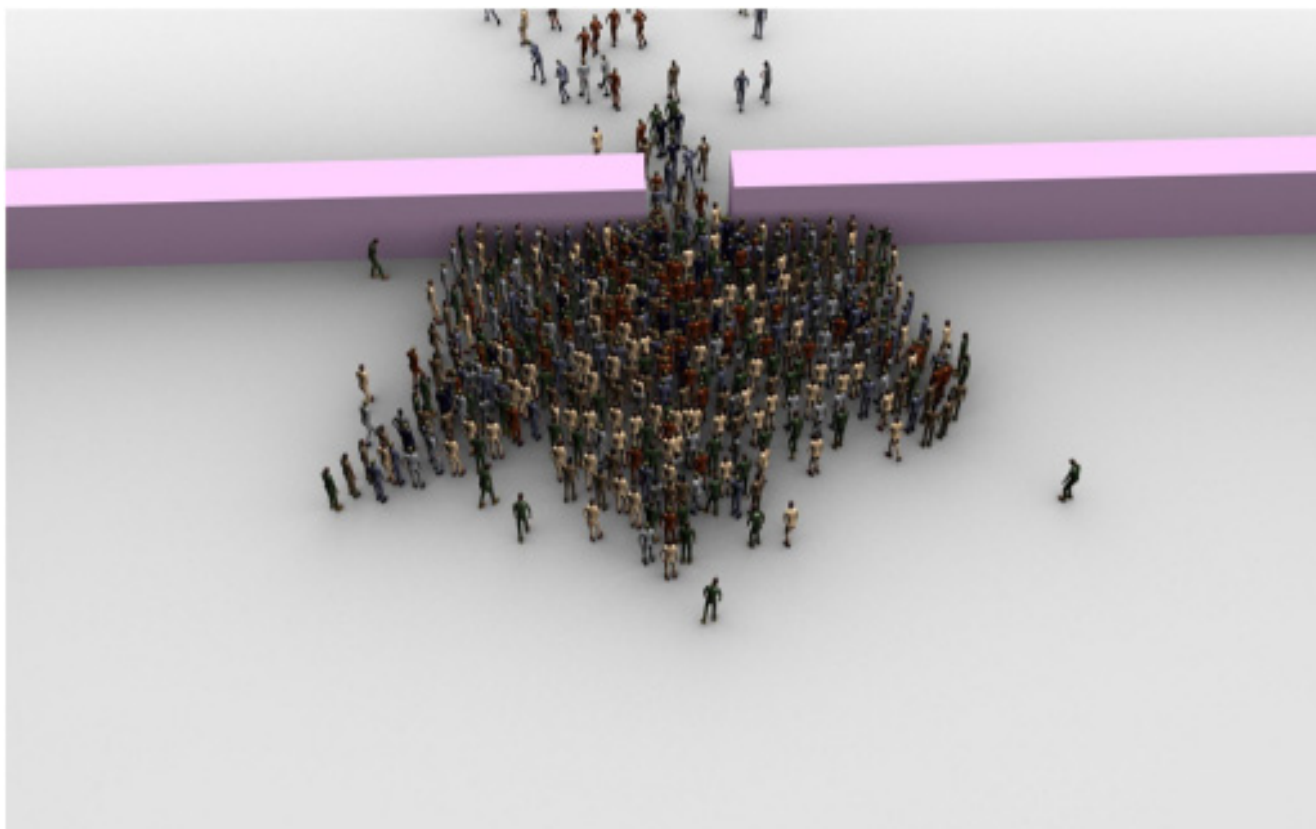




**SOLUM
FINANCIAL**
DERIVATIVES ADVISORY



CALYPSO



The inevitable fragmentation of clearing: A new landscape for derivative end-users and CCPs

July 2015

1. Introduction

Executive Summary

On the basis of current trends, banks taking on new OTC clearing clients will be highly selective and some will move away from third-party clearing altogether. Risk management issues and clearing broker risk are bound to rise as clearing services providers retreat. Charges seem certain to increase significantly because of the banks' cost pressures as well as the supply-demand imbalance and, in all likelihood, the full upward adjustment in charges for clearing services is a long way from being complete.

Until the mid-1990s, the central clearing of financial instruments was an activity centered on clearing houses which were typically regarded as the back-office to front-office derivative exchanges whose contracts they cleared.

Since then, the expansion of central clearing – organised by clearing houses re-labelled as CCPs (central counterparties) – to a wider range of financial instruments has been one of the most visible changes in the structure of global financial markets. As the product range of clearing has expanded, banks have become more important as clearing members, and with OTC derivative clearing, memberships are more or less exclusively held by banks, the largest of whom are also market-makers in OTC derivatives.

In this pre-financial crisis environment, the landscape for clearing services was characterized by abundant, inexpensive and readily available supply of client clearing services. Since then however, the supply and demand equilibrium for such services has been materially altered.

On one hand, as part of a regulatory response to the financial crisis, reform proposals were endorsed by G-20 governments in 2009 making the central clearing of most OTC derivatives compulsory for most counterparties – with the view that such mandatory clearing mandate would improve transparency and robustness of the financial system. These regulatory changes have generated a surge in demand for clearing services.

At the same time, on the supply side, the ranks of non-bank clearing brokers have fallen steadily since the early 2000s. In any case, such clearing brokers are unlikely to offer clearing of OTC derivatives and may not be regarded as suitable counterparties by all prospective clients. Post-crisis regulatory changes have introduced explicit balance sheet and capital costs for financial institutions using OTC derivatives, both un-cleared bilateral and cleared businesses. This deterioration in the balance of profits and balance sheet costs acts as a primary constraint on the ability of financial institutions to continue to offer clearing services. In addition, the global low interest rate environment combined with increased account segregation has resulted in significantly lower revenues earned by the clearing broker from the investing collateral. Already, a number of banks have announced they are pulling out of that activity.

To comply with the clearing obligation for OTCs, financial institutions and large commercial users are left with two options: to have their positions cleared through a clearing broker with CCP clearing memberships, or to become a CCP clearing member themselves. The first of these options is likely to be associated with:

- rising costs – as clearing services providers pass on at least partially the sharply higher costs they incur under new regulations
- increased risk management issues, such as management of clearing broker risk. As the compulsory clearing mandate is enacted at a time when clearing service providers are retreating, the ability of end users to transfer their positions and collateral from one clearing member to another clearing member (upon failure or more simply because that member is withdrawing from providing the service) may be severely constrained by the limited supply of alternative clearing member that will stand in and accept such 'porting'

For these reasons, the acquisition of clearing memberships in order to 'self-clear' has already become, and will increasingly be seen as, both a rational and potentially a necessary path to evaluate, and then, in some if not all cases, to tread.

Such decision-taking, and the supportive analysis, will entail a complex examination of the nature and composition of the OTC derivatives businesses of the decision-takers, of their related capital and funding needs, regulatory implications and operational costs. The optimal implementation of the decision to self-clear (and the related need to manoeuvre between competing CCPs, with different criteria, risk management and margin methodologies) will also be a relatively complex one.

