CFS Policy Paper

Amending Safe Harbors to Reduce Systemic Risk in OTC Derivatives Markets

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Executive Summary

The recent financial crisis has raised concerns that the failure of a significant derivatives' counterparty and the liquidation of its positions might surprise and disrupt markets to the extent of threatening the viability of otherwise solvent institutions. To reduce this systemic risk, a policy consensus seems to have emerged around two objectives. One, ensure that positions held in derivatives markets are transparent to regulators and, in some aggregated form, to the public. Two, channel as many derivatives trades as practicable through clearing houses.

The implementation of these objectives, however, is far from straightforward. Exactly which positions have to be reported and cleared? What are the consequences of inaccurate or incomplete reporting or of failing to clear trades? Exactly which services constitute "clearing"? Existing legislative and regulatory initiatives do not answer these questions satisfactorily, partly because the broad policy objectives have not been thought through in the context of particular markets and partly because of a reflexive preference to rely on mandates rather than incentives.

This paper recommends implementing the transparency and clearing objectives by narrowing the safe harbor for derivatives (i.e., the right to close-out derivative trades with counterparties that have declared bankruptcy) **to include only those trades that are cleared, where "clearing" is meant to mandate only third-party pricing and collateral management.** The resulting systemic advantages of this change will be the following:

- Because counterparties to derivatives trades very much value safe harbor treatment, the market will be strongly motivated to clear all relatively liquid trades.
- Regulators will have position, price, margin, and risk statistics from clearing houses on the trades that matter most in a crisis, namely those that will be closed out under a safe harbor.
- Safe-harbor close-outs will occur only in those markets most able to absorb such stress, namely in the relatively liquid markets.
- Maintaining the safe harbor for relatively liquid contracts allows counterparties and markets to manage past the event and uncertainties of a default in a manner consistent with the preservation of orderly markets and the interests of the defaulted estate.
- Eliminating the safe harbor for relatively illiquid or highly customized derivatives trades, by causing these assets to be disposed of through the normal bankruptcy process, will protect bankrupt estates from those liquidations most likely to be disorderly.
- Eliminating the safe harbor for highly customized derivatives transactions will stop financial engineering from jumping the queue of creditors by recasting financing and other transactions as derivatives trades.
- The clearing of trades that will be closed-out in a stressed environment leaves an audit trail that can be used by a bankruptcy court to assess the inevitable claims of the defaulting estate and its erstwhile derivative counterparties.

I. Introduction

The robustness of over-the-counter (OTC) derivatives markets was a significant concern throughout the financial crisis and is currently being addressed through regulatory initiatives and proposed legislation. In fact, a policy consensus has emerged that positions in these markets should be more transparent and that clearing of trades should be the norm rather than the exception. But despite the existence of text in draft legislation and despite industry initiatives already underway at the behest of regulators, crucial questions concerning the scope and enforcement of this policy consensus have not been addressed. Which positions have to be reported and cleared? What are the consequences of inaccurate or incomplete reporting or of failing to clear particular trades? Exactly which services constitute "clearing"?

These questions of scope and enforcement are best answered by superimposing the broad policy objectives over the realities of OTC derivatives markets and practices. To this end, the first three sections of part II enumerate and describe the perceived market vulnerabilities to be addressed by policy, namely inadequate MIS, complexity of books, and the derivatives "safe harbor" (i.e., the ability of counterparties to close-out derivatives trades with an entity declaring bankruptcy). The fourth and final section of part II argues that policy must also distinguish between the relatively liquid and the illiquid OTC derivatives markets. Despite the structural problems enumerated, relatively liquid derivatives markets were not, in fact, sufficiently disrupted by even the bankruptcy of Lehman Brothers to threaten the viability of other large financial institutions. Illiquid derivatives markets, by contrast, as illustrated by the AIG experience, basically stopped functioning and, absent government intervention, would have left counterparties essentially holding positions and hoping for the best.

Part III of the paper reviews and analyzes major policy initiatives and proposals with respect to OTC derivatives markets, namely the Federal Reserve's initiatives with an industry working group and the Over-the-Counter Derivatives Market Act pending in the U.S. Congress. While directionally appropriate, these policy approaches are found wanting in mechanics, in particular, in articulating which trades have to be cleared and in ensuring the accuracy and completeness of reported data.

