OTC derivatives market structure and the credit profiles of wholesale investment banks

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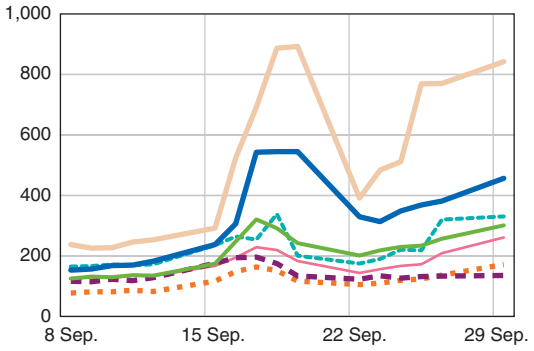
The OTC market is at a critical crossroads from a number of angles – proposed regulatory changes, changing end-user expectations, competitive pressures from the listed market, and the effect of all these on the banks' economics from the business. The possible paths forward may include central clearing, exchange trading, stricter capital, margin and disclosure requirements, for all or parts of the USD 600T market. Moreover, as part of this process, we are seeing the creation of new, or growth of existing, systemically-important institutions – central counterparties. Each of these paths, and the way in which they will interact, have different implications for systemic and individual firm risks.

1| SUMMARY OPINION

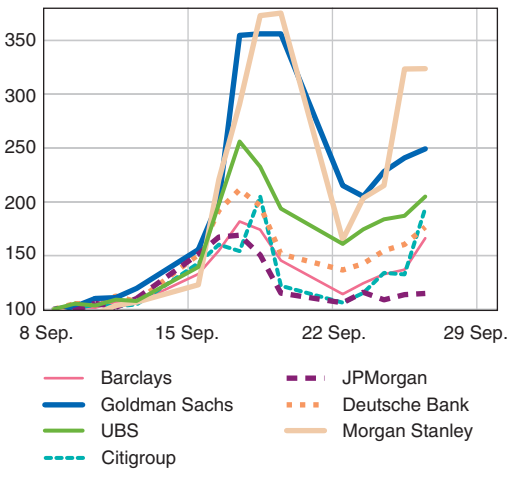
The global financial crisis exposed vulnerabilities in the business models of wholesale investment banks (WIBs). These include risk management weaknesses, high leverage, confidence-sensitivity, excessive concentrations, opacity, and a high degree of interconnectedness. The extent of these vulnerabilities differs from firm to firm, but, at their core, they are a by-product of the WIBs' business model and the structure of the markets in which they operate.

Charts 1 and 2
CDS spreads of selected WIBs

(5-year CDS 2008, in bps)



(5-year CDS 2008, % change)



Source: Markit

At the apex of the crisis in the fall of 2008, the market appeared to shift away from credit differentiation as credit default swap (CDS) spreads on major WIBs spiked (charts 1 and 2). Fearing that the largest WIBs were inextricably connected, investors, counterparties, and customers rushed to reduce their exposures to the sector first and ask questions later. As a result, even the best capitalised firms came under great stress and required extraordinary external support to survive.

The severity of the inflection point was, of course, compounded due to the market's previous tolerance of the WIBs' high leverage, growing reliance on short-term funding, and, in many cases, ill-understood and therefore liberal use of customer collateral to fund their own operations.

The key factors contributing to the perception of interconnectedness were the same ones that served as the transmission mechanism for the market's violent and unremitting response to it: overreliance upon short-term funding provided by the previously undiscriminating repo market, warehousing of risky assets whose valuations collapsed as leverage became more expensive and bids and liquidity disappeared, and the propensity to engage in crowded trades, made worse by leverage.