As the later part of structural regulatory changes continue to progress (with the likes of ring-fencing and MiFID II coming into focus), the current clearing ecosystem is in a state of flux. The existing clearing membership rules can already accommodate certain client segments in becoming direct clearing members, but further changes may be needed in due time to broaden membership to other segments and eventually to create a scalable, democratic clearing system with controlled systemic risk. The ability to understand OTC derivatives clearing, both from the financial product and risk management angles but also from the technological and operational perspective, will be a crucial element of a smooth transition for institutions willing to undergo this process.

Glossary

Clearing broker	Bank or non-bank offering clearing services and having one or more CCP memberships to undertake that activity
CCP	Central Counterparty: label introduced around 2000 in European discussion of central clearing of cash equities Now used interchangeably with CCP
EMIR	European Market Infrastructure Regulation
FCM	Futures Commission Merchant: US regulatory term for clearing broker
GFC	Global Financial Crisis
ISDA	International Swaps and Derivatives Association
IM	Initial Margin
IRS	Interest Rate Swaps
LCR	Liquidity Coverage Ratio
OTC	Over-the-counter
RWA	Risk-Weighted Assets

2. The supply of and demand for clearing services

Product expansion of central clearing by CCPs historically market-led...

Until the mid-1990s, central clearing of financial instruments was a little-known activity, centered on clearing houses which were typically regarded as the back-office to front-office derivative exchanges whose contracts they cleared. Since then, the expansion of central clearing – organised by clearing houses often re-labelled as CCPs (central counterparties) – to embrace a wider range of financial instruments has been one of the most visible changes in the structure of global financial markets.

This initial expansion was market-led, with Europe and other areas catching up with the US and adding the central clearing of cash equities, bonds and repos to the established clearing of exchange-traded futures and options, and Europe then innovating with the introduction of interest-rate swap (IRS) clearing.

... but the latest and potentially largest expansion has been legislation-led

One of the key features of the reform proposals endorsed by G-20 governments in 2009, in response to the first phase of the financial crisis, was that legislation should be introduced making the central clearing of most OTC derivatives compulsory for most counterparties.

This was part of a package designed to improve the transparency and robustness of the financial system and comprising four principal components in respect of OTC derivatives: 1) mandatory reporting to trade repositories, 2) exchange trading of standardised OTC derivatives, 3) mandatory central clearing of standardised OTC derivatives, 4) bilateral margin requirements, higher capital charges and tightened risk management practices for non-centrally cleared OTC derivatives. The latter set of rules (finalised by the Basel Committee in March 2015) acts not only as a prudential measure in relation to non-cleared business but also as an incentive to move as many products as possible under the umbrella of central clearing.

The mandatory OTC clearing proposal was acted upon swiftly, notably in the Dodd-Frank Act in the US and in the European Union's European Market Infrastructure Regulation (EMIR), even if the subsequent approach has been one of phased implementation based on instrument type.

Clearing house membership: the backbone of the CCP model

Central clearing centered on CCPs involves a rather larger number of financial and to a significantly lesser extent non-financial firms whose membership of CCPs allows them to register with the CCP their own and their clients' trades in the instruments cleared by the CCP.

In the early period of modern clearing when contracts in the forward prices of commodities were the only instruments cleared, the 'clearing members' of CCPs were specialist 'clearing broker' firms, typically non-banks (*Futures Commission Merchants –FCMs–* in the US). As the product range of clearing has expanded, banks have become more important as clearing members, and with OTC derivative clearing, memberships are more or less exclusively held by banks, the largest of whom are also market-makers in OTC derivatives.

While non-bank clearing brokers have measured their success by the profit generated by their specialist activity, banks have often viewed clearing as an ancillary service offered to prime clients to whom they provide a number of other profit-generating facilities and products, and as an internal service to their treasury functions and trading desks.

Some CCPs have at times restricted clearing membership to banks. However, membership of most CCPs is now open (subject to varying membership criteria) to banks, non-bank financial intermediaries, commercial firms, and, as a more recent feature in some cases, investment firms.

As noted above, CCPs permit their clearing members to register both house account and client account transactions, provided the firms' regulatory authorisation permits them to undertake client business. House (or own) account business usually includes the business of related entities, while firms may of course restrict their clearing to only house or only client transactions. As the product range of clearing has expanded, those CCPs that have in the process become multi-product clearing houses have introduced membership criteria which vary according to the product cleared, with particular differentiation, in the form of stricter criteria, for OTC derivatives as opposed to exchange-traded cash or derivative instruments.

Catch-22: regulation and the supply and demand of clearing services

New regulatory environment has led to increased demand for clearing services...

Firms required by the recent legislation to clear their OTC derivative positions face civil action, with consequential financial penalties and other sanctions (including in extremis de-authorisation for regulated financial firms) if they do not comply with the law. In effect, the firms have no choice other than to clear their positions through one or more CCPs. There are two options to achieving that end:

- to have their positions cleared through a CCP clearing member (option 1)
- or, should the membership criteria allow it, to become a CCP clearing member themselves (option 2)¹

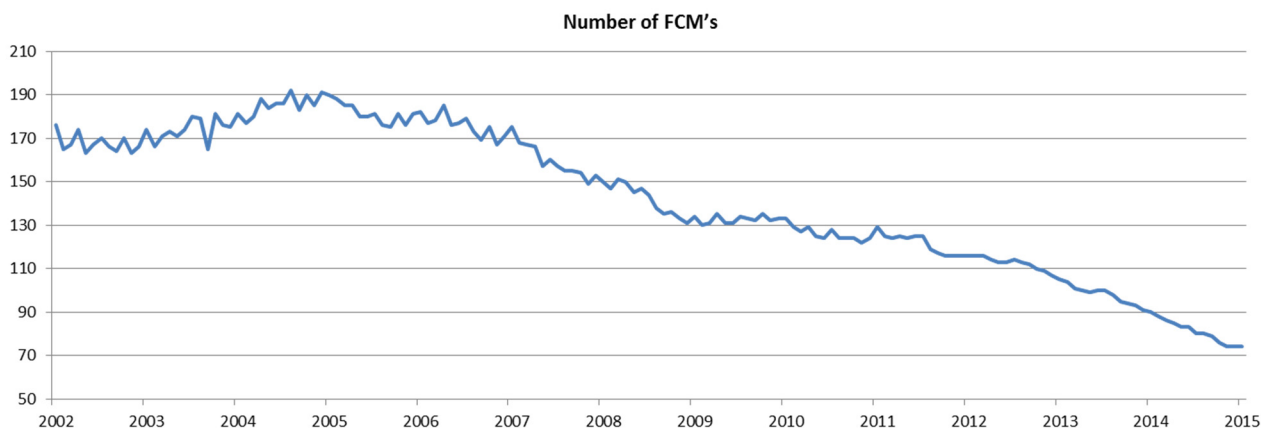
Option 1 is a choice only if there is a supply of clearing brokers of sufficient experience and counterparty creditworthiness willing to meet the demand for clearing services from third parties on mutually acceptable commercial terms.