Part IV presents the paper's own policy proposal, namely to limit the derivatives safe harbor to cleared trades, where "clearing" is meant to mandate only third-party pricing and collateral management. While simple to state, this proposal solves many of the complex issues around OTC derivatives markets reform:

- Because counterparties to derivatives trades very much value safe harbor treatment, the market will be strongly motivated to clear all relatively liquid trades.
- Regulators will have position, price, margin, and risk statistics from clearing houses on the trades that matter most in a crisis, namely those that will be closed out under a safe harbor.
- Increase clearing volumes will facilitate the reduction of book complexity through compression.
- Safe-harbor close-outs will occur only in those markets most able to absorb such stress, namely in the relatively liquid markets.

- Maintaining the safe harbor for relatively liquid contracts allows counterparties and markets to manage past the event and uncertainties of a default in a manner consistent with the preservation of orderly markets and the interests of the defaulted estate.
- Eliminating the safe harbor for relatively illiquid or highly customized derivatives trades, by causing these assets to be disposed of through the normal bankruptcy process, will protect bankrupt estates from those liquidations most likely to be disorderly.
- Eliminating the safe harbor for highly customized derivatives transactions will stop financial engineering from jumping the queue of creditors by recasting financing and other transactions as derivatives trades.
- The clearing of trades that will be closed-out in a stressed environment leaves an audit trail that can be used by a bankruptcy court to assess the inevitable claims of the defaulting estate and its erstwhile derivative counterparties.

Part V briefly concludes.

II. Fears for the Robustness of Over-the-Counter (OTC) Derivatives Markets

Throughout the recent crisis, regulators and investors were fearful that the liquidation of a financial institution's OTC derivatives books would surprise and disrupt markets to the extent of threatening the viability of otherwise solvent institutions.[1] Fears for the robustness of these markets can be attributed to three characteristics of OTC derivatives trading and markets. First, management information systems (MIS) at many institutions are not up to the task of reporting counterparty exposures on demand, [2] with exposures to large banks and dealers often and ironically the least available, likely because the probability of these counterparties' defaulting had historically been considered particularly remote. Second, OTC derivatives books are extremely complex due to: their very large number of trades; their massive—though often largely offsetting—notional amounts;[3] and their legal structure, with each institution trading out of many distinct legal entities and trading extensively within the broader institution but across legal entities. Third, the safe harbor for derivatives, i.e., the right to close-out trades of counterparties declaring bankruptcy, effectively licenses a "run" to terminate and replace trades that might destabilize the relevant markets.

II.1 Inadequate MIS as a Source of Systemic Risk in OTC Derivatives Markets

Without adequate MIS on exposures to derivatives counterparties, market participants cannot properly manage their risks during a crisis and regulators cannot formulate informed policy responses. And yet it does appear that such MIS was indeed inadequate during the past crisis. For example,

> **… [E]very bank in New York City [on the Saturday before the Lehman Brothers' bankruptcy] had their back offices filled with people trying to figure out their counterparty risk to Lehman… I was stunned. Everyone knew that Lehman had been listing for six months.[4]**

As one of their principal justifications for bailing out Bear Stearns, regulators claimed that Bear's books were so unclear that they had no idea what its exposure was... When Lehman filed for bankruptcy… no one even knew who[m] Lehman owed money to and who the counterparties on its derivative contracts were.[5]

More generally,

A report by bank supervisors last October [2009] pointed to poor risk "aggregation"; many large banks simply do not have the systems to present an up-to-date picture of their firm-wide links to borrowers and trading partners. Two-thirds of the banks surveyed said they were only "partially" able (in other words, unable) to aggregate their credit risks. The Federal Reserve, leading stress tests on American banks last spring, was shocked to find that some of them needed days to calculate their exposure to derivatives counterparties."[6]

While some progress has been made on the MIS front since the crisis, particularly with resect to credit default swaps,[7] much work remains to be done.

II.2 Complexity of OTC Derivatives Books as a Source of Systemic Risk

The more complex the derivatives book of a failing derivatives counterparty, the more difficult it is to unwind its trades and the more difficult it is for the financial system to deal with its failure. Derivatives books of financial institutions are complex in two ways: first, the number of trades and the total notional amounts in these books are extremely large relative to the amount of market risk actually being transferred; second, a single institution often executes its derivatives trades through many distinct legal entities and trades extensively within the broader institution but across legal entities.

