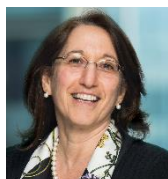


VIEWPOINT

SEPT 2018

BLACKROCK®

An End-investor Perspective on Central Clearing Looking Back To Look Forward



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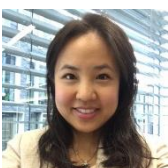
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This month is the tenth anniversary of the Global Financial Crisis (GFC). This milestone has spurred many of us to reflect upon the events that precipitated the GFC and to contemplate how the over the counter (OTC) derivatives markets have changed since then. For many, the defining moment of the GFC was the Lehman default, which exposed complex and opaque webs of bilateral derivatives contracts. Soon after the default it became evident that many of these bilateral trades were insufficiently collateralized or not collateralized at all. In contrast, the disciplined risk mitigation in the centrally cleared markets, for both OTC and exchange traded derivatives (ETD), proved clearing to be more resilient. Still, this month's default at Nasdaq Clearing, and the resulting material loss allocation to its members, reminds us that, while cleared markets may be more resilient, they are not infallible.

The global post-financial crisis regulatory response centered on two core factors: (1) strengthening the resiliency of dealer-banks through rigorous reform of the prudential framework, and (2) moving bilateral derivatives trades into a centrally cleared framework.¹ The result of this has been a significant shift from bilateral to cleared derivatives.²

BlackRock is supportive of central clearing. The reduction in bilateral counterparty credit risk, increased market transparency, together with the improved efficiency in trade execution outweigh the significant operational costs incurred by market participants and end-investors to comply with clearing mandates. In fact, a number of market participants who are not subject to clearing mandates, including end-investors, do decide to clear voluntarily. This indicates that clearing mandates may not always be necessary and that these firms see advantages in clearing.

While the incentives to clear have successfully shifted the market, the cost to the financial institutions providing access has increased. The result is a concentrated group of global dealer-banks which, through their subsidiary dealers, offer the bulk of clearing services to the market.³ Central Clearing Counterparties (CCPs) meanwhile provide regulators with much needed transparency and provide standardized risk mitigation to the derivatives markets, thereby addressing shortfalls that were made evident during the crisis. In contrast to the OTC markets, the cleared markets operated efficiently and effectively during the GFC, providing continued access to derivatives products while also managing to close out large portfolios of defaulted financial institutions. Leveraging this proven structure was an obvious approach for addressing the OTC market's vulnerabilities.

While moving OTC trades into the cleared market structure was a reasonable response, it is important to recognize that this market structure was not fully designed to handle the diverse set of clients or the range of market risks inherent in OTC products. Asset managers, end-users, Clearing Members (CM) and CCPs have all been working to adapt the structure accordingly and significant progress has been made. This has entailed extensive technological development and expenditure, enhancements to quantitative risk models, new operational processes, and adaptation of legal documents and frameworks to meet the new structure. As clearing mandates continue to develop across the globe for OTC and other products (e.g. securities financing), more work needs to be done.

The opinions expressed are as of September 2018 and may change as subsequent conditions vary.

Executive Summary

While central clearing of OTC derivatives as a concept and market practice matures, the framework to incentivize clearing through resilient CCPs, that protect the interests of all stakeholders in times of stress, is still a work in progress. We observe some evidence of market participants clearing voluntarily (e.g. clearing trades not subject to a mandate), though we believe this trend may stall unless the market and the regulators address certain shortcomings. Indeed, the recent losses incurred in the Nordic power markets revealed that CCPs are not immune to market disruptions.

Increasing Participation in Clearing

Specifically, to bring a greater number of OTC participants into clearing and to evolve the clearing models, we recommend:

1. Industry takes the lead in a number of key areas:

- **CCPs should offer increased opportunities for netting offsets.** These could incentivize clients to clear more positions voluntarily through the CCP. Such offerings should be carefully constructed and regulated to avoid a race to the bottom in risk management.
- **Pension funds should be able to post securities as variation margin to the CCP.** This would be an industry-led solution that could, over time, remove the need for the EMIR pension fund exemption in the EU and bring additional participants into clearing.
- **Market participants as a whole can improve co-ordination and address inconsistencies.** Private sector stakeholders should better co-ordinate participation across end-users, clearing members and CCPs when launching new products. Also, addressing inconsistencies around the costs of clearing (which ultimately are borne directly or indirectly by the end-investor) could help to facilitate broader participation.

2. Policy makers renew their focus on cross border equivalency for CCPs and consider granting equivalency for clearing members.

A view on regulatory equivalency between CCPs and clearing members is required. Various jurisdictional requirements that restrict access to extraterritorial CCPs or CMs impede the ability for end-users to efficiently access clearing services.

Enhancing CCP and Ecosystem Resiliency

To strengthen the resiliency of CCPs – and to reinforce end-investor confidence in clearing - we recommend:

3. Policy makers redouble their efforts to enhance CCP resiliency, by for example:

- **Taking a view on the appropriate level of CCP capital.** Despite their systemic importance, CCPs are not currently subject to rigorous regulatory capital requirements.
- **Adopting, implementing and supervising CCP disclosure standards.** This process should be accompanied by the introduction of formal audit requirements to help ensure the accuracy of information released.
- **Ensuring end-investor representatives are included in relevant CCP stakeholder groups.** While investors are major users of CCPs, they have limited input into governance or operations. CCP rulebooks can be meaningfully altered without end-investor consultation today, which can be disadvantageous.

4. To enhance the markets' resiliency, intermediary risks should be actively addressed, including a targeted review of the feasibility of porting customer positions from a failed CM.

We urge policy makers to address account structures and legal frameworks that could impede the movement of positions and collateral.

Protecting the End-Investor in Clearing

To protect the end-investor from bearing losses due to the failure of CCPs, we reiterate our objection to the use of variation margin gains haircutting (VMGH) and request regulators formally limit its application.

5. VMGH should be removed from CCP rule books.

It should only be available to resolution authorities. Where the resolution authority has the ability to use VMGH, it should be subject to the following constraints:

- **VMGH losses should be capped and limited to one round of haircutting.** This would allow for appropriate measurement and management of CCP risk exposure.
- **VMGH losses incurred by end-investors should mandatorily be shared with clearing members.** This would ensure full alignment of interests of stakeholders towards prompt and effective resolution of the CCP.
- **Participants subject to VMGH should receive a senior claim against the CCP and its successors for the full amount of the variation margin taken from them.** This reflects the way in which a CCP would hold a claim over defaulting participants.