¹ It is of course possible for a firm to use both options, directly clearing its core OTC positions as a clearing member and using the services of a clearing broker to indirectly clear other positions as a client

...but supply of such services is now increasingly constrained...

As things stand, the number of clearing brokers is lower than it has previously been, and is contracting further. The number of non-bank broker-clearers, characteristic of the US and UK markets rather than those elsewhere in Europe (but that as noted earlier may not offer clearing of OTC derivatives and who may not be regarded as suitable counterparties by all prospective clients) have fallen steadily since the early 2000s. Most have left because of falling profits, sometimes bearing the scars of client defaults, while others, notably Refco and MF Global, have failed, leaving scars on many parties.

Chart 1: *Historical retreat of broker clearers registered in the US*



Source: CFTC

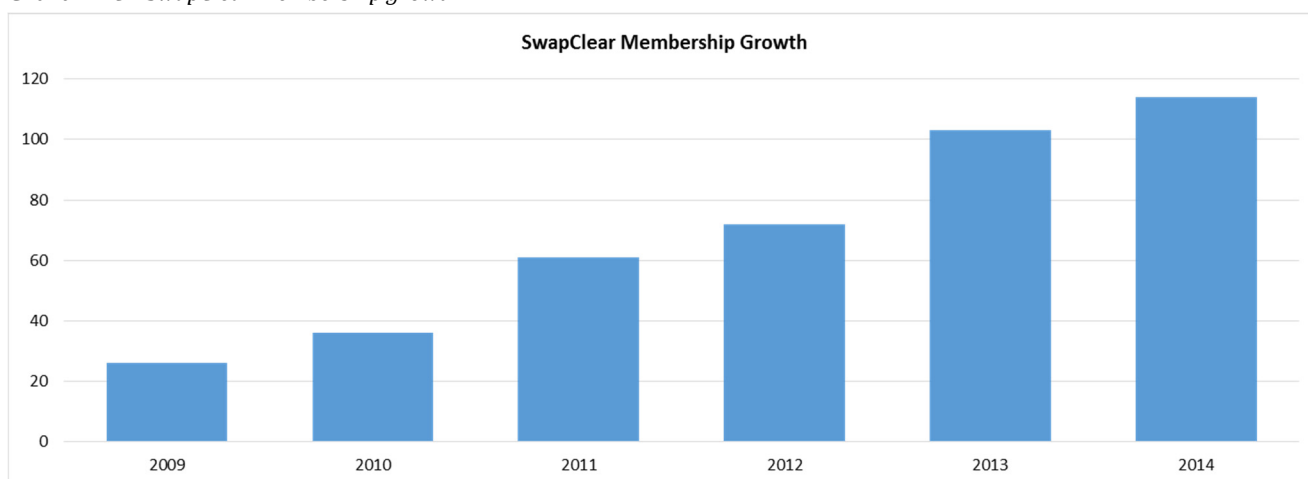
Bank owned clearing broker subsidiaries offering exchange-traded derivative clearing services to third-party clients have at various earlier stages curtailed or restricted their activities for a number of reasons. By common consent, commissions have narrowed, interest earned on client collateral has significantly reduced, while awareness of risk has increased.

As matters stand, banks are essentially the only CCP clearing members of the major OTC derivative classes: the only available choice for option 1. Their initial interest in clearing OTC derivatives was not, however, the result of their wishing to undertake clearing for clients: LCH's SwapClear was intentionally established as an inter-bank service, and the banks' motivation was to reduce their operational and regulatory capital costs through clearing, whilst maintaining their client-facing swap business on a bilateral basis.

Legislation introducing mandatory clearing of OTC derivatives has changed the landscape by covering most transactions, including client as well as inter-bank business. LCH's OTC clearing and that of other CCPs following its lead have been modified or designed accordingly. Membership criteria have to a limited extent been modified to facilitate non-bank clearing of OTC derivatives. However, that has as yet not had any perceptible impact on the position of banks as the virtual monopoly suppliers of access to CCP clearing of OTC derivatives for non-clearing member firms.

The result is that, in meeting their new obligation to clear, non-bank users of OTC derivatives have had to use the clearing services of banks. In contrast, banks have, since the new legislation, increasingly opted to clear their own OTC business rather than use the services of another bank.² The rapid expansion in the number of LCH SwapClear clearing members is shown in Chart 2.

Chart 2: *LCH SwapClear membership growth*



Source: LCH.Clearnet

² This is likely to reflect a general reduction in the appetite for inter-bank risk from all banks, a trend encouraged by regulators who openly speak of their suspicion of what they label 'tiered' clearing arrangements

... in part due to those same regulatory pressures that have created the demand in the first place

Banks cannot, however, be coerced into supplying clearing services to third-parties, and their appetite to do so has been significantly affected by the new banking regulation that formed the pillar of the response to the financial crisis. As we describe in the costs and benefits section below, such regulatory changes have introduced explicit balance sheet and capital costs for financial institutions dealing in OTC derivatives, both on a bilateral basis but also with respect to cleared businesses. CCP requirements have become more onerous for clearing members, in OTC and exchange-traded products, even if, in response principally to US legislation, apparent minimum capital requirements for OTC clearing membership have fallen³.

New regulatory rules affecting CCPs have had the effect of increasing margin requirements whilst restricting the range of permissible collateral, and similarly increased both the size of contingent clearing/default/guarantee funds⁴ contributed by clearing firms and their obligations to supplement those funds in case of need, including provision for multiple clearing member failures.

On all fronts, banks providing client clearing services are faced with markedly higher costs, and have heightened awareness of the related inter-bank, concentration and liquidity risks. At the same time, to offer a full client clearing service now requires clearing memberships on a substantial scale, as new OTC CCP providers have emerged⁵.

The other new factor is a by-product of the emphasis on enhanced client protection embodied in the new legislation and regulation, and best illustrated by EMIR. CCPs are obliged under EMIR to offer client accounts which facilitate the transfer of client positions and related margin collateral ('porting') in the event of the failure (or in advance of the failure) of a clearing member. As CCPs have pointed out, despite their new obligations, and rule changes that many of them have made⁶, they can only go so far in facilitating 'porting': the positions and collateral need to be transferred from the failing or failed clearing member to another clearing member, and CCPs cannot dictate acceptance of such transfers because risks are necessarily involved for the receiving firm. The failure of a major bank would involve many hundreds of clients seeking new homes for their positions in a very short period of time. Clearing members would need to evaluate the additional collateral and liquidity requirements of the relevant CCPs before accepting new positions, quite apart from undertaking their counterparty assessments, examining whether internal limits would be breached, and so on. Clients understandably seek as much certainty as they can, but absolutely 'guaranteed' porting will continue to prove elusive.

