the markets to continue trading. On the other hand, the higher and tougher the collateral requirements given a CCP's product and risk expertise, the more secure the CCP is in the case of default. The challenge is finding the right formula that asks the minimum standard of collateral for the most amount of security for the CCP itself.

CCPs are accustomed to industrial strength processing of securities transactions and the associated collateral. Compared to bilateral clearing, which is predominantly manual, CCPs are highly automated and can manage vastly more collateral substitutions. CCPs are able to conduct intraday collateral calls on a frequent and automated basis as opposed to the overnight collateral calls of most bilateral counterparties. For CCPs, handling the large volume of processing they conduct is a given. For the members and regulators who are counting on them, the processing strength of CCPs is an important cornerstone for operational risk management.

Collectively, CCPs control at least US$400 billion in collateral assets, according to data collected from the most recent CCP annual reports (see Exhibit 1). LCH.Clearnet and CME, the largest CCPs, hold US$96 and US$94 billion respectively. The size of collateral assets held decreases quickly among the remaining CCPs. CCPs provide little disclosure on the composition of collateral assets or reinvestment options for cash collateral.

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Exhibit 1:
Collateral held by CCPs
(US$ billions)



Source: CCP Annual Reports

CCPs continue to define their relationships with their regulators. Regulators have asked that certain OTC derivatives products be cleared regardless of their suitability; it is expected that all "standardized" over-the-counter derivatives products will be cleared on CCPs in the coming years. Some of these products fit the profile of a CCP transaction nicely, having substantial liquidity and a growing user base. Others are thinly traded and require additional collateral in order to keep the CCP in a risk neutral position; in some cases initial margin may be 60% of the value of the trade. European regulators have responded to the concerns of CCP risk management participants by mandating capital requirements for the CCPs themselves instead of removing the requirement that ill-suited products be cleared. For CCPs, this is the type of conversation that provokes frustration. In other markets, regulators are working closely with the CCP itself to best define product suitability, operational readiness and other preparedness factors for taking on clearing of additional product types.

The relationship between CCPs and their users requires a substantial amount of balancing between client-centered demands and risk management practices. Creating a capital reserve is an important part of a CCP's risk management practice and at the same time creates an intertwined relationship between the

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CCP, which must remain a neutral entity, and its users. Some CCPs operate as subsidiaries of for-profit exchanges while others act independently; these ownership structures increase the variety of strategic actions in the marketplace, which can affect the fortunes and competitiveness of each CCP's client base.

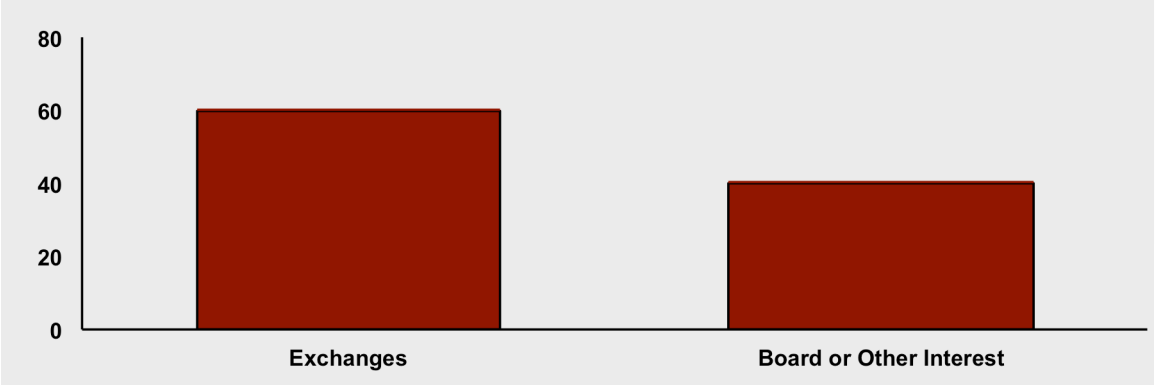
This report looks at the challenging world of CCP collateral management from the perspective of the CCPs themselves. We conducted detailed interviews with major CCPs worldwide including several in emerging markets to hear how they view the role of collateral for both risk management and as a potential competitive lever in the marketplace. The report also looks at how CCP goals are being achieved from an operations and technology standpoint. As CCPs work to evaluate their new responsibilities in the post-Lehman era, this report serves as a benchmark guide for understanding their rules, roles and rationale for decision-making in the collateral management space.

Who Owns CCPs

While alike on the surface, CCPs are a diverse group when it comes to ownership and strategic thinking. Stock, options and futures exchanges own 60% of recognized CCPs, according to the most recent CPSS Red Book data (see Exhibit 2). This ownership structure makes CCP activity part of the strategic direction of the exchange itself; decisions made at the exchange level trickle down as opposed to CCP decisions trickling up. The remaining 40% of CCPs are run either by a board made up of industry representatives or are owned by outside parties.

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Exhibit 2:
CCP ownership
(Percent)



Source: CPSS Red Book 2011

These ownership structures complicate the process of categorizing the intentions of the CCP community; some CCPs operate truly as utilities for the benefit of their users while others are inclined towards market growth through acquisitions and new product development. Further, many exchanges including the CME, ICE and London Stock Exchange are competitive, publicly traded entities, putting their fully owned CCP functions in a competitive position as well.

Sales of CCPs are not common, though LCH.Clearnet is a noteworthy recent example. LCH.Clearnet began as an exchange-owned utility, became independent in 2007, and is now seeing a 60% stake being acquired by the London Stock Exchange. In general, CCPs are taken over along with their parent exchanges, as in the recent case of the London Stock Exchange's merger with the Bolsa Italiana and its CCP, Cassa di Compensazione e Garanzia (CC&G).