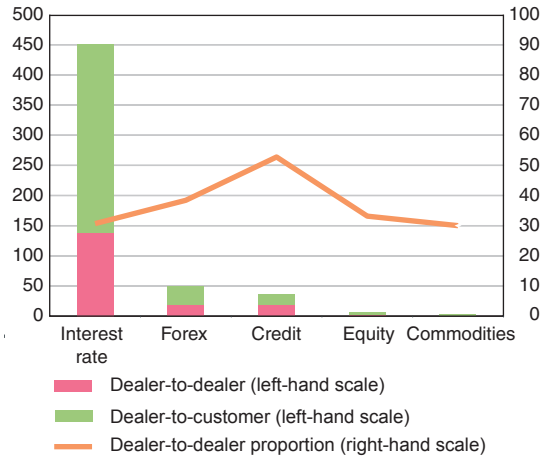
But arguably no factor was and remains more singularly associated with the interconnectedness of WIBs than their active presence in the over-the-counter (OTC) derivatives market. Measured at USD 600 trillion in notional amounts and dominated by fourteen global dealer-WIBs,[1] it is one of the largest and most concentrated financial markets in the world (chart 3).

Currently unregulated and largely bi-lateral in nature, the OTC derivatives market itself is now at a critical inflection point. It is among the key subjects of financial market reform initiatives in Europe and the United States. As of this writing, lawmakers and regulators are coalescing around a market structure based on central clearing, possibly exchange-based trading, higher capital and margin requirements,

1 *The 14 largest dealers that are part of the so-called "G14" Group.*

Chart 3
OTC derivatives market

(notional amount in USD trillions, December 31, 2009) *(%)*



Sources: BIS, Moody's estimates

and more meaningful transparency standards. The expectations of end users of OTC derivatives are also changing as greater awareness of the market's risks is leading some to scrutinise their relationships with dealers and explore such alternatives as the listed futures market. Finally, the dealers themselves have recognised[2] the need for some structural reforms as being prudent and tactically necessary given the potential for very restrictive regulations.

The future OTC derivatives market structure and practices will have an impact on both systemic risk and the credit profiles of its major participants. For this reason, analysing the above-mentioned developments and their credit implications has been and will remain one of our key analytical and research priorities.

This article summarises our views on the credit benefits and risks of possible future market structures. We do so by first covering the key shortcomings of the status-quo structure laid bare by recent events – the default of Lehman Brothers and the (near) collapse of Bear Stearns and AIG. We then discuss how central clearing, exchange-trading, and the imposition of higher margin and capital requirements may address these shortcomings. Such a discussion, of course, would be incomplete without acknowledging the new risks or, at the very least, analytical considerations, that would be introduced by these approaches.

2| THE STATUS-QUO MARKET STRUCTURE AND PRACTICES

In analysing the "credit delta" of any new market mechanisms, it helps to first understand where the current system worked properly and where it did not. Importantly, in thinking about "market structure and practices," one has to go deeper than the market's bi-lateral (as opposed to centrally-cleared) structure or, for example, the specific terms of the standard ISDA (International Swaps and Derivatives Association) Master Agreement template. The market's structure, practices and behavior of its participants also reflect the accounting and regulatory capital treatment of OTC derivatives, the degree of public transparency about market exposures and concentrations, the perceived ratio of risks and revenue rewards from market-making activities, and the existence (or lack thereof) of clear and well-tested close-out procedures for a large counterparty.

With the above in mind, we offer our perspective on the key credit positives and negatives of the current market structure and practices of the OTC derivatives market. We then discuss several of these in greater detail.

CREDIT-NEGATIVES:

• contributed to both the reality and perception of interconnectedness among WIBs;

• reduced the market's ability for credit differentiation to a binary view on whether a firm's derivatives book was sufficiently "too complex to unwind" so that it would warrant emergency government support;

• facilitated undercapitalised, reckless "carry trades";

• in some cases, replaced risk management and hedging with "net-and-forget" self-deception;

• Lehman's OTC derivative counterparties incurred large trade replacement costs;

• flawed customer fund segregation practices exposed Lehman's counterparties to unexpected losses;

• compounded liquidity problems for Bear Stearns.