In this *ViewPoint*, we take stock of the progress to date in regards to establishing central clearing in global derivatives markets. We make a number of recommendations to develop central clearing further and to restate the case for the protections end-investors need and expect whether they choose to or if they are required by law to clear certain products. We draw the paper to a close by looking forward to how clearing could evolve over the medium and longer term exploring some of the main incentives to clearing from the end-investor perspective that underpin the evolution of the model.

Central Clearing Today

At the center of the post-financial crisis regulatory reform of derivatives markets was the push to clear OTC derivatives

on centralized infrastructure, with increased trading on venues wherever possible, as well as additional reporting to regulators and to the market. Derivatives that were historically negotiated and settled bilaterally are in certain cases required to be cleared through CCPs and/or executed on public trading venues, which provides the market and the regulators with improved transparency. Mandates to settle and clear derivatives at CCPs have been implemented across the globe. Additional requirements have been placed on bilateral trades, such as mandatory margin requirements and trade reporting. These changes have incentivized the market to shift more trades into the centralized infrastructure.

Incentives to Clear: An End-investor Perspective

There is discussion in the market regarding the unintended consequences of a broad brush clearing mandate that treats most market participants in the same way. Likewise in the regulatory community - in August 2018, the Financial Stability Board (FSB) published a consultative report of the evaluation on incentives to clear OTC derivatives. The report specifically evaluates the effects of the G20 financial regulatory reforms, how they interact and how they could affect incentives.

Here we briefly outline what is currently working well in clearing in the United States and Europe and the areas that are not working well, from the perspective of the end-investor who is ultimately committing the real money (i.e. their positions and margin) to clearing.

Progress to Date

The expansion of clearing in recent years has resulted in a number of benefits across global financial markets that create incentives which encourage more clearing. The end-investor benefits from multilateral netting and risk reduction through the CCP's mutualization of risk. Where end-users decide to voluntarily clear, they do so primarily due to liquidity in cleared products, execution efficiency and various cost considerations.

Overall, market participants, clearing members and end-users alike, are getting an increased sense of what it costs to clear. We view this transparency as a benefit of clearing and an incentive to clear. As clearing develops further, it would be appropriate to revisit pricing models with a view to standardization across products.

The overriding incentive to clear, we believe, is to transact and clear in a well-regulated and increasingly transparent market, in which products can be safely cleared on a CCP that has a suitable risk management framework in place.

Weaknesses in Today's Clearing Framework

An overarching theme in a discussion of the incentives to clear from an end-investor perspective, is an emphasis on practicality. By way of principle, we believe that only products that are supported by appropriate risk management frameworks and have sufficient liquidity are appropriate for clearing. Only in these products should market participants be required to clear.

Differing jurisdictional requirements can also create barriers to efficient clearing, often compelling end-users to use a CCP or CM in a specific domicile, or require the use of particular account structures. This inhibits competition amongst CCPs and amongst CMs and adds to the concentration of risk in the ecosystem more broadly. Cross border recognition of equivalent CCP and CM risk regulations should be prioritized.

One weakness that can be resolved in a relatively straightforward manner concerns the process to manage CCP technology outages. In our view, lessons from technical outages in the market should be drawn and actions taken to underpin market confidence in clearing. Specifically, we call on regulators to better manage how outages are addressed, including the communications with the market around such events.⁴

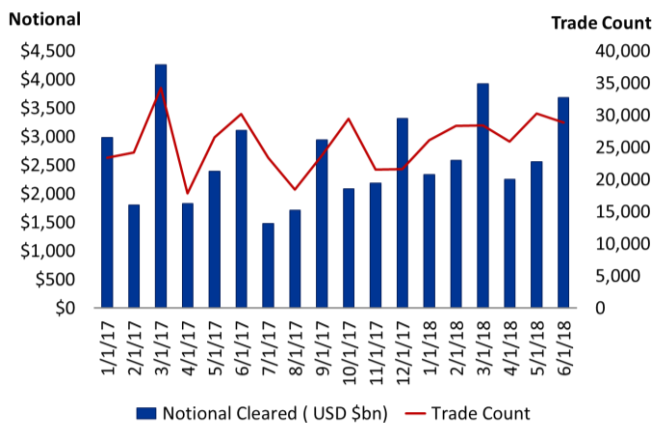
While most of the available market data, and hence the focus of this *ViewPoint*, naturally centers on those products in scope of the relevant legislation, we discuss broader trends in the market that we have observed. For example, we address voluntarily clearing products and asset classes that are not currently in scope for mandated clearing.

Market Overview and Dynamics

Notwithstanding the operational costs of set up and the ongoing servicing costs, clearing of interest rate swaps (IRS) and credit default swaps (CDS) has gained general market acceptance in recent years. Logically, the rate of acceptance accelerated following the entry into force of statutory clearing mandates. This is shown in the notable increase in cleared volumes, for example, in IRS.

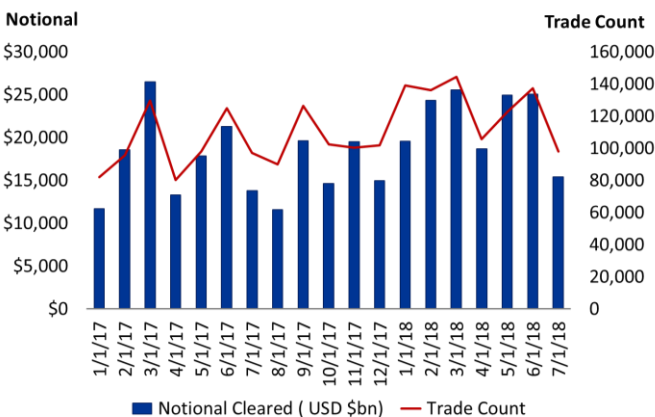
A comparison of the data from two leading CCPs that clear IRS, underlines this upward trend as shown in Exhibits 1 and 2.