The Core Functions of a CCP

CCP functions worldwide may vary according to historical practice, national regulation or owner preferences. Basel III and documentation from the International Organization of Securities Commissions (IOSCO) seeks to

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harmonize how CCPs do business, but it is unlikely that the level of global standardization preferred by regulators will be realized.

Instead of one description for all possible CCP services, we have identified certain core functionalities that all CCPs should recognize and are willing to take responsibility for. The first, when acting as a true counterparty, is to novate trades (or a close equivalent) and be responsible for the counterparty risk to each side. This function should not be taken as a generality, and we found multiple CCPs that provided counterparty services for some products but not for others. We found others that call themselves CCPs but do not novate trades. When acting as a counterparty, novation is central to the process; the CCP itself is exposed to risk and must act both conservatively and carefully in order to maintain an appropriate risk waterfall relative to its exposure.

Second, CCPs provide reporting to users on their positions and margin calls when required. CCPs are meant to be the center of information for the financial markets where they are responsible. Users look to their CCPs for definitive statements on their outstanding positions and capital requirements. Users may duplicate the CCP's models to verify that positions and statements are accurate, but they are merely reinforcing the CCP's central position and allow the firm to identify possible internal discrepancies. The CCP remains the final arbiter.

Lastly, the CCP is responsible for collecting and managing margin on trades for its users. Whether the CCP is the legal counterparty or not, it typically calculates the initial margin required on a trade and asks its users to put up that margin into a commingled or segregated account. The calculation is based on an explicit and publicly available calculation methodology, making the CCP the independent and neutral calculation agent; there should be no arguments of favoritism or adjusting the numbers based on a subjective analysis. When the value of the trade goes

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up or down, the CCP will ask for more or less margin. This is the variation margin in OTC derivatives markets but for futures this will simply be a margin call. Variation margin is a zero sum game; one side's excess is another's deficit. The CCP is indifferent to the terminology of each market; it is reacting to its available capital relative to the perceived risk of default and market exposure in the trade.

While different CCPs offer a range of services for user convenience and as a competitive differentiator, CCPs worldwide are not necessarily converging to provide one set of advanced functionalities. CCPs universally say that they are looking to provide efficient services, but the definition of efficiency may vary depending on local market conditions. Institutions typically called CCPs may also not be counterparties for every product; some organizations may simply offer clearing, reporting and collateral management services but may leave the counterparty risk to the original trading parties. These variations are important to remember for both users and regulators.

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Collateral Management as Risk Management

Key Points:

- *CCPs have seen a steady migration towards cash collateral in low interest rate markets, but emerging markets are expecting their historically high percentages of cash collateral to decrease in the coming years.*
- *CCPs have been migrating away from LIBOR and towards OIS but there are no universal standards. Using the wrong discount rate can result in understating or overstating the required collateral.*
- *CCPs have a diversity of opinions and historical practices on omnibus accounts, LSOC and fully segregated accounts.*

CCPs agree that collateral management is first and foremost a risk management activity. While users may ask for changes to collateral practices, these changes must first conform to the risk waterfall needs of the CCP; this is a serious matter and one that CCPs repeated consistently in our interviews. Collateral management itself has many facets, including what types of collateral to accept, policies on cash collateral, risk models, the curves used to find present value for rates-based contracts, and whether client margin assets are kept in omnibus, Legally Segregated/Operationally Commingled (LSOC), or fully segregated accounts.

Collateral Acceptance

The types of collateral that CCPs accept have received substantial attention lately, as demands for collateral are expected to increase owing to the move of OTC Derivatives onto CCP platforms. Virtually every CCP is under pressure to

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expand the collateral they accept. This is a reaction to an expectation of future collateral shortages or increased costs to acquire that collateral. Certain clients, including US insurance companies, which typically hold an excess of corporate bonds and a shortage of cash or treasuries for their derivatives collateral activity, have successfully argued for change.

All clients would rather utilize assets they already own as opposed to being required to buy in the market or conduct a collateral transformation trade. CCPs must balance the needs of clients who may not own eligible "safe" collateral and seek to offer less liquid paper they do own with the risk of not being able to convert paper into cash should a clearing member default.

Regulators have taken differing views on collateral acceptance types. All regulators want to avoid a "race to the bottom" that could result by allowing CCPs to use greater flexibility in order to gain clients. Different types of collateral have their own costs, and this has a direct impact on trading behavior; this is particularly important for the exchanges that CCPs serve. Some regulators, notably in the US and to a lesser degree in Europe, have allowed some headroom, particularly in taking corporate bonds or equities.

CCPs that do take corporate bonds or equities do so only after imposing strict risk management procedures (see Exhibit 3). In one US case, corporate bonds are limited to those rated A- or better, have strict concentration limits, and exclude paper issued by clearing members. CCPs worldwide have been challenged on how they may liquidate corporate bonds in case of a default, and also for the longer settlement cycle in corporates than for treasuries. CCPs respond that a committed liquidity line can be put in place to guarantee cash availability. The size of the committed line acts to cap the total amount of corporates taken in. Third parties can be engaged, on a stand-by basis, to

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orchestrate a liquidation. There are costs to these services and these may be absorbed by the CCP or passed on to the client, but the CCP succeeds in mitigating its own liquidity risk pressures.