2 *G14 dealers have outlined their specific commitments in a letter to the Federal Reserve released on March 1, 2010.*

CREDIT-POSITIVES:

• OTC derivatives market-making has been a major net earnings contributor for WIBs;

• enhanced hedging ability when properly used;

• intra-dealer netting and collateralisation practices have generally worked well;

• industry initiatives around redundant trade compression, electronic confirmations, and Depository Trust and Clearing Corporation's (DTCC) Trade Information Warehouse have improved the market's operational integrity;

• CDS auction process has been battle-tested and appears to work well.

As discussed above, the WIBs active participation in the OTC derivatives market is a key reason for their interconnectedness. What does this mean? An interconnected market is not the same thing as an integrated market (or markets) in which capital flows seamlessly and valuations quickly reflect the totality of available market data. Highly-integrated markets can leave investors feeling shell-shocked as they did on May 6, 2010 when the US cash equity and futures markets fell in fearsome and self-reinforcing unison; still, they are generally accepted to be a good thing because they improve price discovery, liquidity, and efficiency.

An interconnected market, in contrast, is defined by the condition whereby the disorderly failure of a large market participant can have negative, and potentially, catastrophic consequences for many of the others. This definition applies to the OTC derivatives markets where major dealers are interconnected through tens of thousands of bi-lateral OTC contracts, without the credit intermediation and just-in-time liquidity[3] offered by a central counterparty (CCP). As a result, when a dealer fails, its surviving counterparties are faced with potential unsecured derivative receivables and the need to replace "orphaned" contracts in a volatile market.

Indeed, this is precisely what took place when Lehman Brothers defaulted in September 2008.

Box 1

"Credit default swaps: market, systemic, and individual firm risks in perspective"

"In the event of a default by a major CDS counterparty, there would likely be considerable systemic damage that would extend beyond credit default swaps."

"Since CDS protection sold by the defaulting counterparty would no longer be in place, the protection buyers would have to either replace such protection in the open market or bear the risk of not having such protection any longer. The pricing "shock" caused by the general widening of credit spreads following the failure of a major dealer, and the sudden increase in demand for CDS protection, could apply to both the CDS and the cash markets, and could lead to substantial losses for affected counterparties. In addition, the actual process of winding down the CDS book of the failed dealer and the collective attempts by its counterparties to replace the now-defunct CDS trades would put the CDS market under unprecedented operational strain."

Source: Moody's, May 2008.

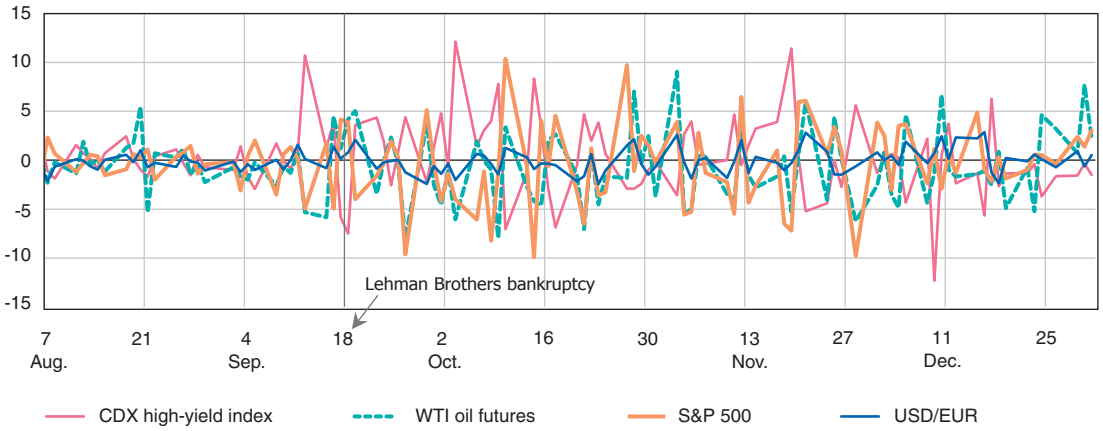
As we discussed in our May 2008 research report on the CDS market (see box), most other major dealers suffered losses in the hundreds of millions of dollars each[4] as their derivatives books became unbalanced due to the disappearance of OTC contracts with Lehman. In extremely volatile market conditions (chart 4) – themselves largely the direct consequence of Lehman's default – dealers suffered significant contract replacement costs and, until the necessary trades were replaced, hedge ineffectiveness. In other words, market participants lost their OTC contracts precisely when they needed them most and when replacing them became most expensive.