The resulting supply/demand imbalance favours a move towards self-clearing

On the basis of current trends, banks taking on new OTC clearing clients will be highly selective and some will move away from third-party clearing⁷. Charges seem certain to increase significantly, because of the banks' cost pressures as well as the supply-demand imbalance, and it is unlikely that the upward adjustment in charges for clearing services has done more than begin.

For these reasons, option 2 – the acquisition of clearing memberships in order to 'self-clear' – has already become, and will increasingly be seen as, both a rational and potentially a necessary path to evaluate, and then, in some if not all cases, to tread.

It must be noted, however, that while the current state of clearing membership rules could allow for financial institutions that do not already self-clear to make and implement such changes, CCPs might have to broaden their membership criteria over time (notably, the requirement to participate in so-called "fire drills") to enable a broader set of end users – such as buy-side firms, or even large corporate clients – to become direct clearing members. Such a decision is not in itself uncontroversial.

On this point, it is important to note that the decision to self-clear is not solely in the hands of the prospective clearing member. For example, it is unlikely that CCPs and in particular existing clearing members will readily accept new members with directional and/or concentrated portfolios who would mutualise counterparty risk without contributing to the default management process. Such membership extensions likely require CCPs to increase and vary IM by counterparty (including directional multipliers and discretionary overcollateralisation through haircuts to account for concentration and asset-specific risks) based on the risk profile they bring – effectively creating a proxy default contribution by way of higher initial margin rules.

³ The Dodd-Frank Act follows the earlier Bill in stipulating that the minimum capital requirement for OTC derivative clearing membership should be no higher than \$50mn. US-registered CCPs offering OTC clearing have implemented the minimum: LCH improbably lowering its SwapClear requirement from \$5bn to \$50mn in one change of its rulebook. But in practice those CCPs require capitalisation significantly above their stated minimum and set additional risk-related requirements for lesser capitalised clearing members

⁴ CCPs have not standardised their references to the funds designed to cover default losses which exceed the initial margin of the defaulter, although most have chosen clearing fund, default fund or guarantee fund. In the rest of this paper default fund is used as it is the most descriptive term

⁵ For example, LCH's SwapClear was the only CCP clearing service for IRS until CME offered IRS clearing from the US in 2010. CME Clearing Europe and Eurex Clearing are now also CCP providers in Europe, and other CCP services have been established in Asia

⁶ CCPs offering OTC clearing have mostly specified that clients who select accounts designed to facilitate porting, or in some cases all OTC clearing clients, must nominate and have agreements in place with at least two OTC clearing members, in order to make 'porting' more feasible

⁷ Risk magazine – Nomura reviews viability of swaps clearing business (Apr 2015) (<http://www.risk.net/risk-magazine/news/2405748/nomura-reviews-viability-of-swaps-clearing-business>)

3. Benefits and costs of self-clearing

Self-clearing benefits

The benefits of self-clearing manifest themselves across many areas, which should be assessed against the firm's sensitivity to each issue. The two major benefits are related to risk management and cost efficiency but there are many tertiary benefits that can provide value.

Cost-saving benefits of removing client clearing costs

While this section covers the benefits of self-clearing, one needs to fully assess the cost of clearing through a clearing broker to understand the cost saving and associated benefit of moving to a self-clearing operating model.

In a traditional client clearing relationship, the clearing broker typically applies fees to a client's account based on the number of tickets/lots, the level of Initial Margin (a proxy for risk) and the funding required. Given changes in the regulatory landscape (predominantly the leverage ratio) that have resulted in the introduction of a risk insensitive measure, some clearing brokers are now applying a charge based on the gross notional value of derivatives cleared on behalf of a client. In order to be able to quantify the cost of client clearing in a bank the various components (and sources) of that need to be broken down.

Financial Resources

When a bank intermediates a transaction it uses various financial resources which generally result in a cost or required return. The financial resources used could be categorised as the following:

- Capital - Leverage
- Capital - RWA
- Balance Sheet
- Funding
- Liquidity Reserves

Table 1 below gives an indication of the different clearing obligations that can result in the use of financial resources. These are numerous in nature and affect different clearing brokers and clients in different ways. Removal of any one would not result in the cost of client clearing reverting back to pre-Basel III levels but balance sheet leverage is in many cases providing the most dramatic results. Estimates of the fee increase required in the OTC space range from between 5 to 10 times the current market levels. The regulatory capital (and liquidity) requirements on the banking sector act like a tax on their client positions, shifting the economics of client clearing. A bank can choose to pass the cost of this taxation to its clients or can absorb it in order to maintain the client relationship. These two potential outcomes mean either that fees increase for the clients or that the client is using "good will" from the bank in order to clear transactions. If the client chooses to self-clear its derivatives, it can reduce the cost or use the goodwill in more profitable ways such as better execution or Repo financing.

Table 1: Financial resources used at a clearing broker

Trade	Capital – Leverage	Capital - RWA	Balance Sheet	Funding	Liquidity Reserves
CB Trade against Client	Y - Percentage of notional based on Tenor	Y - Offset by IM = insignificant	Y	N	N
CB Trade against CCP	N - (If no CCP guarantee)	N - (If no CCP guarantee)	Y - Netting benefit with VM collateral	N	N
Collateral	Y* Y - Collateral excess	N - (If no CCP guarantee)	SCM - All FCM - Cash	Y-Intraday buffer required	Y - Potential timing differences
Default Fund	Y	Y-C-factor supplied by CCP (0.5%-180%)	Y	Y	Y - Liquidity reserves for large market moves

*Except PRA regulated entities

n.b. FCM are required to fund residual interest in addition

Capital costs of client clearing

As we discuss in more detail in a previous paper⁸, the introduction of the CCP as a new central point in the OTC derivatives trading infrastructure leads to the definition of new capital charges – to reflect the fairly complex way counterparty exposures are distributed in the waterfall structure (as described in Chart 3 below) which determines contingent payments and exposure priority.