Exhibit 3:
CCP acceptance of corporate bonds and equities
(Percent)

	Corporate bonds	Corporate bonds haircut	Corporate bonds notes	Equities	Equities haircut	Equities notes
CME	Yes	20%	To A- credit rating, only through triparty with BNYM or JPM	Yes	30%	Selected from S&P 500, acceptable only for Reserve performance bond and Concentration requirements
OCC	Yes	30%	Top four ratings, must be listed on a national exchange	Yes	30%	Over $3 per share
LCH. Clearnet	No		Said to be considering acceptance	No		
Eurex	Yes	18.3%	For ECB liquidity classes I-IV	Yes	20% minimum	DAX, EuroStoxx 50, SMI constituents
BM&F Bovespa	No			Yes	13%-80%, average of 34%	If held by the BM&F Bovespa Central Depository

Source: CCP websites

While US CCPs tend to accept collateral on an asset class basis, European CCPs tend to manage what is acceptable on a security-by-security basis (identified at the ISIN or CUSIP level). This methodology mimics the European Central Bank's repo process, and CCPs note on their website that they follow the ECB's guidelines. However some European CCPs worry that the ECB has become more politically motivated and less focused on risk in the last year, and that could affect the securities that the ECB will accept. The ECB has noted that one of its benefits is that it is not subject to runs on liquidity and hence in no rush to liquidate assets in a "fire sale" in the case of a default; CCPs do not have that

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same luxury and have begun to adopt stricter collateral rules than the ECB. Eurex and selected other CCPs accept a broad range of collateral including corporate bonds and equities albeit with healthy haircuts.

Asian CCPs appear to be about on par with or more flexible than other CCPs in their collateral acceptance. As one example, the Singapore Exchange accepts securities listed on the NYSE, which other CCPs would not do, but with a market standard haircut of 30% (see Exhibit 4). Singaporean Government Securities with maturities past five years are subject to a 10% haircut; the CME's haircut on US Treasury Notes and Bonds can reach 7.5% in some cases. Our conversations with Asian CCPs suggest that there is no intent of greater acceptance as a competitive tool; their criteria are simply an expression of how they perceive risk in their markets.

Exhibit 4:
Singapore Exchange (SGC) Derivatives Clearing accepted collateral

No.	Acceptable Instruments	Maximum Valuation
1	Cash	100% of Face Value
2	Singapore Government Securities	
	- Up to 5 years maturity	95% of Market Value
	- More than 5 years maturity	90% of Market Value
3	US Treasury Securities	
	- Up to 5 years maturity	92.5% of Market Value
	- More than 5 years maturity	90% of Market Value
4	Japanese Government Bonds	
	- Up to 5 years maturity	95% of Market Value
	- More than 5 years maturity	90% of Market Value
5	EURO Government Bonds	
	• French: Treasury Bills("BTF"), Treasury Notes("BTAN"), Treasury Bonds("OAT")	
	• German: Treasury Bills("Bubills"), Treasury Notes("Bobls" and "Schatze"), Treasury Bonds("Bunds")	
	- Up to 5 years maturity	96% of Market Value
	- More than 5 years & up to 10 years maturity	93% of Market Value
	- More than 10 years maturity	90% of Market Value
6	Bank Certificates of Deposit	100% of Market Value
7	Bank Guarantees (BG) or Letter of Credit (LC)	100% of Face Value
8	Gold Bars	70% of Market Value
9	Gold Certificates issued by banks approved by MAS	70% of Market Value
10	Securities listed on Singapore Exchange Limited, New York Stock Exchange, American Stock Exchange or 1st Section of Tokyo Stock Exchange	70% of Market Value

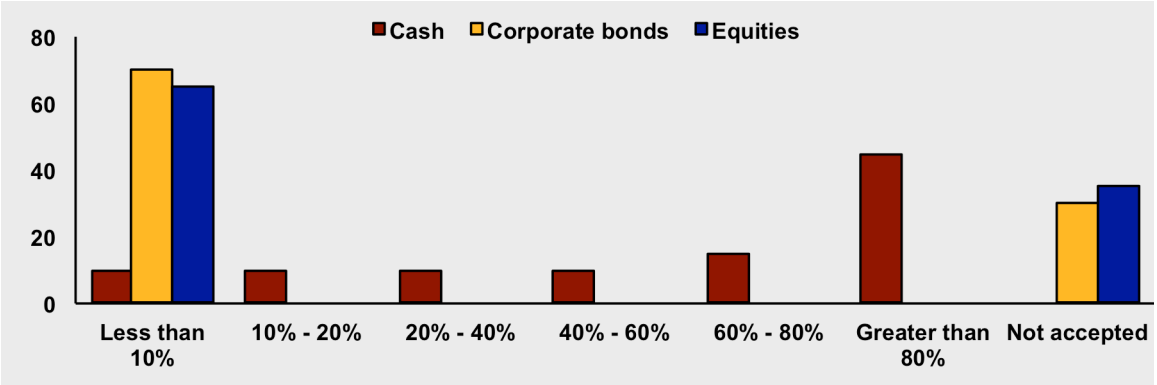
Source: Singapore Exchange (SGX)

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Cash Might Not Be King, But It Is Still Important

While most of the recent conversation about collateral has centered on non-cash, the evidence suggests that cash is still extremely important in the CCP business model. A recent report from the Federal Reserve, "Senior Credit Officer Opinion Survey on Dealer Financing Terms," published September 2012 looked at the amount of cash versus bond collateral that dealers and clients were posting at CCPs.[1] The preponderance of cash collateral is striking: nearly half of the dealers surveyed said the share of cash they posted as collateral was greater than 80% (see Exhibit 5). Meanwhile, corporate bonds and equities are barely used.