Exhibit 1: Interest Rate Swap Volume at CME IRS



Source: Citigroup and CME

Exhibit 2: Interest Rate Swap Volume at LCH Client Cleared IRS

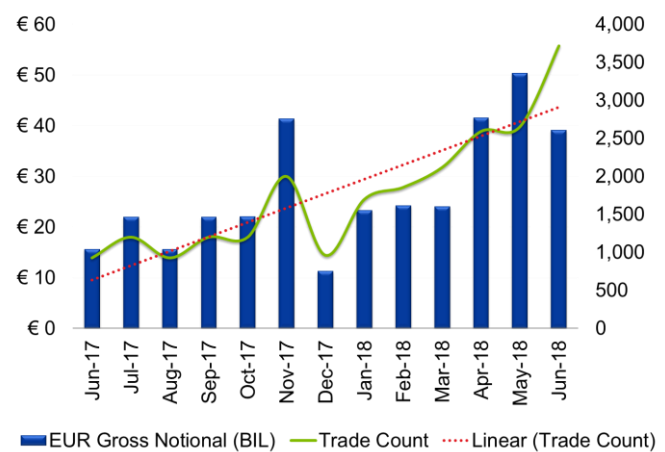


Source: Citigroup and LCH.Clearnet Ltd.

In the US and Europe, most of the financial incentives to clear non-mandated trades have been targeted at the dealer community, with margin and capital requirements set to favor cleared trades. Most dealers have now incorporated these incentives into their client clearing pricing, providing motivation to the end-investor to voluntarily clear. Many European end-investors have decided to voluntarily clear ahead of their category's compliance date.⁵

Though Europe has been slower to adopt clearing mandates, activity has grown significantly in the past year. For example, we have observed that our European clients have cleared four times as much OTC volume per month this year compared to 2017 (Exhibit 3). Much of the increase in cleared trades is attributable to voluntarily clearing (of for example, emerging market swaps) and new categories of clients (e.g. EMIR Category 3 clients)⁶ being phased-in to clearing.

Exhibit 3: Growth of Central Clearing (Europe)



Source: BlackRock

Voluntary Clearing

We identify five main drivers why end-investors voluntarily choose to clear today:

- **Increasing liquidity in cleared products.** Sufficient liquidity in a cleared product is one of the most important factors driving end-investors' willingness to voluntarily clear derivatives. A moderate increase in liquidity increases the likelihood of voluntary clearing.
- **Trading efficiency.** Access to a broader set of liquidity providers aids best execution, improving the likelihood and efficiency of execution. As compared to a bilateral trade where an end-investor must assess the creditworthiness of its counterparty as well as other factors such as the execution price, the executing broker for a cleared trade presents minimal credit risk, which opens up a greater universe of dealers with which end-investors feel comfortable trading.

- **Economics of the trade and cost advantages.** Generally the cleared price across asset classes is trending cheaper at execution. Though this can vary depending on the specific trade and executing broker, it is likely to be one of the main factors behind even greater adoption of voluntary clearing going forward.⁷
- **Netting margin efficiencies** from netting for end-users are another potential significant and positive cost advantage.
- **The entry into force of the initial margin requirements under the uncleared margin rules.** The requirement to post initial margin (IM) will take effect in 2019-20 for certain buy side counterparties, which will increase the costs and dis-incentivize maintaining a bilateral trade. Some large end-users are today voluntarily clearing what they can so that they can reduce their uncleared derivatives exposures, bringing exposure below the threshold in order to delay or avoid being brought into scope for the IM requirement. Other smaller end-users which wouldn't be caught by the IM rules until 2020 or beyond, are nevertheless, also voluntarily clearing in preparation. This is attributable to a CCP generally requiring a 6 month plus lead-time, as the in-house development work and the on-boarding process takes time. Finally, non-cleared swaps are likely to be more expensive from both a margin and execution (price) perspective. Executing dealers are already subject to IM and have moved the dealer to dealer liquidity to clearing, which also has trickle down effects to clients.

The Impact of Policy Choices on Clearing – Comparing the US and EU Markets

In the US, market participants have consistently cleared more trades than they are mandated to clear, as the chart below illustrates:

Exhibit 4: Actual Cleared Volumes vs. Mandated Cleared Volumes

	Total US IRD Trading Volume (US \$ trillions)	Cleared (%)	Mandated to be Cleared (%)
2014	143.8	77	73
2015	142.2	78	73
2016	166.3	84	77
2017	193.1	88	85

Source: ISDA

The narrowing gap between cleared volumes and non-cleared volumes reflects the expanded clearing mandate introduced in 2016.

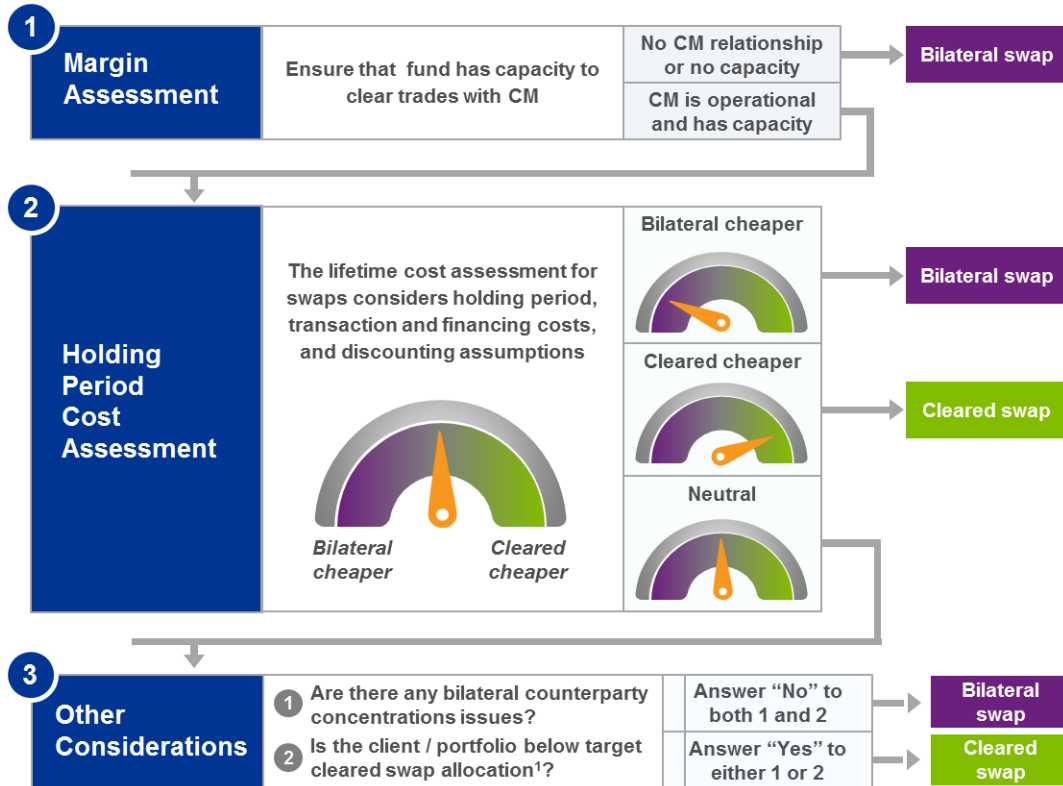
Europe's mandate is still in its early stages as compared to the US. In Europe, CCPs offer several different account structures with varying terms and fees (i.e. Individual Segregated Accounts, General Omnibus Segregated Account, Fund Manager Accounts, etc.) requiring clients to analyze the associated risks and cost impacts to their funds. Additionally, market liquidity in Europe has been slow to shift as clearing has not matured. Although central clearing is gaining traction in Europe, many end-users have delayed their preparations to clear until closer to the application of the various relevant clearing mandates and/or the incentives to clear voluntarily become more compelling. This is especially the case where clearing is more expensive (requiring initial margin) and in the absence of a bid/offer differential at the point of execution.