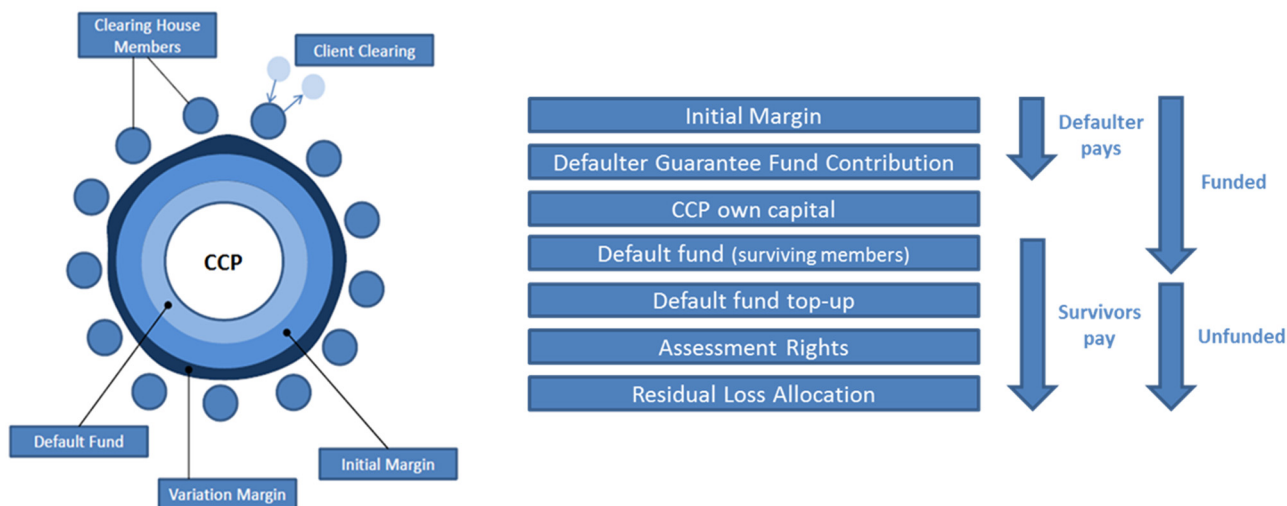
The total capital charge reflecting the exposure of a clearing member to the CCP (in this context defined as a Qualifying CCP, or QCCP) will be the sum of three components, namely:

- the capital charge against trade exposures
- the capital charge against posted collateral, and
- the capital charge against the pre-funded default contribution

This is a material change, both in quantum (compared to the 0% RWA the CCP model initially benefitted from) and in complexity, compared to the capital measures that prevailed for CCP exposures prior to these regulatory changes.

⁸ Solum Financial – Regulatory sea change for OTC derivatives: The Clearing and Margining Revolution (May 2014)

Chart 3: The central counterparty model



Source: Solum Financial

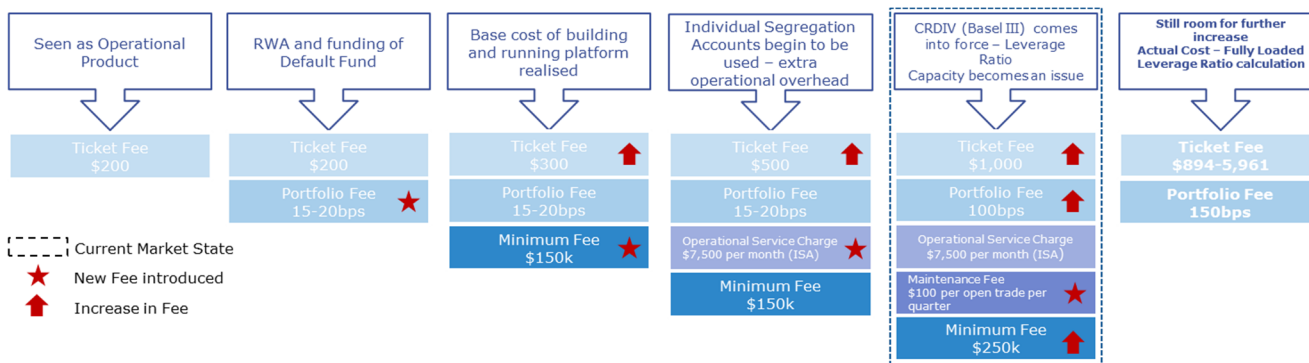
The further introduction, as part of the Basel III rules, of a mandatory leverage ratio, whereby banks are required to maintain their Tier1 Capital at a level higher than 3% of their total assets (where total assets are calculated according to a so-called “Exposure Measure”) acts as another binding constraint on banks’ deployment of their balance sheets.

Within that framework (along with the overall tighter capital requirements under the new Basel Accord), balance sheet usage comes at a steep premium and marginal costs are likely to be passed on to end users, or the activity curtailed altogether.

Infrastructure

When a firm is delivering a client clearing offering it needs to ensure that it has the appropriate connectivity to the clearing house, trade capture life-cycle management, risk management, collateral management, client reporting, reconciliation and regulatory reporting. There are vendor solutions that can reduce the initial outlay and time to market. For each system used, support networks need to be established both from a technology and operational perspective. Typically these support networks need to be staffed on a “follow the sun” basis, resulting in staff being placed in at least 3 locations globally. The initial investment can be anywhere from \$10m for a “light weight” single product offering to \$150m for a scalable multi-product solution. In both cases, for the clearing broker to have any hope of generating a positive return on this investment after covering the high support costs, a high volume of transactions will need to be processed.

Chart 4: Evolution of fees and financial resources of a clearing broker



Source: Calypso Technology

The ever increasing scrutiny on banks has resulted in a changing fee landscape. Chart 4 above shows the indicative evolution of fees for a rates OTC clearing service, assuming the full cost of clearing has been passed on to the client. As the market has matured and been impacted by the changing regulatory landscape, the structure of the fees has also adapted, starting on a per ticket basis, and evolving to include a portfolio fee, segregation fee and minimum fees. These fees are all designed to capture a particular commercial or regulatory pressure and ensure that the clearing broker reaches its return on equity hurdle rate.

Continuity of service

In a traditional bilateral OTC transaction between a dealer and a client, both parties were required to fulfill their obligations under the confirmation until the maturity date, the initiation of a break clause, or the occurrence of an early termination event. The migration of these positions to client clearing in the CCP model has changed this relationship. The movement from facing a counterparty to a service provider has resulted in the risk that a clearing broker may not only prevent the clearing of any new transactions but may also terminate

the existing ones. This could happen for various reasons, among which: the clearing broker is exiting the business, a concern about the credit quality of the end user, or the clearing broker is attempting to rebalance its capital requirement and return profile. By accessing the CCP directly the risk of this situation is greatly reduced. A CCP is unlikely to be exiting the clearing business and CCPs are not subject to capital requirements in the same way that banking entities are. A CCP could terminate a clearing membership if there were concerns about a member's credit quality but in practice CCPs tend to control credit risk through increasing margin requirements.

Risk

Although the CCP is the ultimate counterparty in the centrally-cleared world, an end-user is nonetheless exposed to the risk that its clearing broker may fail and default to one or more CCPs. Some level of protection is provided through separate account structures at the clearing house (so-called Omnibus or Individually Segregated accounts) but the positions and collateral will be liquidated if they cannot be ported to an alternative clearing broker relatively soon after the initial clearing broker has been declared a defaulter.

Given the porting concerns mentioned above, these risks are real and can be sizeable in nature. If an end user's position is liquidated, an unknown amount of the initial margin could be used in order to cover the cost. In addition, the end user would need to replace its positions at a time when the markets are highly likely to be volatile, and such replacement costly or conceivably unachievable.