Exhibit 5:
Share of collateral posted initial margin to CCPs and other financial market utilities against OTC Derivatives
(Percent)



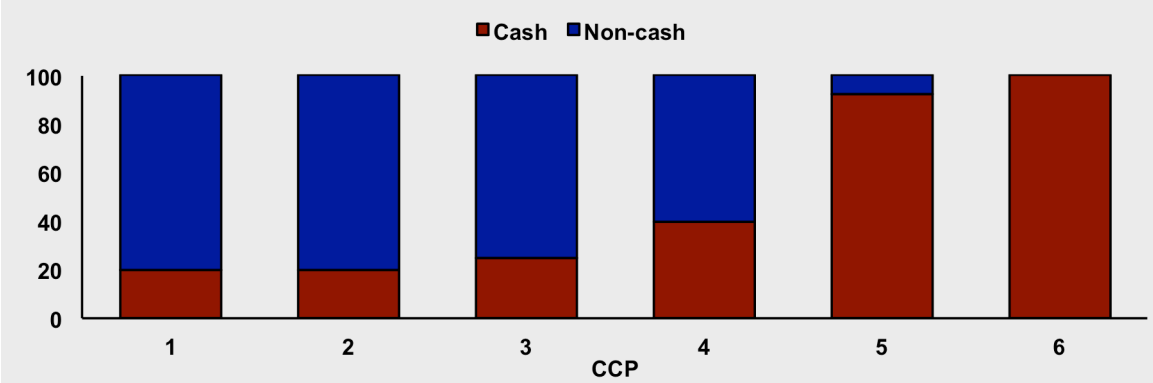
Source: "Senior Credit Officer Opinion Survey on Dealer Financing Terms," Federal Reserve, September 2012

[1] "Senior Credit Officer Opinion Survey on Dealer Financing Terms," Federal Reserve, September 2012, available at http://www.federalreserve.gov/econresdata/files/SCOOS_201209.pdf.

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Across six CCPs willing to speak about the matter, we found significant diversity in the amount of cash versus bonds they accepted and for what reasons. Four of the six, all located in North America and Europe, cited an increase in their cash holdings over the last few years to percentages between 20% and 40% (see Exhibit 6). These markets have very low interest rates, making CCPs an attractive venue for leaving cash. The remaining two CCPs, both in emerging markets, took almost all cash but noted that they were increasing their acceptance of non-cash products. These CCPs expected their percentage of cash to decrease over the next two years. Neither of these CCPs are located in exceptionally low interest rate markets.

Exhibit 6:
Share of cash held as collateral across six CCPs
(Percent)



Source: Finadium

CCPs in Europe, Asia and emerging markets note that cash is often the collateral of choice, even when the rate earned on the cash is at or near zero. The driver toward cash is risk management, as evidenced by European CCPs reporting a recent influx of Swiss francs. CCPs are known for their conservative investment policies and can be seen as a safe place to leave cash, and some CCPs have access to their Central Bank's balance sheet to leave their cash. Cash left on a Central Bank's books earns a 0% return but at the same time, the CCP does not

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charge their client a cash management fee. This is not a desirable situation from the CCP point of view; they would rather earn interest on cash balances, and recent European rules on CCP cash reinvestment rules highlighted that the London Stock Exchange Group has done well in this regard. Cash balances may also reflect poorly on the balance sheet of CCPs. There are exceptions; other CCPs are now entering into interest rate scenarios where members effectively must pay a fee to use cash as collateral.

The assets that CCPs can manage as collateral drives their fees to clients, and hence becomes part of the overarching cost structure of each CCP's model. As one example, CCPs have no magic investment formula for cash collateral; they struggle as much as others to find a conservative return. CCP users must look closely to determine whether placing cash collateral with a CCP is a better choice than leaving it with a custodian or placing it under a mattress, particularly in a negative real interest rate environment.

For those who have natural positive cash balances, cash makes the most sense in a low interest rate environment but this too will eventually change. When interest rates ultimately rise, so too will the cost of using cash as collateral.

Using Tri-Party Custodians

CCPs are not custodians and do not wish to assume this role, yet how collateral is held impacts how it can be risk managed. The use of tri-party custodial arrangements by CCPs to hold collateral is growing in importance and with good reason. Tri-party isolates collateral in an account with a custodian where it cannot be re-hypothecated without specific contract terms and paper is marked to market using recognized independent vendors. Collateral eligibility is controlled by the tri-party agent's systems, which in turn permit substitution by the provider. Cash payments and corporate actions are easily tracked by the tri-party agent.

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The use of tri-party custodians appears to benefit all parties. In the event of a default by the collateral provider, the CCP can take ownership of the paper since it is already a party to the arrangement. This is a cleaner process for isolating collateral, especially in a full segregation model, than omnibus or LSOC accounts. Custodians are aggressively entering the tri-party space for holding CCP collateral, as well as holding the excess cash and securities that investors hold with Futures Commissions Merchants and Derivative Clearing Merchants. Central Securities Depositories including Clearstream and Euroclear have also entered this market. For investors, the use of their tri-party custodian relieves the operational pressure of managing collateral movements, although this comes with a fee.

Risk Models, Curves and Present Value

Over the last 15 years, CCPs have generally adopted the Standard Portfolio Analysis of Risk (SPAN) model created and sold by the Chicago Mercantile Exchange for collateral calculations. The CME website notes that over 50 exchanges and clearinghouses currently use SPAN. However, its use is not universal, and CCPs had two main reasons to argue against it. The first argument was commercially based: CCPs did not want to pay the CME when they felt they had a perfectly good model of their own. Second, CCPs are looking at a historical Value-at-Risk model that they believe can replace SPAN as a global standard. CCP managers know that no model is perfect, and it is curious that CCPs are adopting VaR when it has been largely discredited during several financial crises for its failure to incorporate tail-end risk into model scenarios. However, a part of the CCP market is heading in this direction.

An important component of any risk model is finding the Present Value (PV) of an OTC derivatives trade. These trades executed at the market have an initial PV of

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zero. As market levels change, so will the PV value of a trade, and one side's plus is the other side's minus. Those changes will increase or reduce exposure and trigger changes in variation margin. The concept is that the current PV of the trade, plus or minus the future value of the variation margin, will bring exposure back to zero. But exactly which curves and how those curves are sourced is a topic of debate in OTC derivatives. CCPs are at the center of debate since they are charged with marking trades to market and collecting margin to reduce exposure.