Furthermore, the actual process of replacing trades – including the ineffective "risk reduction trading session" on the eve of Lehman's default – was challenging. As all the major dealers were in a similar situation, the market became caught in something of a gridlock, as demonstrated by thin trading volumes during the post-Lehman week. Still, no other major institution failed, although it is difficult to determine *ex post* to what degree

3 *Just-in-time liquidity refers to "liquidity that must be available at a particular location, in a particular currency, and in a precise time frame measured not in days, but in hours or even minutes." Source: "Financial market utilities and the challenge of just-in-time liquidity", Federal Reserve Bank of Chicago, November, 2009.*
4 *Moody's (2008): "Credit default swaps: market, systemic, and individual firm risks in practice", October 2008.*

Chart 4
Market conditions before and after Lehman's bankruptcy announcement

(% change from prior day)



Source: Bloomberg

this was due to the then-unprecedented degree of government support extended to the sector.

Incidentally, the issue of trade replacement costs is not new – it was in evidence in 1998 at the time of the collapse of Long-Term Capital Management (LTCM). While dealers may have been demanding sufficient initial margin to cover the potential future exposure of an *individual* trade, competitive pressures made it impossible for firms to demand sufficient initial margin to fully cover trade replacement costs in a disorderly unwind. This was a major factor behind the industry's decision to recapitalise LTCM with USD 3.6 billion to "buy time" and organise a more controlled liquidation.

Lehman's major counterparties did not suffer significant credit losses on derivatives receivables because Lehman was subjected to and was able to meet collateral calls until the end. In this respect, the industry's standard netting and collateralisation framework worked well. Still, an important aspect of the framework failed when the counterparties (mainly, hedge funds) of Lehman's main UK subsidiary were not able to retrieve independent amount collateral (known in the centrally-cleared markets as "initial margin") they had posted to Lehman, and are now *pari passu* with senior unsecured creditors who are facing low recoveries on their claims. This happened because customers' independent amount collateral was not legally and operationally segregated from Lehman's own collateral, as would be the case in a centrally-cleared solution.

In a way, this situation was reversed in Bear Stearns' near demise, which was compounded by a wave of novation requests by Bear's hedge fund counterparties. In a rush to reduce their exposure to Bear, hedge funds "assigned" their end of the OTC contracts to other dealers. When the hedge funds left, Bear had to return their independent amount collateral – a total of possibly several billion dollars – which had been used by Bear to fund its own operations. This became a major contributing factor to Bear's liquidity crunch. We note that following these events, the industry has proposed changes to the margining framework.[5]

Beyond the mechanics of Bear's and Lehman's crises, the market structure and practices of the OTC derivatives market also contributed to the financial crisis in other ways. Most importantly, the absence of universally applied minimum margin requirements – such as those that would be imposed by a CCP and/or by regulation – allowed certain market participants (most notably, AIG) to put on

5 *ISDA (2010): "Independent Amount", Whitepaper, March.*

a massive amount of market and credit risk, which, in turn, exposed all of its counterparties, and indeed the system – to counterparty credit risk. Had AIG been required to post even a modest amount of initial margin against the hundreds of billions of dollars of CDS protection it sold, this would have materially reduced the economic attractiveness of its "carry trade". As a result, it is reasonable to conclude that AIG would have either significantly curtailed its protection-selling appetite, or priced the risk differently, thus curtailing the demand.