It should also be acknowledged that not only are the end-users different, the costs of clearing and their sensitivity to costs differ in the US as compared with Europe. Clearing members (typically dealer-banks which are often subsidiaries of global investment banks) are also different in terms of their setup, balance sheet composition, appetite for certain client types and risk models. In terms of product offering, US CMs seem to have wider coverage when compared to their European peers. For example US clearing members typically have a strong CDS offering (offering client clearing for all the clearable contracts and tenors) while some European clearing members were slow in developing their CDS client offering.

As a general observation, in the US end-users are much more aware of clearing and have more readily embraced the related benefits. More products are cleared in the US vs. Europe for a number reasons:

- Some end-users in Europe will have more cost sensitivity due to variances in fees charged for different account structures created by the CCPs as well as funding collateral.
- While we see a general shift in liquidity to the cleared markets, European end-users are not yet seeing the economic drivers in terms of pricing differences between bilateral vs. cleared.
- Many European end-users (and their consultants) are still going through the education process, trying to understand benefits versus the costs. By way of illustration, the typical decision making process of a European pension fund considering clearing could be summarized in Exhibit 5.

Exhibit 5: Cleared vs Bilateral Swap Selection



¹ The target is set to meet portfolio liquidity requirements, recognizing that cleared swaps often provide greater liquidity

Source: BlackRock, September 2017

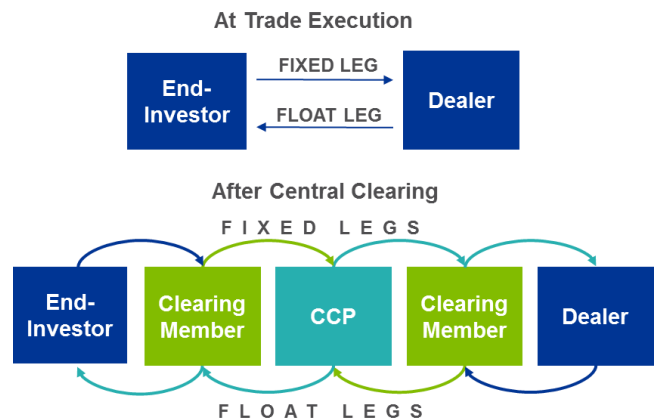
Nonetheless, European clients are slowly moving into clearing, especially long-dated pension funds⁸ and hence CCPs are generally seeing liquidity growing in the longer tenors, for example in the 10+ year maturity bucket. Having more participants is good for market quality – including for pension clients trading longer dated swaps - because it gives market participants more counterparties to trade with when getting in and out of a position, and could potentially lead to better execution quality.

Protecting the End-investor in Clearing

Clearing mandates and market incentives have successfully migrated a significant volume of OTC derivatives into clearing, and we are now seeing efforts to move securities financing into a cleared market structure. However, while CCPs reduce credit risk, it is important to recognize that risk is not eliminated, which was demonstrated by the recent CCP member loss allocation at Nasdaq Clearing. While the probability of a CCP failure is low, it is not zero. CCPs are businesses that can fail and CCP rulebooks are increasingly incorporating loss sharing mechanisms that impact the end-investor. In addition, the structure of the cleared market

creates a multifaceted risk profile for the end-investor. There is risk to both the CCP and to the CM (Exhibit 6). As clearing continues to develop, market participants and supervisory authorities need to recognize and address these risks accordingly.

Exhibit 6: Intermediation in Trading and Clearing

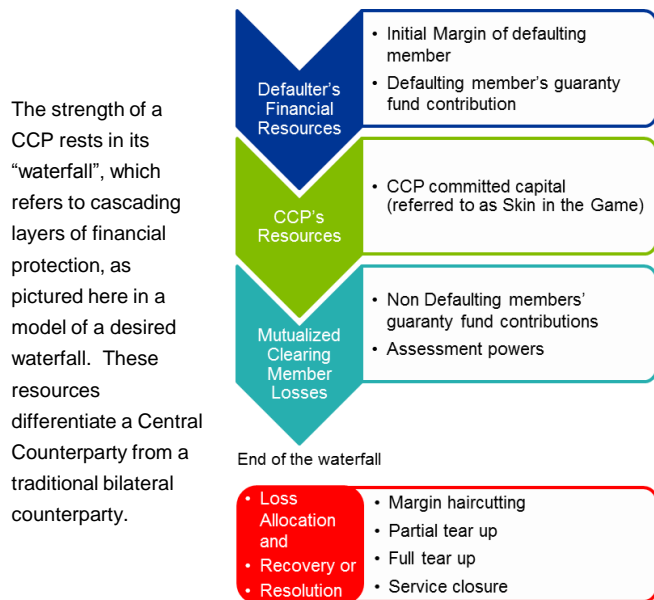


Source: BlackRock

The Risk of a CCP Failure

The key differentiator to a CCP's risk profile is the cascading layers of financial protection that they maintain, generally referred to as a "waterfall" (Exhibit 7). Many CCPs are able to use customer funds after they have run through their default management waterfalls and before they have exhausted their own equity. It is paramount therefore for CCPs to be sufficiently resilient to fully achieve the risk reducing goals of central clearing. If a CCP were to fail and exhaust the resources in its waterfall, it would have to resort to loss allocation to either recover or resolve.