For years swaps were marked to market using forward LIBORs to discount the flows, although a slow but steady transition from LIBOR to OIS has been underway. LIBOR's recently well publicized problems have only thrown further doubt on the validity of the LIBOR process in general. If variation margin is equal to a discounted future value, then the discount rate plays a critical role. If the discount rate is too high, then not enough variation margin will be collected and vice-versa. The discount rate must be a realistic measure of where the variation margin can actually be invested over time. LIBOR represented the offered rate for money, not necessarily what cash would earn. Further, LIBOR trading has, since the financial crisis, been illiquid.

CCPs like LCH.Clearnet and the CME have switched to Overnight Index Swaps (OIS) to discount cash flows. The floating side of OIS is an overnight inter-bank rate; in USD that is the Fed Funds Effective. In GBP it is Sterling Overnight Index Average (SONIA) and in EUR it is European Overnight Index Average (EONIA). While overnight inter-bank rates are not without their issues, they are much closer to the return that can actually be realized than

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LIBOR is.[2] But liquid OIS curves do not exist in all currencies and maturities. Those markets, which must still rely on inter-bank offered rates, may be under- or over-estimating exposure.

A related issue is where the curves come from and the rules they use to set those rates. Ironically, LIBOR curves were thought to be representative of an active underlying deposit market, but it turned out otherwise. Other countries do not necessarily have the same issue. For example, in South Africa, JIBAR is based on observed transactions and has an active futures market.[3] In Mexico IRS curves are widely available, traded worldwide in over a dozen venues. Any discrepancies are resolved using actual trade data.

Omnibus Accounts vs. LSOC vs. Full Segregation

Globally, CCPs are thinking about omnibus accounts versus Legally Segregated Operationally Commingled (LSOC) accounts, but the similarities between CCPs do not extend far. Some organizations have always had a strict segregation of client accounts and have never tried omnibus or LSOC; these CCPs are confused that large economies such as the US have not adopted this model as it provides the greatest degree of risk protection. Other CCP managers noted that omnibus structures are the best way to protect against default risk; they see an opportunity for significant difficulty in newly approved LSOC models.

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[2] Especially in the US where Fed Funds is illiquid and below the rate that the Central Bank pays on excess reserves. In addition, the FRB recently announced that a faulty algorithm has been driving the Fed Funds Effective Rate.

[3] JIBAR Fact Sheet, Johannesburg Stock Exchange, available at http://www.jse.co.za/Libraries/Interest_Rate_Market_-_Education/JIBAR_Futures_Fact_Sheet.sflb.ashx.

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The problem with LSOC is that "no one in bankruptcy will send a margin check," according to one CCP manager. When CCPs have a very limited amount of time in order to close out a position, the faster they are able to get their hands on cash, the better. If a bankrupt account is in default, CCPs see little or no way that they will be able to recoup excess cash in the 59 minutes or so they need to manage their exposure. While LSOC protects individual investors against the potential default of other investors at the same broker-dealer, not all CCPs feel that they themselves have the best protection in this model.

CCPs with fully segregated accounts down to the investor level do not feel the same. They see their models as having worked quite well over time and are not concerned about being left hanging in case of an individual bankruptcy. While the economic and cultural rules between CCPs differ substantially, it should be recognized that CCPs worldwide have very different experiences and expectations about recapturing assets from individuals or individual organizations in case of a default.

In fact, the greatest movement and enthusiasm seems to be towards full segregation of client accounts, not only legally but also operationally. Emerging market CCPs support this move as do European CCPs, where gross omnibus models have never been in favor. In fact, every CCP outside the US that commented on the fully segregated model was in favor, which may lead the US to ultimately change its bankruptcy laws to allow more global interaction between markets and market participants. US CCPs see fully disclosed clearing as simpler than LSOC and easier to support, but that does not yet mean their market is ready for the change.

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Collateral Management as a Competitive Edge

Key Points:

- *CCPs are both conservative utilities and competitors in a global marketplace.*
- *Even subtle methodologies such as VaR confidence intervals can create a competitive advantage in the CCP market.*
- *Cross-netting and government backstops create additional opportunities to promote a CCP's risk management, stability or more efficient cost structure.*

CCPs are divided on whether collateral management is an accommodation, a competitive advantage or combination of both. All CCPs agree that collateral is required in order to safely conduct the business of being a central counterparty. Moreover, some executives state that any expansion into accepting riskier products as collateral or allowing different types of account structures based on market gamesmanship would be inviting trouble.

On the other hand, a second group in the US and Europe is actively considering the ways that collateral can be used as a competitive strategy. Margin policies can differentiate both risk and the attractiveness of a CCP in general, in particular the specific models used and the types of account structures that are acceptable. Part of this is regulatory arbitrage, as regulators will ultimately decide what rules a CCP must follow. Another part however is the willingness of a CCP to look at its procedures with an eye towards meeting its risk management requirements and satisfying market requests. Even the confidence interval of a VaR model, whether at 95% or 99%, will affect collateral requirements. CCPs in the US and

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Europe are in active conversations with their users and can push for regulatory changes as they and the market see fit.

What kind of collateral to accept has been a competitive driver in the market for some time now, and the dynamics are shifting fast to accommodate new political and economic realities. CCPs may accept collateral based on broad asset class categories, subsets of asset classes or by ISIN or CUSIP; each selection brings with it inclusions and exclusions that users must adapt to. A willingness to accept cash in currencies with negative real interest rates and either pay a return or at least not charge a fee means that CCPs might be more attractive as cash holders than custodians, which are currently charging for large balances of Danish krone and Swiss francs. CCPs can also impose haircuts on certain currencies to encourage or dissuade members from using that currency as collateral.