For *some* CDS protection buyers, the ability to "get away" with minimalistic and uninformative accounting disclosures, combined with arguably insufficient capital charges, allowed them to net their longs and shorts, irrespective of the ability of protection sellers to perform. The result was the illusion of a "zero risk" carry trade. For a number of banks, this amounted to a "net-and-forget" approach to risk management, ultimately leading to large losses (in some cases, CDS protection ended up being entirely worthless), and materially weakened credit profiles. Although no market structure can prevent errors in judgment or self-deception, additional disclosures, higher capital and margin requirements, and where appropriate – central clearing – would be credit positives by reducing counterparty risk and creating a more sensible risk-reward balance in the OTC derivatives market.

Indeed, the lack of transparency of the OTC derivatives market and participants' exposures is among our key credit concerns with respect to WIBs. Wholesale investment banks do not disclose enough information publicly to paint an accurate, or even approximate, picture of their OTC derivative exposures (current and potential) to a particular sector or counterparty. As a result, in times of stress, the market's ability to accurately differentiate among the WIBs in terms of their risk exposures or their exposures to one another is very limited. Such opacity and perception of interconnectedness makes for a dangerous combination with the WIBs' confidence-sensitive funding and customer franchises. It can result in an undiscriminating withdrawal of funding and rapid and, *in extremis*, irreversible franchise erosion. This vulnerability is at the heart of what we call "transition risk" (the risk of multiple-notch downgrades), and is a key reason why our ratings on wholesale investment banks are currently under negative pressure.

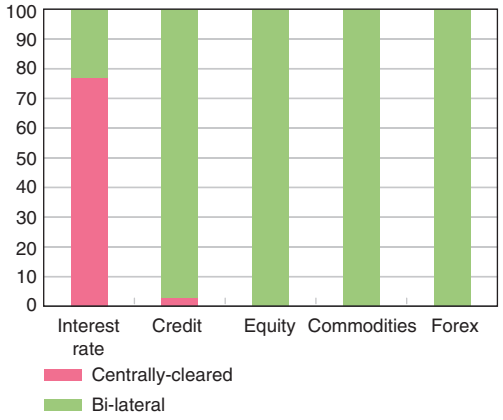
3| CENTRAL CLEARING

There currently appears to be strong momentum to transition much of the OTC derivatives market to central clearing. Virtually all major legislative reform proposals in Europe and the US identify central clearing as a key goal for the OTC derivatives market, notwithstanding important differences in details such as whether it is to be mandated or encouraged, who would be exempted and whether it is to be linked with exchange-based trading.

Additionally, the dealer community, and to a lesser extent the buy-side, have made tangible progress toward central clearing. Still, virtually the entire dealer-to-customer and much of the dealer-to-dealer markets remain bi-lateral (chart 5).

As noted throughout the prior section, we believe that central clearing for OTC derivatives can significantly reduce credit risks – both systemic and

Chart 5
Dealer-to-dealer OTC derivatives market
(in %)



Sources: BIS, ICE, LCH.Clearnet. Centrally-cleared data represents open interest (not cleared volume). Dealer-to-dealer data as of December 31, 2009. CDS centrally-cleared data as of February 19, 2010. Interest rate centrally-cleared data as of February 28, 2010.

for individual wholesale investment banks. The key reasons for this are as follows:

• For every counterparty that participated in central clearing, this market structure would replace multiple bi-lateral relationships with a single, fully net-able relationship with the CCP. This is referred to as multi-lateral netting and its primary benefit is the reduction of the aggregate amount of system-wide counterparty credit risk.

• A CCP would shield its counterparties from the adverse consequences of a particular clearing member's default. Because their trades would be with the CCP, these counterparties would have neither unsecured receivables nor trades in need of replacement if another clearing member defaulted.