Exhibit 7: Model Default Waterfall



Source: BlackRock

CCP Recovery and Resolution

End-investors have a direct interest in ensuring an effective and fair regime for recovery and resolution of CCPs without resorting to a taxpayer bailout. An effective regime for central clearing can strengthen investor confidence underpinning financial stability. A loss of confidence leads to reduced investment and causes investor flight which can exacerbate a crisis.

In this context we re-state our concerns regarding the potential losses to end-investors through the use of variation margin gains haircutting (VMGH) as a result of the non-performance of the CCP and the subsequent need to clearly set out requirements for its governance, calculation and usage of VMGH with no room for ambiguity. Strict controls and caps, as well as transparency on maximum potential exposure to losses, must be placed around potential use of VMGH. In the event of stress at a CCP, end-investors who fear they could be subject to losses inappropriately allocated

to them through VMGH would rush to the exit and rationally seek to rapidly close out positions. We are concerned that the possibility of haircutting end-investors does not create the right incentives to continue to maintain their positions and is potentially destabilizing on a system-wide basis. It also risks cascading defaults as participants expecting variation margin payments to cover hedging or other costs may not be able to fund the unexpected shortfall.

The Facts on VMGH

- What is referred to as "margin gains" is actually an investor's profit, which the CCP wants to reserve the right to use to cover losses because it failed to manage risks appropriately.
 - Without appropriate safeguards, such as timing limits and caps, VMGH can eliminate all gains.
 - As a form of loss mutualization, VMGH unfairly penalizes end-investors, who in general hold directional positions, vs. CMs or dealers, who generally manage to a flat market position.
 - While VMGH may resemble the loss allocation that often occurs in a bankruptcy proceeding, it is in fact meaningfully different. For example, in a bilateral insolvency:
 - the loss allocation is determined by an independent bankruptcy judge;
 - the loss allocation is not enabling a failed business to operate (assuming VMGH is used in recovery); and
 - the defaulted counterparty was deliberately selected from a competitive pool of dealers.
- In contrast, in a CCP-led recovery:
- VMGH is directed by the failing CCP;
 - VMGH enables a failing business to continue operations; and
 - the failing CCP may not have been deliberately selected since there is very limited competition amongst CCPs.

We continue to urge policy makers to establish the following framework for VMGH in CCP recovery and resolution legislative proposals:

- VMGH should never be available to a CCP as a recovery tool, but should only be available to resolution authorities. Despite opposition from many market participants, CCPs routinely incorporate VMGH into their rulebooks.
- VMGH losses should be capped by an absolute amount and/or limited to one round of haircutting to allow for appropriate measurement and management of CCP risk exposure.

- VMGH losses incurred by end-investors should mandatorily be shared with clearing members to ensure full alignment of interests of stakeholders towards prompt and effective resolution of the CCP.
- Participants subject to VMGH should receive a senior claim against the CCP and its successors for the full amount of the variation margin taken from them in the same way a CCP would hold a claim over defaulting members.

These concerns also suggest that policy makers should place the emphasis on pre-funded resources such as CCP skin-in-the game and the default fund in the ongoing discussions on CCP resiliency, recovery and resolution. In our view, this approach together with the restrictions around the potential use of VMGH would best safeguard end-investors' market confidence and ultimately tax payers.

CCP Resiliency

In conjunction with protecting the end-investor through recovery and resolution, we urge policy makers to keep focus on enhanced CCP resiliency. The global mandate to clear derivatives has given rise to the systemic importance of many CCPs, making resiliency a key aspect of financial market stability. We highlight three key aspects that require continued attention:

- **CCP capital** not only adds more loss absorbing resources, particularly when it is dedicated to the default waterfall, but equally importantly, it serves to align incentives. Despite their systemic importance, current CCP capital requirements lack true analytical rigor.
- **Disclosure standards** improve market confidence by allowing participants to independently evaluate and surveil a counterparty. Consequently, we encourage policy makers and CCPs themselves to adopt more formal standards and audit requirements. Current disclosures, though improved, lack formal standardization, contain little explanatory text and are not subject to an audit requirement.
- **Representation in stakeholder groups** and 'war game' scenarios can provide the market with valuable end-investor market perspectives. While end-investors are significant users of CCPs, they have limited control or input into governance or operations. Changes to default management practices, including potential loss allocation, treatment of client trades and auction mechanics are examples of factors that clients (and their agents) would want to understand.

The Risk of a Clearing Member Failure

The majority of end-investors can only gain access to clearing at a CCP through a CM. Fees are paid to the CM for this access, which are incremental to the CCP's fees for

clearing services. In most cases the end-investor retains counterparty credit risk to its CM, which can arise from several areas. This two-tiered risk structure is complicated for end-investors to manage and introduces risks that go beyond the risk of the CCP failing. The risks are highly dependent on the legal and market structure in a particular jurisdiction and often vary between cleared OTC and ETD markets. Some of these risks have been addressed in the cleared OTC market structures, but remain in the ETD structures, and some jurisdictions have specific requirements that mitigate these risks. Nevertheless, we recommend the regulatory community keep these risks in mind as they continue to enhance market resilience and customer protections. We recommend market participants consider ways to mitigate risks where appropriate. We endeavor to provide a general overview of the risks as follows:

- **Transit risk.** A CM receives funds from its customers and then sends those funds to the CCP's account at either a central or commercial bank. If the CM goes bankrupt after it has received the customer funds, but before it has sent them to the CCP's account, it is possible those customer funds could be considered part of the CM's bankruptcy estate.
- **Excess margin risk.** A CM will often hold excess customer margin, the origin of which can vary. One way this arises is when a CM requires the customer to post a multiple of the CCP's initial margin requirement. The CM may do this if there is concern over the customer's credit quality. Another way excess margin arises is through a practice referred to as "net margin." Some jurisdictions require a CM to collect customer margin on a gross basis but then permit that CM to reduce its obligation to the CCP by netting the customer positions against one another.
- **Fellow customer risk.** A CM will generally have two broad account types – a customer account and a house account. When a customer account is omnibus it holds the funds for multiple customers and the CCP may consider the customer account as a single entity. If there is a shortfall in the customer omnibus account, it can be met by all of the assets in that account, whether or not they belong to the defaulting customer.
- **Indirect CM risk.** An investor will generally contract with only a handful of clearing members and it is unlikely that any one CM is a member at all global CCPs. To access some markets, a CM will contract with a domestic CM to provide clearing services for its customers. This is often referred to as "indirect clearing" and gives rise to indirect CM risk. Although the contracted CM is responsible for selecting the indirect CM (often referred to as a "carry broker"), the end-investor still bears the risk of loss if that indirect CM were to fail.

- **Porting risk:** Porting refers to the process by which a failed CM's customer trades are moved to a non-defaulting CM, with the goal of preserving the end-users' positions while protecting any collateral pledged. Porting is one of the key elements of the safety envisioned in the cleared market infrastructure and yet, there is general agreement amongst industry participants that there are significant barriers that will make porting difficult to achieve during a time of market stress (e.g., CCP Risk Management Subcommittee recommendation to the CFTC Market Risk Advisory Committee⁹). Despite this general market agreement, we have seen little regulatory attention paid to the very real concerns raised. We urge policy makers to address these concerns, which include CM capital requirements, account opening requirements and changes to legal frameworks that could otherwise delay the quick and efficient movement of positions and collateral¹⁰. We also encourage regulators and CCPs to mandate clearing members and end-users to move to account models which make porting a realistic possibility of a CM default.

Going forward, CCP risk management should evolve to include a more robust analysis of these risks by the competent authorities, with the goal of reducing these risks across the cleared landscape.

We encourage regulators and market participants to make sure these risks are fully understood as products continue to shift to a cleared market structure. We note that some "direct access models" are attempting to address these risks by allowing the end-investor to directly access the CCP without having any financial relationship with a CM. These offerings have so far focused on cleared OTC (not ETD) and have not proven to be commercially viable.

Benchmarking the Three R's – Progress on CCP Resiliency, Recovery and Resolution

In our October 2016 *ViewPoint*¹¹ we addressed concerns about the risks to the end-investor in the cleared market infrastructure. Since then, CPMI-IOSCO and the Financial Stability Board have issued helpful recommendations to regulators and to the market to address issues around CCP interconnectedness, resiliency, recovery and resolution. At the European level the European Commission issued a formal legislative proposal to enshrine global standards into EU law, while ESMA has developed its CCP stress testing framework. In the US, the CFTC has conducted several cross CCP stress tests that have included both liquidity and default risk.

So while the direction of travel to address the recommendations we made in 2016 is broadly positive, there is still some distance to travel on the road ahead. We ask the regulatory community to keep its focus on the three core policy pillars: Resiliency, Recovery and Resolution.

We summarize progress on these elements in Exhibit 8 on the following page.

Central Clearing in the Future

While clearing is developing at different paces and with different results in the US and in Europe, based on our experience to date, there are a number of trends which we see gathering momentum in the medium to longer term.

Expectations over the Medium Term

First, **voluntary clearing of additional asset classes, currently not subject to the clearing mandate, is likely to increase.** This phenomenon will likely be driven by a combination of bank balance sheet optimization, potential for tighter bid/offer spreads, risk management, standardization and efficiency. In other words, due to increased capital charges through regulation, this could be seen as unattractive business for the broker resulting in either disadvantageous pricing and/or denial of access. Going forward, the capacity of the clearing system as a whole requires monitoring.

Second, **cleared products in the foreign exchange (FX) market will grow.** Today's cleared FX market is interdealer driven. This is shaped by uncleared margin rules and that the economics do not compel the buy side to join yet at this time. However, the expectation is that in time the buy side will join the banks in FX clearing when the economic incentives become compelling— non-deliverable forwards (NDFs) first and after that FX options. In our view, this development does not require there to be a formal regulatory mandate.

Third, the market will likely **see more voluntary clearing of inflation swaps (IFS).** This market will develop as the number of pension fund participants in clearing grows, as they are typically heavy users of IFS.

Finally, we believe in terms of the clearing ecosystem, we would expect to witness a continued decline in CCP choice as liquidity pools consolidate to a limited number of CCPs. This may ultimately benefit execution efficiency but is not the best outcome from a risk perspective. End-users need viable options to ensure an optimal distribution of risk.