As CCPs maneuver the landscape of regulation around collateral, they are encountering a new and at times awkward series of conversations. CCPs are supposed to be conservative, risk-mitigating utilities, and they are. But they are also in some form of competition with other CCPs and must be cognizant when new CCPs make entries into their territory. ICE and the CME have certainly not overlooked the launches of New York Portfolio Clearing and LCH.Clearnet LLC in the US. This disconnect between function and competition can create some confusion for CCP management, as leaders work to make decisions first on risk management and second on user interests.

The CCPs not involved in any competitive thinking are those in emerging markets where competition is not permitted. Domestic regulation in these countries dictates which CCPs may be used for which exchange-traded or off-exchange traded products, and it is unlikely that regulators would allow the dominance of national champions to be threatened. For now, Europe and the US represent still

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unexplored opportunities for CCPs. We expect it will take many years before market leaders take a competitive look at smaller markets.

Is Cross-Netting Valuable or Dangerous?

CCPs see the allure of cross-netting products to make their platforms more attractive, but also believe that there is marketing behind the language and that cross-netting may not live up to the hype. In the most extreme cases, cross-margining may also be outright dangerous to market stability. The immediate issue is the challenge of giving up the control of risk management for one portfolio to a combined group of portfolios, even when all the products live under the same CCP organization. By sharing multiple CCP-cleared products within the same organization, who would determine which counterparty gets what collateral in the case of default? Further, what risk scenarios would be used to generate the net benefit for the combined portfolio? CCPs think that size matters and that brokers do not move their franchises easily; cross-netting might be attractive but it would take more than that for a large bank to make big strategic decisions about CCP usage.

That said, CCPs with multiple entities or product lines have and are continuing to make efforts to offer cross-product portfolio margining or variations that achieve a similar end-goal within acceptable risk parameters. The main obstacle is making sure that assets remain under their own legal agreements. If this can be achieved, there is a strong argument to be made that the cost of capital allocations in the form of collateral will go down. Technology vendors support this

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notion as well, and several now include scenario analysis tools by counterparty, including CCP margin rules, as part of their collateral management packages.[4]

CCP executives are more pessimistic about the idea of cross-exchange margining between different CCPs in one or more regulatory jurisdictions. CCPs noted substantial legal, competitive and technical obstacles that would impede any progress. Legally, the risk that a CCP takes on is accounted for in its client agreements; while not every conceivable risk can be accounted for, at least the main risks are documented and resolutions are planned. Adding a second CCP to that agreement structure would add undue complication to risk mitigation efforts, let alone the difficulty of actually conducting the agreement negotiations between the CCPs' own sets of lawyers.

From a competitive perspective, CCPs could not conceive of a cross-margining or inter-operability agreement equally benefitting both parties to the agreement; one CCP would always gain more than the other. This would stop the larger or better prepared party from engaging in cooperation to begin with.

Technically, CCPs note that their own and their clients' bookkeeping systems are not prepared to account for cross-margined products. While this obstacle could be surmounted, it is a low priority item given other challenges that first need to be addressed. CCPs also note that while cross-listing of exchange traded products has been successful, this has not translated into back office clearing. In a cross-listing or global trading book environment, a local trade is moved to the book of the primary exchange, and each exchange organization maintains its own margin

[4] More detail on collateral management technology vendors can be found in Finadium's October 2012 report, "A Buyer's Guide to Collateral Management Technology Vendors."

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and collateral rules and requirements. There is a legitimate concern that under a cross-margining agreement, any differences between technologies or rules could cause contagion from one CCP to another.

While a single global CCP that aggregates and manages risk worldwide might seem like a great idea, in practice there is no support from the organizations that would need to make it a reality. This throws cold water on the enthusiasm of regulators, industry participants, academics and commentators who might see cross-margining between CCPs as a useful way of reducing capital requirements for the world's banks and brokers.

Central Bank Backstops

CCPs in larger markets noted the confusion caused by different policy viewpoints that suggest some CCPs now have implicit government guarantees while others do not. As one example, the US Financial Stability Oversight Council has named several CCPs as systematically important under Title VIII of Dodd-Frank, including the Chicago Mercantile Exchange, ICE Clear Credit LLC and the Options Clearing Corporation. Besides the new regulatory requirements that come from this designation, these Financial Market Utilities can now borrow at the Federal Reserve discount window under certain circumstances, giving them an implicit government guarantee.

The same obligations and borrowing opportunities have not been granted to other US CCPs however, and this creates an unequal playing field; the market now knows who has a government guarantee and who does not, and this may change their perception of risk at each CCP. The situation could become exacerbated by lobbyist organizations wanting to exempt US banks from capital exposure limits to CCPs as contained in Dodd-Frank 165, a uniquely American phenomenon. Lobbyists are suggesting that regulators allow an exemption to

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Dodd-Frank 165 for only the CCPs designated as systematically important by the Financial Stability Oversight Council (FSOC). This aligns with the interests of CCPs that have the FSOC mandate but not to CCPs that did not meet the systemically important criteria. Parent exchanges could also benefit or suffer.

Outside the US, the idea of a CCP receiving a government backstop has potentially negative political ramifications that CCPs are anxious to avoid. It is likely, say CCPs, that their Central Banks and regulators will designate national CCPs as local SIFIs or systematically important utilities. This will include access to Central Bank funds in times of an emergency. However, CCPs are concerned that this will increase public scrutiny of their activities and/or push their organizations towards measures that do not benefit the market or even perhaps their own risk management practices.

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CCPs in Emerging Markets

Key Points:

- *Some emerging market (EM) CCPs disagree with the application of Basel III to their domestic markets, particularly in the creation and maintenance of new default funds.*
- *EM CCPs maintain that their local banking markets remained healthy throughout the financial crisis and they should not be penalized for the developed world's mistakes.*
- *EM CCPs intend to wait and see the actions and errors of other CCPs before committing themselves to confusing and expensive redesigns of their risk waterfalls.*

Emerging market (EM) CCPs have a different tone than US and European CCPs when discussing the markets, their challenges and opportunities. The smaller markets that EM CCPs run and the lack of competition have made it easier for them to manage risk with the cooperation of their local bank and clearing client partners. The relative stability of local banks gave EM CCPs the sense that risk management in their markets, while not to be ignored, was an easier task than markets faced with the blow up of major banks. This is still true today, and the introduction of Basel III rules has created a series of headaches that are viewed as unnecessary and expensive.