• All centrally-cleared trades would be subject to uniform (and, presumably, conservative) daily margining. The posting of such margin – both initial and variation – would not only protect the CCP against a member's default but would also create economic disincentives against taking on undue risk exposures.

• Subject to applicable regulations and its own rules, a CCP should be able to impose concentration limits on clearing members, which would reduce – albeit not eliminate – the possibility of a material market imbalance if a large participant fails.

• Should a central clearing solution gain traction and acceptance by the end-user community, this could increase the standardised proportion of the OTC derivatives market, making more contracts eligible for central clearing. This would both improve the liquidity in the market as well as increase the netting and risk reduction benefits of central clearing.

• If a significant proportion of dealers' derivatives books are centrally cleared, this would reduce both the reality and perception of their interconnectedness, thus reducing the credit transition risk for major dealers in times of stress.

• A CCP would have up-to-date information on individual member exposures thus improving both its and regulators' ability to prepare for, and react to, market stress events.

As can be seen from the above list, central clearing is capable of mitigating many of the of risks of the current market structure and practices.

However, central clearing cannot completely eliminate these risks if only because not all OTC derivatives are sufficiently standardised and liquid to be centrally cleared. The exact proportion of the market that is, or can be made standardised, is hard to estimate, but based on publicly available research,[6] it appears to be more – possibly, significantly more – than 50%, as measured by notional amounts. We think that central clearing can be a credit positive only if it applies to contracts that are reliably liquid and price-transparent. Both conditions must be satisfied in order to facilitate daily margining (absent which a CCP cannot function as intended) *and* to ensure that a CCP can successfully liquidate a failed member's portfolio.

The latter consideration is sometimes overlooked but it is absolutely essential. As stated above, the CCP shields its members from counterparty credit risk and trade replacement costs if one of them fails. It does so by concentrating these risks within itself by being counterparty to every trade. When a member defaults, the CCP becomes exposed to market risk because its previously perfectly balanced portfolio of offsetting longs and shorts is now unbalanced. To rectify this and get back to a net-flat posture, the CCP needs to liquidate the failed member's portfolio by selling it (piecemeal or through an auction) to other clearing members (or their customers), with the failed member's initial margin and any other guarantee funds available to absorb the costs of such a liquidation. This can only be accomplished if the portfolio is composed of liquid contracts with transparent prices.

If – and for as long as – a CCP cannot liquidate the portfolio, it runs the risk of suffering potentially devastating market losses, which – if they led to the CCP's failure – could in turn have devastating systemic consequences. Similarly, if the CCP's procedures were to allow it to simply allocate the illiquid and impossible-to-price trades to the surviving members, then such an approach would seem to fall short of a CCP's stated purpose –

6 *For example, see Goldman Sachs' research report (2009): "Effective regulation: Part 4. Turning good ideas into good outcomes", October. The report's authors estimated that more than 90% of Goldman Sachs' OTC derivatives book, as measured by notional amounts, was "standard".*

to shield surviving members from the consequences of a members' default.

In summary, allowing illiquid contracts to be centrally cleared would exacerbate risks. Instead, for bespoke trades we believe that systemic and individual firm's credit risks would be reduced if market participants held higher amounts of capital as well as posted initial margin collateral into a segregated account.

Central clearing reduces risk but it also concentrates it. We think that major CCPs are and will be systemically important entities insofar as their disorderly failure would have highly adverse systemic consequences. Therefore, whether they in practice reduce or exacerbate systemic risks will depend on each CCP's risk management and operational capabilities. Furthermore, the specificity and consistency of international regulatory standards and best practices for CCPs will be very important in ensuring that competition among them does not devolve into a "race to the bottom" on margin requirements. While the recently released CPSS-IOSCO's (Committee on Payment and Settlement Systems-International Organization of Securities Commissions) guidance[7] for CCPs is a step toward establishing such standards, the specific requirements in the area of stress tests, capital adequacy, and operational capabilities have yet to be released.