Exhibit 8: Progress on Resilience, Recovery and Resolution

Why it's important	How it can be addressed	Today's status
<p>Resiliency</p> <p>Resiliency incorporates the safeguards to avoid a potential CCP failure. A strong risk management framework (including supporting regulatory structure) should keep the CCP viable in extreme but plausible market conditions.</p>	<p>Standardized, supervisory run stress testing is necessary to foster confidence in the infrastructure</p> <p>Financial resources and capital are not sufficient, with very small amounts of CCP capital at risk to a CM default or a non-default loss.</p> <p>Disclosure adequacy, reliability and consistency are insufficient.</p>	<p>Very good progress and the trajectory looks positive. Specifically, both the CFTC and ESMA have conducted rigorous cross CCP stress tests. What remains is for regulators and market participants to work together to run stress tests across borders.</p> <p>No known regulatory actions have been considered and CCP capital remains low, both in absolute terms and relative to the default fund. Market participants hold divergent views on capital adequacy and a regulatory response is needed.</p> <p>CCPs have taken initiative to move this forward, but it is still insufficient and more focus is required. CCPs have materially lower disclosure requirements than even the smallest public company. Regulatory intervention may be necessary.</p>
<p>Recovery</p> <p>Recovery consists of rules, written by the CCPs that allocates losses so the CCP stays in business, even if resiliency fails. Ensures continuity of service for critical CCPs.</p>	<p>Loss allocation rules are often opaque and complex and may allow loss allocation to the end-investor. Tools that allow a CCP to pass its losses onto end-users, while it remains in business, need to be removed or, at a minimum, subject to oversight by the Relevant Competent Authority.</p>	<p>No improvement in rule transparency.</p> <p>Increased use of end-user loss allocation tools in CCP rule books. Losses allocated to customers before CCP equity holders absorb losses. Emphasis appears to be on individual CCPs to address adequate protections through the rule book rather than through formal legislation.</p> <p>The Competent Authority needs more direct control over end-user loss allocation.</p>
<p>Resolution</p> <p>Resolution is the orderly wind down of the CCP. If Recovery cannot be achieved, a CCP must be wound down.</p>	<p>Resolution must begin when all sources of voluntary private capital are exhausted. Presumption that the continuity of all services in all CCPs is preferable to resolution is flawed. Maintaining a CCP at all costs will not always be in the best interest of the financial system or tax payer.</p>	<p>Compulsory loss allocation has not been removed from resolution plans.</p> <p>Scant evidence of any differentiation between CCPs that should be allowed to fail and those that may require extraordinary support measures.</p> <p>Resolution frameworks should remove compulsory loss allocation, particularly for CCPs that are not systemically important.</p>

The Longer-term Perspective

Over the longer term¹² we are looking to regulators to enhance the framework to allow for greater **competition between CCPs in certain products**. While clearing is generally a winner takes all game, the IRS market in Europe for example could benefit from two or more CCPs to enhance pricing competition and also to ensure end-investors have choice between CCPs that best protect their interests. The expansion of mandatory clearing beyond the US and Europe may help accelerate the number of CCPs as we expect local market CCPs to become more prevalent, similar to how the JSCC has become a meaningful competitor in the market for Japanese Yen swaps.

Another secular trend impacting the development of clearing is the **application of distributed ledger or blockchain technology**¹³ that can be used to change the way CCPs function, particularly where blockchain companies offer real

time clearing and settlement of contracts. Platforms allowing market participants to commission and run permissioned registry services for payments, settlements and clearing of cash could win in this space as could providers that increase cross margining offerings, which may otherwise further complicate CCP risk profiles.

Finally, **we anticipate the growth in CCP participation in the clearing of securities financing transaction (such as repurchase agreements (or “Repos”), securities lending and sell/buy-back arrangements)**. This has the potential to deliver significant benefits for financial market resiliency and directly to the end-investors, including:

- Enhanced counterparty (CCP) credit quality.
- A standardized risk management framework.
- Operational efficiency.
- The provision of alternative sources of liquidity particularly through periods of market tension.

Securities Financing Clearing – Background and Future Outlook

Clearing securities financing transactions between banks is a well-established practice. In the US, the OCC's Stock Loan/Hedge Program model reported an average daily loan value of \$180bn in June 2018¹⁴. In the European repo market, the majority of dealer to dealer repo is cleared with LCH and Eurex reporting a combined €800bn+ of >3 day maturity repo contracts in June.¹⁵ This represents approximately a quarter of the Repo market; with many participants and instruments yet to gain access to a clearing model.¹⁶

The challenge for CCPs and the market is extending these models to the buy side participants, who may operate as agents rather than principals, and who may have a different regulatory profile compared to traditional CMs, a different appetite for risk and who may find the initial and certain ongoing costs prohibitive, relative to the uncleared trading models that are typical in the securities financing markets today.

Through central clearing, market participants may be able to transact with a broader set of counterparties as the CCP guarantees counterparty performance obligations. It should also be noted that, as a central repository of data, a CCP will be in a strong position to quickly ascertain exposures in a member default scenario and conduct an orderly wind-down via position netting and standardized default management procedures.

Importantly, a CCP will drive standardization of securities financing transactions that will create long-term efficiencies in daily operational processes, as the myriad operational relationships such as initial trade settlement through all lifecycle events will collapse down to a much simpler model. As the market starts to work towards greater transparency and settlement discipline, transacting through a CCP materially reduces settlement failure and opacity, and will therefore increase scalability.

Demand for cleared solutions will naturally vary across products and market participants, and will be particularly impacted by the ability of global banks to profitably transact in bilateral, un-cleared transactions. Repo practitioners, for example, who secure enough balance sheet¹⁷ from bilateral counterparties or those who choose to utilize financing alternatives to repo such as ETDs or

OTC derivatives will likely have limited demand for cleared repo. Money market funds on the other hand, who need to place cash on an overnight basis, may realize pricing and capacity benefits through a CCP in contrast to a bi-lateral model where holding cash is a low yielding activity that consumes a significant proportion of a counterparty's balance sheet.

There are many considerations for potential participants to consider – the implementation effort and associated costs for buy side participants can be significant depending on the transaction; the perceived resiliency and creditworthiness of the CCP; the ability of a derivatives CCP to successfully pivot into securities finance, particularly given the different liquidity risk profiles; and the selected membership model. For those required to do so, the increased costs of posting IM and VM, as well as the costs and risks of contributing a default fund should be considered. As the cleared market gradually welcomes a broader set of participants, the true impact of these costs on the economics for the buy side will become clearer.

While we don't anticipate the clearing of securities financing transactions to become the dominant trading model for the buy side, we do expect to see CCPs evolve as part of the risk management and trading toolkit alongside the traditional bank-intermediated OTC structure. We would, however, encourage CCPs and regulators to ensure that the barriers to access for many buy side participants are considered and addressed. Market practitioners globally are finding regulations designed for bilateral securities financing transactions do not align with the proposed CCP models – for example, rules in various jurisdictions limiting the types of counterparties a public fund can face for a securities financing transaction can sometimes prevent the fund from entering into a cleared trade where its counterparty is the CCP. The industry should, therefore, consider engaging with regulators to discuss a central clearing enablement framework, where certain restrictions that apply to bilateral trading are reviewed in the context of the strength of the CCP and the unique requirements of the operating model.

Conclusion

We applaud regulators' efforts to make the financial system safer in the wake of the global financial crisis. Today the financial system is safer, in as much as additional capital requirements and the shift to centrally clear OTC derivatives, has insulated the financial system from shocks of the like witnessed 10 years ago. Market participants have worked alongside regulators to deliver clearing access, increasingly competitive services and products contributing to the success of the reform efforts to date.