Pushing Back on Basel III

Some EM CCPs take strong offense to Basel III; they contend that these rules were written for the US and Europe and do not pertain to their markets. Even the correlation data that Basel is based on overwhelmingly comes from developed markets, not emerging ones. The concentration of local banking industries and their stability through the financial crisis suggests that EM CCPs have a point;

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they are dealing with global regulation that was not written by them or for them. Local government regulators however are following the Basel Committee's prescriptions and CCPs are responsible for acting them out.

This perceived misdirection in regulation creates difficulties for EM CCPs as well as some absurdities. The primary complaint is the impact that requiring a large default fund has on a market with a small concentration of banks. This concentration allows the CCP to have an in-depth understanding of its major counterparties and track risk differently than some of their developed world peers. When CCPs respond to broad brush-stroke mandates for risk management or to regulators newly concerned about CCP balance sheets, CCP management becomes occupied with explaining how their local realities differ from the Basel test case scenarios.

Available data support EM CCP arguments on capital rules. By value of transactions cleared, EM CCPs are correct that their 3% share of the market is small compared to the US, UK and the rest of the developed world (see Exhibit 7). However, operationally EM CCPs are as or more important than their developed world peers, representing 26% of the global market by number of transactions cleared (see Exhibit 8). Hence, while the value of a default may be smaller, there is no less likelihood of a default in the number of transactions cleared at an EM CCP versus a developed world CCP.

EM CCPs are also concerned that new CCP risk waterfall requirements place an undue burden on both themselves and their local bank clients. One CCP noted that holding a default fund equal to one or two times the stressed cost of a default is fine when there are many clearing members to share the burden of the capital expenses. However, when there are five or fewer major banks, the numbers may become huge and impractical. In effect, the requirement for a default fund

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imposes punitive damages on the local economy by taking capital out of the banks.

Exhibit 7:
Value of transactions cleared

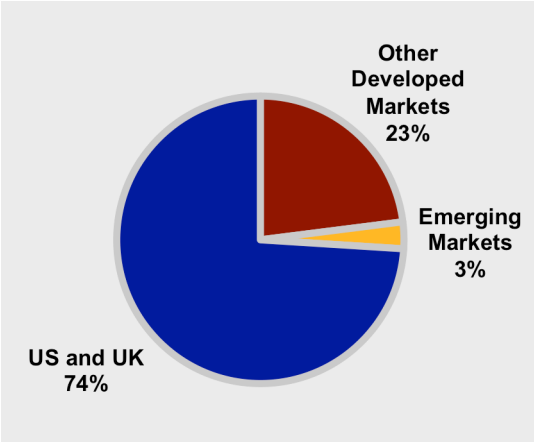
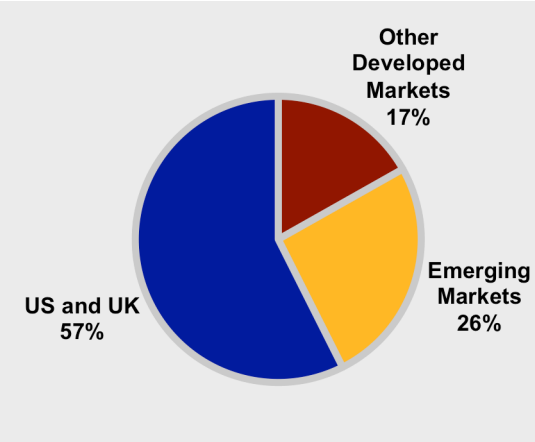


Exhibit 8:
Number of transactions cleared



Source: CPSS Red Book 2011

The liquidity requirements of the developed world are not their problem, say EM CCPs, and there is a strong pushback on local regulators to see the reality of the domestic market. The consequence is the introduction of excessive costs that a highly concentrated market cannot bear well; at least in developed markets costs can be spread more evenly among a greater number of participants.

EM CCPs noted that their national banks remained fully solvent throughout the financial crisis and local housing markets remained stable. In many cases they did not see the initial run-up in housing prices that led to later downfalls. As a result, local banks did not overextend themselves in the mortgage market and did not require government liquidity. Though Basel III rules are written for banks globally to ensure their stability, many EM CCPs and their clients scratch their heads at Basel's applications to local markets.

Insofar as EM CCPs are stuck with Basel III, they are keen to wait until other markets have acted before creating plans of their own. Being the first mover is

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expensive, and besides the rules may still be in flux. EM CCPs would rather wait until developed markets have solved some of the headaches they created before EM CCPs move into the execution phase of meeting Basel III obligations.

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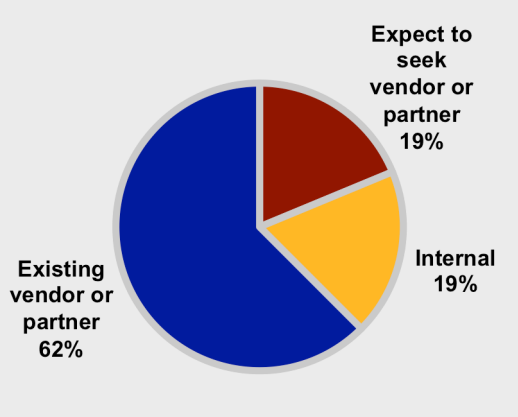
The Role of Technology

Key Points:

- *81% of CCPs and their associated Central Securities Depositories are using or plan to use an outsourced technology vendor or partner for collateral management.*
- *While CCPs are proud of their local vendors or in-house development, they also recognize that collateral optimization is a global business and that technology may require global expertise.*
- *CCPs see consultant and vendor certification programs as a way to quietly assert their expertise in collateral and risk management.*

Like other actors in financial markets, CCPs are highly dependent upon technology to run their collateral management processes effectively. Our conversations with CCPs revealed a mix of internal development and external vendor systems, with 62% of CCPs and their associated Central Securities Depositories using outside vendors or partners while another 19% expect to outsource this work shortly (see Exhibit 9). The most common piece of vendor-developed software for CCPs is a margin engine, where margins for individual positions are calculated and reported out. Emerging market CCPs were most likely to support their local industries by using local developers. CCPs with internal systems noted the benefit of control and lack of dependency on third parties, but also recognized that cost pressures may push them to abandon internal development at some point in the future.