If the same end user is clearing directly (has become a clearing member) and another clearing member defaults, its positions are safe from liquidation. The default fund contribution (which clients do not have to post) does pose some additional risk when self-clearing but is generally about 10% of the size of the Initial Margin and the track record of most CCPs in handling defaults without recourse to default funds is good. There are increasingly likely to be unfunded commitments to meet default losses, often set at 'the same as the funded contribution' level, so also around 10% of initial margin. But the magnitude at risk is defined and smaller than when clearing through a broker.

In addition, there are other risks that self-clearing removes, such as transit risk. This is where a clearing broker is holding the end-user's collateral but has not passed it on to the CCP. If the clearing broker defaults at this point, it is likely to result in the end user's collateral being lost although a legal claim will exist against the estate of the defaulted firm.

Chart 5: Clearing risks – client clearing vs. self-clearing



Source: Calypso Technology

As discussed, self-clearing protects clients against the clearing broker risks but introduces clearing member risks such as the default fund. In addition, there are risks faced by both clearing members and end users when accessing a CCP. Two key areas are i) non-clearing member default losses and ii) variation margin haircutting. The first of these is the loss passed to the clearing members that a clearing house may have incurred in an event un-related to a clearing member default (e.g. losses related to the CCP's investments). In this case, the clearing house can use the clearing members' initial margin in order to cover the resulting P&L impact. The second risk occurs when the resources of the waterfall have been exhausted and the clearing house goes into resolution where it can withhold positive variation margin from clearing members. In both these cases clearing broker typically have terms in their documentation allowing them to pass the impact on to their clients. Both of these loss allocation methods impact institutions with large directional positions to the greatest

degree, which is typically the buy side. So at the end of the waterfall, the buy side appear to be providing the capital and since they are using clearing brokers to access the clearing house, have very little say over controlling and managing the risks at CCPs. If buy side institutions were able to connect directly to the clearing house, they would have more opportunity to influence and manage these risks.

Margin efficiencies

Going directly to the CCP is likely to produce margin efficiencies through three possible means.

- Membership of one or more CCPs means that clients do not need to split their portfolios between multiple clearing brokers. When a portfolio is split the correlation benefits between the portfolios are lost
- Some CCPs require clients to be margined on a 7-day basis in order to take into account the potential for porting when a clearing member fails. If there is no intermediary clearing member the requirement is for 5-day cover. This is a saving of about 15% for a direct membership relative to client clearing
- Although cross-margin is available at some clearing brokers this is not always the case. By going directly to the CCP a client has greater control over where/if it can receive the cross margining benefits

Additional benefits

There are many additional benefits that would not typically drive a decision to clear directly but should be considered. When a client clears through a bank a large portion of its position can be seen by that institution. Although Chinese walls exist at all good clearing brokers between the clearing and execution desk, the technology architecture of a bank often makes enforcing the walls very difficult. If a breach were to occur clients risk poorer executions.

Becoming a direct clearing member gives the client the opportunity to influence the direction of the CCP. A clearing member has the opportunity to sit on one or more of the governance and steering committees of the CCP to discuss risk policy and rules, including segregation, and product design and direction.

The increase in regulatory burden is not just impacting derivatives, there is a similar drive towards central clearing for the cash market focusing on repo and securities lending. Centrally clearing these products helps reduce the counterparty risk, remove the capital burden and reduce impact on liquidity stresses. Cross-asset margining is offered by a limited number of clearing brokers to their clients, but it only supports OTC and ETD.

It is CCPs that will become the platform to allow cross-asset margining between the cash and derivative market. This can only be achieved through direct membership and with the new emerging clearing models, it will encourage a broader set of institutions to directly access CCPs. This brings benefits to both the client, but also the institutional banks who can maintain their capital markets relationships without the added capital burden due to the bilateral and cleared exposures. CCPs are established both operationally and legally to provide netting in this way, not only providing material margin benefits, but linking the collateral with the derivative enabling customers to meet their cash variation margin requirements within a closed ecosystem.

Self-clearing costs

Minimum capital requirements

Before describing and analysing the costs of self-clearing it is necessary to note that, in order to clear its own (and if desired, its own client) business, a firm must meet the clearing membership requirements of one or more CCPs. The principal hurdles are minimum capital requirements. In most cases, CCPs have intentionally adopted regulatory standards of eligible capital as their capital measure, and specified that clearing members must be in full compliance with their regulatory requirements, meaning that applicable risk-based regulatory capital requirements must also be respected.

The minimum requirements are not additional to regulatory capital, and nor are minimum requirements of different CCPs viewed as cumulative in the case of firms with multiple clearing memberships. So, if a firm has regulatory capital of \$100mn it is eligible to join any CCP that has a minimum requirement of \$100mn or less (potential additional CCP requirements are discussed later). Generally speaking, the minimum capital requirements are unlikely to present difficulties to banks and larger non-financial intermediaries, although requirements for OTC clearing are higher than those for the clearing of exchange-traded products. Some CCPs have introduced particular requirements for commercial firms – for example, LCH has a different capital measure for that clearing membership category – and for investment firms – for example, CME has introduced an ‘assets under management’ requirement.

Payment and settlement systems

Another general point to make before discussing the costs of self-clearing is that clearing members must put in place specific banking facilities with CCPs that are the channel for daily payments to and from the CCP. Unless a firm moving from client of a clearing broker status (option 1) to self-clearing membership (option 2) is a bank that is eligible to act as its own settlement or payment bank vis-à-vis the CCP, it will have to find an appropriate bank to provide that service. Costs for the basic service and for any agreed credit lines, and core collateralisation requirements, are standard.

Most of the costs of self-clearing represent costs borne by clearing members of CCPs and passed on to their clients, typically in bundled form without itemisation of constituent costs. The categories of costs tend to be common across CCPs, although the details of course vary. Table 2 below offers the general picture and the ‘comment’ column provides some commentary on differences between CCPs, and the potential significance of the cost category to a firm considering the move from option 1 to option 2 and self-clearing status.

The task of undertaking a cost-benefit analysis of a move to self-clearing is not a totally straightforward one, and is necessarily more complicated if clearing membership of more than one CCP is desirable. Even linkage to one CCP has its complications if several different products are involved. The situation has evolved, actively supported and driven by banks and latterly by regulators, in which the clearing

of different OTC products under one CCP roof is organised as separate, product differentiated activities with separate margin collateral pools, clearing/default/guarantee funds, and default management arrangements. The latest dimension, part of the introduction of 'living will' requirements for CCPs, is that each product clearing service at a CCP should have separate 'service liquidating' arrangements should losses be greater than available resources.