The nature and degree of competition among CCPs will also be a relevant credit consideration because a market structure with too many CCPs can introduce additional risks. Firstly, a fragmented clearing architecture can reduce netting benefits and increase collateral demands[8] – in aggregate and for every major market participant. And secondly, if individual CCPs end up clearing only a relatively small proportion of the centrally-cleared market, their profitability and, as result, operational capabilities could come under stress – from cyclical volume declines or competitive pressures. This would be especially true of stand-alone CCPs specialising in only one assets class (CDS or OTC equity derivatives, for example) since they might not have the benefit of revenue diversity to shield them from market share or volume declines.

Finally, one possible negative consequence of the market's embrace of central clearing could actually be the reduction in risk vigilance and consideration of creditor interests by the WIBs. Because they would no longer act as credit intermediaries (this role would be outsourced to CCPs), WIBs might have fewer business incentives to maintain strong credit profiles, which are currently necessary to win OTC derivatives business. If, as a result, the WIBs' customers become less demanding of the WIBs' to maintain strong credit profiles, this would make the risk management function of CCPs that much more critical.

4| EXCHANGE TRADING

Exchange trading of OTC derivatives can also help reduce systemic risk, albeit at the cost of undercutting the profitability of this business for major WIBs.

Exchange trading could increase the depth of liquidity for contracts that 1) are highly standardised and fungible, and 2) can attract enough supply and demand to support reasonable exchange trading volumes. Deeper liquidity would strengthen the central clearing mechanism by improving the price transparency of traded contracts and strengthening the CCP's ability to liquidate a failed member's portfolio, as discussed above.

It is possible that exchange-based liquidity would be enhanced by electronic and high-frequency trading participants if the market offered adequate profit opportunities. However, for this to occur, the contracts would have to have sufficient end-user appeal – as hedging and/or speculative instruments – for there to be sufficient trading demand. Currently, OTC contracts that fit these characteristics (CDS indices or plain-vanilla interest rate swaps) are already highly liquid and trade with tight bid-ask spreads.

7 *"Guidance on the application of the 2004 CPSS-IOSCO Recommendations for central counterparties to OTC derivatives CCPs", May 2010.*
8 *Duffie (D.) and Zhu (H.) (2010): "Does a central clearing counterparty reduce counterparty risk?", March.*

But it is a plausible scenario that exchange-based trading would lead to higher trading volumes and even tighter bid-ask spreads. The consequences would be greater transparency and competition among market-makers. This would benefit market efficiency by transferring a portion of the bid-ask from dealers to the end users. The casualty of this would be dealers' profitability – a potential credit-negative.

Dealers generate significant revenues from OTC derivatives market-making: JPMorgan Chase, for example, has disclosed that it generated fully a third of its overall investment banking profits from OTC derivatives in 2006-2008. In large part, the profits are of a function of the absence of complete transparency into bid-ask spreads and the difficulty of electronic market-participants to offer "price improvement".

Additionally, OTC derivative revenues provide ways for WIBs to better monetise relationships with their corporate and hedge fund clients. The WIBs' ability to continue doing so would be negatively affected by open exchange-based competition.

The dealers recognise the threat of exchange trading to their profits. Because of this, mandating exchange-trading or automatically linking it to central clearing could have unintended consequences. To protect market-making and structuring spreads, the dealers could choose to reduce, as much as possible, the centrally-cleared proportion of the market by slowing down the process of contract standardisation. Put another way, if central clearing is the "ticket" to exchange-trading – a destination to which dealers do not wish to get – they may take a pass on the journey altogether.

To conclude, the current structure and practices of the OTC derivatives market contribute to the interconnectedness of large wholesale investment banks – a key vulnerability of their credit profiles. The extent of such interconnectedness and the risks it poses could be reduced by central clearing of eligible contracts and appropriate capital and margin requirements on all contracts. However, such benefits would only be realised if the systemically important CCPs are properly risk-managed and operationally sound, and do not compete on the basis of membership criteria or margin requirements.