Exhibit 9:
Who provides collateral management technology for CSDs and CCPs



Source: Finadium

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The ability to effectively run the collateral management margin process is a point of pride for CCPs worldwide, several of whom highlighted their local vendor partnerships or internal systems built up over the years. However, CCPs also recognize that collateral management is getting more complicated, and global expertise may be required to develop and maintain margin and collateral engines going forward. Regulations in some countries are speeding up the push for a vendor system as exchange, clearing and CSD systems are required to be separate. The best outcome would be to continue to rely on the local relationship but purchase components, such as an optimization engine, from a global vendor.

CCPs report that they are at the center of a complex web of technology-driven reporting and processing activities, and this has driven at least one to launch a global certification program for consultants and technology vendors. CCPs are concerned that an error on a vendor's part could be seen as an error on their part, and they want to do their best to avoid that perception. Certification programs also showcase the CCPs expertise in collateral and risk management, an area they are keen to publicize to the right audiences.

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CCP Expectations of the Future Landscape

Key Points:

- *Cross-border margining is seen as impossible until regulators sort out global bankruptcy laws; in practice this may never occur.*
- *CCPs expect some level of industry consolidation at the ownership level leading to reduced technology and headcount costs, although it will take many years before CCPs assume each other's functional duties.*
- *CCP consolidation is likely to play out in Europe and North America first, with the national champions of emerging markets protected by national regulators and local bank preferences.*

The CCP landscape continues to evolve, with CCP executives keeping a close eye on both regulations and the demands of their clients. Managers appear to take these changes in stride; there was little concern over the final outcome except for the amount of work it would take to get there. CCPs also felt that regulators for the most part would hear them out and make rational choices on future rulings, although the backdrop of Basel III and certain strong personalities make some conversations more challenging than others. The main areas where CCPs expect ongoing changes were: OTC derivatives moving to the futures market, consolidation in the CCP industry and continuing concerns over what products are appropriate for CCP clearing.

In spite of the global excitement of OTC derivatives moving onto CCPs for clearing, several CCPs themselves express that these derivatives may ultimately be part of the futures market. At least one market, the IntercontinentalExchange (ICE), has announced that it will move all of the contracts cleared on its OTC energy market to the futures market, partly to avoid new regulations specifically targeted at OTC derivatives. Another benefit will be the reduction of margin

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obligations for futures products and protection of clients from additional regulatory reporting requirements, particularly under Dodd-Frank. While not every CCP is ready to move in this direction - for example, the Japan Securities Clearing Corporation just started clearing Interest Rate Swaps in October 2012 - the conversation about converting OTC derivatives to the futures market will continue for some time to come.

CCP executives raised the question of how many CCPs the world actually needs. Some feel that there is currently an oversupply and consolidation should occur for the good of the market. While CCPs are not ready to move to cross–jurisdictional margining or even cross product margining, they see no obstacle to CCP legal consolidation. This progression, they believe, will first take the form of mergers or takeovers such as the London Stock Exchange's purchase of the Bolsa Italiana and its CCP, CC&G, as well as LCH.Clearnet. Consolidation of ownership allows a reduction of technology staff and systems, which in theory should drive costs lower for end-users.

Consolidation would result in a reduction of the number of CCPs in operation. While not a popularly held view, some managers thought that CCPs could take over the functioning of other CCPs in selected markets. For example, a CCP clearing equities in one European market could clear on another equity market using the same collateral pool. There was little discussion about cross product CCP consolidation although a few CCPs are experimenting with this idea already.

In spite of oversupply on the surface, true consolidation in the CCP space may be some years away. CCPs are viewed as national champions, and it appears unlikely that regulators in emerging markets would allow their CCPs to be taken over without a strong rationale. Instead, consolidation may happen only in

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markets like the European Union that are already forcing the issue of interoperability. One acquisition in the US - LCH.Clearnet's purchase of the International Derivatives Clearing Group - seems as much a purchase of an important regulatory license as it did any true consolidation.

CCPs do not expect that the promise of global interoperability will come to fruition anytime soon. They are firm believers that regulators must first come to agreement on global bankruptcy laws and that may never happen. If regulations get sorted out, then the next large challenge to surmount will be risk management practices and legal agreements between the CCPs themselves. As CCPs are already reluctant to enter into this type of agreement with other CCPs in domestic markets, it would take a regulatory mandate to effect change. Given the ongoing struggles in implementing Basel III, CCPs expect that it will take many years before regulators finally look critically in their direction on a global basis.

Additionally, CCPs have their own views about the acceptance of exotic derivatives through their systems. There is a strong understanding, by both CCPs and financial market participants in general, that products should have a minimum level of standardization before they are appropriate for central clearing. If the risk of the product cannot be managed appropriately, say CCPs, that product should not be centrally cleared. CCPs have no interest in clearing everything simply for the sake of it being on a CCP. While it is clear that end-users understand the role of the CCP, in this regard, there still seems to be concern over how far regulators will push to get exotic OTC derivatives away from the bilateral market.

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