While much work has been done already to develop central clearing and by so doing underpin global financial stability, more work needs to be done to improve the operational efficiency of clearing, incentivize a wider range of participants to move into clearing and ultimately to protect the end-user whose products are centrally cleared. The importance of continued regulatory focus was emphasized by the large mutualized loss experienced in the Nordic

power markets this month, with two-thirds of a CCP's default fund consumed by one single clearing member default. While the CCP proved resilient, the loss allocation defied expectations and should challenge assumptions. Extreme market moves happen at unexpected intervals and in unexpected places.

Importantly, attention should re-focus on equivalency, as this represents a regulatory roadblock that ultimately complicates a process that is designed to reduce systemic risk. As this *ViewPoint* has also shown, the roll out of central clearing to additional products and geographies raises many more questions than answers, and these questions will need to be addressed over the coming months and years.

We look forward to working with regulators, market participants such as CCPs and CMs, and our clients to address the challenges that lie ahead, and to promote an effective and well-functioning marketplace that allows our clients to meet their investment objectives.

Endnotes

1. For an overview of how clearing works and the relevant legislation governing clearing frameworks globally, see pages 1-3 of the BlackRock *ViewPoint* (October 2016) on CCP Resiliency, Recovery and Resolution: <https://www.blackrock.com/corporate/literature/whitepaper/viewpoint-ccps-resiliency-recovery-resolution-october-2016.pdf>
2. According to ISDA data (2018) 88.6% of trades are currently cleared while cleared index CDS represents 83.6% of total notional traded: <https://www.isda.org/a/Z49EE/Swaps-review-Q1-2018.pdf>
3. For data and trend analysis on clearing member concentration over a 15 year period, see: <https://www.clarusft.com/fcm-rankings-concentration-q3-2017/>
4. In one recent prolonged technical outage in a globally significant CCP, it was not clear which rules were being enforced or who was empowered to decide on which rules were being followed leading to significant room for interpretation. This led to confusion in the market and inefficiencies in the clearing process.
5. For example, pension funds under the EMIR framework currently have an exemption from mandatory clearing. There are also examples of asset classes and products that are not currently subject to a clearing mandate but where a limited amount of clearing activity already takes place. For example non-deliverable Korean, Chinese and Indian IRS and single name CDS.
6. Categories of clearing entity under EMIR: Category 1 – Financial Counterparty (FC) and Non-Financial Counterparty (NFC) plus entities that are clearing members for the mandated instruments; Category 2 - FC entities and NFC plus Alternative Investment Funds (AIFs) who are not clearing members but whose Aggregate Month-End Average Notional Amount of non-centrally cleared derivatives greater than €8bn; Category 3 - Other FC and NFC plus other AIFs; and Category 4 – NFC plus entities not in categories 1, 2 or 3.
7. Clients still need to take into account a holistic view of costs, which includes clearing costs - the fees charged by the CMs and the CCP over the life of the trade. Depending on the counterparty, some market participants may adapt their trading costs to encourage clearing.
8. See: <https://www.lch.com/sites/default/files/media/files/European%20Clearing%20Factsheet.pdf>
9. See: https://www.cftc.gov/sites/default/files/idc/groups/public/@aboutcftc/documents/file/mrac111716_ccpdrecommendations.pdf
10. In Europe, "net omnibus client accounts" (NOSAs) are still commonly used in relation to ETDs. These accounts would record positions on a net basis (i.e. one clients position would be netted against another clients position) and the corresponding margin call from the CCP to the CM would be calculated on a net basis. There is a significant risk in relation to these NOSAs that porting, on a CM default, will not be achieved both in relation to the positions and assets recorded in the NOSA. This position differs as compared to most "gross omnibus client accounts" or "individually segregated accounts" where the regulatory regimes or framework put in place through CCP rules make porting more likely.
11. See BlackRock *ViewPoint* (October 2016) on CCP Resiliency, Recovery and Resolution in which we outlined a number of recommendations to strengthen CCP resiliency and to best protect the end-investor in central clearing: <https://www.blackrock.com/corporate/literature/whitepaper/viewpoint-ccps-resiliency-recovery-resolution-october-2016.pdf>
12. We note that this perspective presumes the regulatory community successfully addresses CCP risk shortfalls, including required capital levels and disclosures. Failure to do so could impact the buy side's longer term clearing strategy for its clients.
13. We note that these developments are under way already. Two contemporaneous examples include (1) the Australian Stock Exchange (ASX) offering to settle trades in one day rather than two to reduce risk going forward. Their distributed ledger will be used to clear and settle \$2tr Australian cash equity market; and (2) Citi and CME are implementing a real time distributed ledger platform that allows banks to view the collateral in its ledger in real time.
14. http://www.securitieslendingtimes.com/securitieslendingnews/article.php?article_id=222343
15. <https://www.lch.com/services/repoclear/repoclear-ltd/volumes>
<http://www.eurexrepo.com/repo-en/info-center/statistics>
16. <https://www.financialresearch.gov/money-market-funds/us-mmfs-investments-in-the-repo-market/>
17. <https://www.investopedia.com/terms/b/balancesheet.asp> / <https://www.investopedia.com/terms/b/bank-capital.asp>

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BlackRock response (November 2017) - EU Consultation on Post-Trade in a Capital Markets Union (November 2017): <https://www.blackrock.com/corporate/literature/publication/ec-consultation-on-post-trade-in-a-capital-market-union-151117.pdf>

BlackRock response (September 2017) - CPMI-IOSCO Consultative Report on a Framework for Supervisory Stress Testing of Central Counterparties (CCPs): <https://www.blackrock.com/corporate/literature/publication/consultative-report-on-framework-for-supervisory-stress-testing-of-central-counterparties-cpmi-iosco-170921.pdf>

BlackRock response (October 2016) – CPMI-IOSCO Consultative Report on Resilience and recovery of central counterparties (CCPs): Further guidance on the PFMI dated August 2016: <https://www.blackrock.com/corporate/literature/publication/cpmi-iosco-ccp-resilience-and-recovery101716.pdf>

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