Table 2: Self-clearing cost analysis

Cost category	Cost incurred as client of clearing member	Comment
Membership application fee	Fees low and once-for-all, so unlikely to be material element in bundled charges	Not a major up-front item
Annual membership fee	Where exists would be an element in bundled charges	Not charged by many CCPs ; larger in some
CCP or related exchange shareholding requirements	Likely to be viewed as historic cost and not considered in charges	Now largely a legacy requirement. Even where exists for exchange-traded clearing, has been waived for OTCs
Maintenance of capital to meet CCP minimum requirement(s)	Cost of regulatory capital allocated to clearing increasingly likely to be passed on to clients	
Additional capital or collateral requirements established by CCP	Any such costs increasingly likely to be passed on to clients, although unlikely to be incurred by well-capitalised clearing member unless it has a large share of the cleared positions at a CCP	Self-clearers unlikely to incur such costs unless their capital is near the minimum requirement and/or these cleared positions are very large relative to capital
Clearing transaction fees of CCP	Passed through to client	There are typically several categories of transaction fee charged. At some CCPs, transaction fees for members are lower than for client business, so self-clearing may be cost-saving
Collateral lodgement charges of CCP	Passed through to client	
Interest retained on cash balances by CCP	Clients may be paid the CCP interest rate or a different and potentially lower rate by the clearing broker	CCP practice varies. Interest income may be a major profit centre for a CCP ; or CCPs may pass through the interest earned on cash deposits
Opportunity cost of meeting initial margin requirements	Clients typically face higher than CCP initial margin requirements from their clearing brokers	Self-clearing is likely to be opportunity cost saving

Liquidity needs/cost of meeting daily re-valuation (variation margin) calls from CCP and intra-day risk calls	Clients will incur a combination of opportunity costs (insofar as they have to supply additional collateral to cover such cash calls) and charges for credit extension from their clearing broker	This is likely to be an important change for a new self-clearer, although it will be used to managing its own liquidity needs. If it cannot act as its own settlement/payment bank as a clearing member, the liquidity needs/cost will be determined by its relationship with its settlement/payment bank (see below)
Settlement bank costs	Will be an element of bundled, pass-through costs if clearing broker does not act as its own settlement/payment bank	A separate cost element for a new self-clearer unless it acts as its own settlement/payment bank
Risk exposure and opportunity cost of making contribution to the CCP clearing/default/guarantee funds	Exposure is low probability but real. Cost incurred by clearing broker increasingly likely to be passed on as regulatory costs are incurred on these mutualised exposures to the costs of clearing member failure	Recent regulatory rule changes for CCPs have had the general effect of increasing the size of CCPs' contingent funds. If self-clearing requires membership of several CCPs, the aggregate size of contributions may be significant and regulatory capital costs will be incurred
Risk exposure and opportunity cost of non-funded commitments to supply further default resources to CCPs	Insofar as such commitments require regulatory capital backing, the costs are increasingly likely to be passed on to clients	The potential opportunity cost relates to regulatory capital
Risk exposure in default auctions of OTC CCPs	A new and difficult area. As the quantification of potential loss exposure consequent on a clearing broker acquiring part of the book of a failed clearing member in a default auction process is difficult, as is estimation of the probability of occurrence, it is unlikely to be explicitly factored into current charges to clients	OTC CCPs' default rules vary. Bank clearing members potential exposures also vary, and investment firm clearing members are unlikely to be required to take part in such auctions
Need for more operational staff to oversee clearing activities and relationship with CCP(s)	Clearing broker's staff costs part of bundled charge for clearing services	Size of Increased staffing requirement depends on extent to which clearing activity conducted through clearing broker is actively monitored, with reports checked and reconciled, margin calculations verified, and so on. Notwithstanding that, more attention, including close liaison with settlement/payment bank and CCP(s), is required as clearing member.

4. A changing landscape for CCPs

The post-crisis clearing model faces a number of unresolved issues

The not-for-profit utilities vs. competitive entities dilemma

Clearing has not traditionally been a noticeably competitive activity, even if there has been rather more product competition between the derivatives exchanges that are the owners of many CCPs. And opinions have differed significantly on whether clearing should be a competitive, profit-making activity. Many banks are active supporters of the principle of CCPs as not-for-profit ‘utilities’, along the lines of the DTCC and OCC in the US, in which their own governance role is prominent. But exchange owners of CCPs, including those that have moved from not-for-profit or public company status to listed company, for-profit status, are equally active supporters of the opposing principle of viewing CCPs as for-profit entities that are a major element in their exchange owners’ competitive positioning.

Legislators have been largely neutral in this on-going difference of opinion on the for-profit or not-for-profit question, even if the new US laws and rules do refer to CCPs as ‘utilities’, and pre-EMIR there were proposals in the EU, including from the French Ministry of Finance, that a publicly-owned OTC derivative CCP for the EU should be established. There has, however, been a more recent tendency, particularly in the EU and US, to ensure that CCPs promote competition between trading platforms and venues in both the OTC arena and in the field of exchange-traded derivatives. For example, Dodd-Frank stipulates that OTC CCPs must have a non-discriminatory policy in clearing for ‘Swap Execution Facilities’, while the EU’s MiFID II has a similar stipulation in respect of CCPs clearing for trading venues directly competing with stock and derivative exchanges (many of whom of course own or control CCPs).

Regulatory barriers to entry vs. prudential management of concentration risks

The post-crisis legislation and related supervisory rules do not directly promote the establishment of new OTC CCPs, and it can be argued that the impact of new rules governing the risk management arrangements of CCPs (for example in the so-called Regulatory Technical Standards flowing from EMIR) is to raise entry barriers for any type of CCP. But apart from the market incentive for existing and potential new CCPs provided by the certainty that OTC clearing volumes will expand enormously through the introduction of mandatory clearing, there has been plenty of encouragement from national authorities for additional supply of OTC clearing capacity to be established. There are clearly risk concentration issues if clearing is too concentrated. At the same time, it would be hard to deny that the national authorities in some countries have a strong preference for ‘their’ markets to be cleared by ‘their’ CCP.

It is clear that the combination of market incentive and market threat – because the extent to which the clearing of OTC derivatives will affect the balance and relative use of OTCs and exchange-traded derivatives is unclear – and in some cases encouragement from national authorities has led to more CCPs offering clearing of OTC derivatives after it became clear that legislation on mandatory clearing would be adopted. As noted previously, from 1999 to 2010, there was only one CCP, based in the UK, clearing IRS; now there are at least six CCPs, two in the UK, one in Germany, one in Japan, and two in the US, with more in the pipeline.

Historical dominance of first entrants vs. jurisdictional preferences and ‘national champions’

As was the case with LCH as the pioneer of IRS clearing, the new supply of OTC clearing has come from already established CCPs that have in effect diversified from the exclusive clearing of exchange-traded products. This is true, for example, of the Japan Securities Clearing Corporation, organised to carry out the central clearing of all Japanese exchange-traded clearing, which introduced CDS clearing in July 2011 and IRS clearing in October 2012.

While there are now more OTC CCPs, it remains the case that those who were the first to introduce clearing of a particular product type remain dominant in that clearing activity as a whole. The new competitor CCPs that have so far built significant volumes alongside the ‘first mover’ CCPs are those whose national legislation has stipulated that clearing undertaken by entities in that country should be handled by a CCP established in that country⁹. The current advantage that the ‘first movers’ have is that they have established a currency-diversified product range and built volume and open positions across that range, while the newcomers have either concentrated on products in their national currency or have necessarily been slower to develop their product diversification.

Regional clearers

Indirect clearing was meant to allow regional banks to maintain their relationship with their client base (by providing clearing services) without having to become a direct clearing member. Although the regulatory structure for offering indirect clearing is agreed, it has proved very difficult to create a commercial solution. The clients of regional banks have been trying to source clearing relationships directly with the large clearing banks but do not have strong relationships to rely on. This often results in high fees or no access to clearing. The global banks retreat from clearing has forced many regional banks to become a direct clearing member. This has presented an opportunity for the regional banks where their current client base is putting pressure on them to provide access to the clearing house. Although regional banks generally have no intention of building a large scale business in the clearing space, they may consider servicing the needs of a core part of their client base in order to maintain franchise relationships.

In addition regulators and local market participants are concerned about the risk of clearing at a global CCP. The regulators of the largest CCPs do not have the interest of the foreign local participants in mind when making decisions in a crisis. As a result there is a lot of demand for more regional clearing houses to ensure that the local market functions in a crisis. Examples of this can be seen in the interest

⁹ Such ‘national preference’ is of course not a feature of EU legislation, and that has led to some friction between the EU and US in the field of clearing and CCPs

to set up new CCPs in Spain and South Africa¹⁰. It is unlikely that global clearing brokers will provide access to such local markets.

As regional banks consider clearing for a handful of clients, the economics require as low a cost platform as possible. This encourages banks to use vendor solutions or managed platforms

The optimal self-clearing decision process is therefore a complex one

Broadly speaking, the decision to self-clearing presents the following choice:

- under the direct clearing model: initial margin is segregated; default fund commitments (including contingent ones) are required¹¹; and as of today members are required to participate in default management simulations such as “fire drills” and associated auctions
- under the indirect clearing model: initial margin, depending on the chosen structured, may potentially be at risk; no default fund commitments are required; but while the clearing client does not face the operational burden of CCP membership requirements, it does face clearing broker and porting risk

Beyond that broad picture, the fine details of the new OTC clearing universe presents those considering self-clearing with a relatively complex if not confusing picture, and potentially difficult choices. This will be especially true if the portfolio of cleared contracts is large and both product and currency diversified.

The preference might be to become a clearing member of a CCP established in the prospective self-clearer’s own country, because of greater familiarity with the national law and regulation. However, even if there is an OTC CCP in that country, its product range might be narrow and its activity small.

By way of non-exhaustive illustration, this could lead to a number of conclusions:

- that it is necessary to join more than one CCP
- that it would be better to join just one CCP and to continue to use a clearing broker as well
- that use of the potentially preferred national CCP would be problematic because of the difficulty of finding market counterparties also willing to clear business there (or to only accept to do so at an adjusted price)

Many other factors specific to CCPs’ arrangements might equally influence the conclusions drawn:

- their minimum capital requirements
- their margining methods (which while similar might lead to lower requirements for certain portfolios and risk profiles at one CCP vs another)
- the size of the minimum contribution to their clearing/default/guarantee funds
- the structure and detail of the accounts they make available to clearing members
- their default arrangements
- the openness of their governance structure

Clearing brokers’ charges are of course another part of the decision-making calculus for potential self-clearers. In this area, while banks offering clearing services for OTC derivatives have stated publicly that they will use whatever CCPs their clients wish them to use, their costs and therefore pricing might be lower in respect of one CCP rather than others.

¹⁰ Risk magazine – CCPs raise alarm on South African OTC reform (Mar 2015) (Available at: <http://www.risk.net/risk-magazine/news/2399490/ccps-raise-alarm-on-south-african-otc-reform>)

¹¹ The exact balance between default fund commitments (a partially unfunded contribution paid by the surviving members) and size of initial margin (a fully funded contribution paid by the defaulting member) is itself an element of CCP membership criteria that may weigh in the decision process of the prospective self-clearer

5. Conclusion

OTC derivative markets have undergone major structural changes in recent years. The expansion of central clearing – in part mandated by the regulatory response to the financial crisis to improve the robustness of the financial system – has created surging demand for clearing services. Simultaneously, explicit balance sheet restrictions and capital costs have been imposed on financial institutions engaged in OTC derivatives, such that, as a result of these changes, providers of third-party clearing services are steadily withdrawing from the market.

The access to such services is therefore likely to come with both increased long-term uncertainty and significantly higher charges for end users. Smaller size institutions – smaller banks, but also buy-side entities – that have long relied on third-party clearing will now need to weigh whether to bear the rising costs and risk management pressures associated with the new landscape for clearing services, or to seek to obtain clearing membership and clearing in their own account.

As the market for clearing houses itself becomes a more and more complex one (with increased competition, fragmented offering, product line specificities as well as national and local jurisdictional preferences), the ability for financial institutions to make the decision to self-clear or not will require a thorough understanding of numerous aspects of OTC derivatives clearing.

Likewise, the implementation of such a decision and the ongoing management of CCP exposures (while being in our opinion an inevitable conclusion of the supply and demand changes in the market for clearing services and eventually a cost-efficient solutions for third-party) will still represent a considerable financial, technological and operational leap for many institutions to make which will require significant expertise in both OTC derivatives risk management and clearing infrastructure – both in respect of financial risk and risk management aspects, but also of associated operational issues.

Contact us

Solum Financial Limited

12 Austin Friars
City of London
EC2N 2HE
United Kingdom
+44 207 786 9230
research@solum-financial.com

*Solum Financial Limited is authorised
and regulated by the Financial Conduct Authority*

Vincent Dahinden

CEO
vincent@solum-financial.com
+44 207 786 9235

Thu-Uyen Nguyen

Partner
tu@solum-financial.com
+44 207 786 9231

Calypso Technology

One New Change, Level 6,
London EC4M 9AF
United Kingdom
+44 20 7029 3000

Venkatesh Ramasamy

SVP – Business Services and Utilities
venkatesh_ramasamy@calypso.com
+44 207 029 3033

Richard Thompson

Business Architect – Business Services and Utilities
richard_thompson@calypso.com
+44 207 029 3018

Michael Boroughs

Client Solutions – Business Services and Utilities
michael_boroughs@calypso.com
+44 207 029 3049

Disclaimer

This paper is provided for your information only and does not constitute legal, tax, accountancy or regulatory advice or advice in relation to the purpose of buying or selling securities or other financial instruments.

No representation, warranty, responsibility or liability, express or implied, is made to or accepted by us or any of our principals, officers, contractors or agents in relation to the accuracy, appropriateness or completeness of this paper. All information and opinions contained in this paper are subject to change without notice, and we have no responsibility to update this paper after the date hereof.

This report may not be reproduced or circulated without our prior written authority.