The first source of complexity, namely the buildup of large notional amounts, occurs because derivatives traders usually cover the market risk of a first trade by doing a second trade as opposed to by unwinding that first trade. For example, say that firm #1 agrees to receive a fixed rate (and pay a floating rate) through an interest rate swap with firm #2 on a notional amount of $100mm. Sometime later firm #1 decides to reverse that market risk by "paying fixed" to firm #3 (and "receiving floating") on a notional amount of $100mm. Note that firm #1 did not reverse its market risk by "compressing" its book, that is, by unwinding its original trade with firm #2 or by assigning its obligations under that trade to firm #3. So even though firm #1 now has no market risk—it is simply passing fixed rate payments from firm #2 to firm #3 (and floating payments from firm #3 to firm #2)—firm #1 has two trades and $200mm notional of swaps on its books. Furthermore, by not compressing its book, firm #1 has counterparty risk to both firms #2 and #3 meaning that should either firm fail with some outstanding obligations to firm #1, firm #1 might suffer a loss.

From a systemic point of view, so long as all three firms are solvent it doesn't much matter whether firm #1 compressed its book or not. But should firm #1 declare bankruptcy, firms #2 and #3, in order to preserve their current market risk profiles, will terminate their trades with firm #1 and have to replace them in the market, i.e., firm #2 will have to find another counterparty to whom it will pay fixed and firm #3 will have to find another counterparty from whom it will receive fixed. But since firms #2

and #3 will want to put on these new trades quickly, and when the market is under stress, the system would have been subject to less risk had firm #1 compressed its book in the first place.

The difficulties of unwinding large derivatives books in the middle of a crisis were made clear at the time of the Lehman Bankruptcy. For example, on the Saturday before that filing,

…the Fed had already begun trying to untangle Lehman's credit default swaps… [T]he team would need to do… portfolio compression… [I]t couldn't be done… before trading began in Asia on Monday morning.[8]

To fully appreciate the fear of regulators and investors with respect to the size of derivatives books, consider data from the Bank for International Settlements (BIS): as of June 2009, the notional amount of OTC derivatives contracts outstanding was $605 trillion, including $437 trillion of interest rate contracts, $49 trillion of foreign exchange contracts, and $36 trillion of credit default swaps (CDS).[9] While these magnitudes are certainly breathtaking, it is particularly interesting from a policy perspective to know whether these notional amount are "too big," i.e., whether compression can significantly reduce them, and, therefore, systemic risk, without impeding true economic transfers of risk. For that purpose consider that, under pressure from regulators, the industry did manage to compress CDS notional amounts significantly, eliminating $32.5 trillion in 2008 alone,[10] with seemingly more to be done.[11] And while it is generally accepted that interest rate contracts, the largest group of derivatives in terms of notional amount, are particularly susceptible to compression, little has been accomplished so far. TriOptima, the leading company facilitating compression for the industry, eliminated only $13.6 trillion of interest rate swaps through compression in 2008 and $25.8 trillion in 2009.[12] While these eliminations represent significant operational achievements, they are relatively modest in terms of systemic risks in light of the $437 trillion interest rate contracts outstanding as of June 2009.

The second source of book complexity noted earlier is the fact that derivatives trades of a large financial institution are typically spread out over many legal entities and are often between one entity and another. One important reason for this practice is that different legal entities are required in order to comply with regulatory differences across distinct legal jurisdictions. Another reason is the desire to segregate the credit risk of certain activities from those of the larger firm. And a final reason is to optimize the allocation of revenue for tax purposes. In any case, to take a relevant example, Lehman Brothers had 2,985 legal entities spread across 50 countries.[13] While this headline certainly exaggerates the problem since a handful of entities covered the vast majority of the trades, it does highlight a serious source of obstacles to an orderly unwind. And the vast, pending claims of Lehman Brothers' legal entities against one another confirm the confusion that can result in a crisis from this source of book complexity.

II.3 The Safe Harbor for Derivatives and Systemic Risk

It has been argued that the safe harbor for derivatives mitigates systemic risk but it has also been argued that it exacerbates systemic risk. Since the main recommendation of this paper is to narrow the coverage of the safe harbor so as to reduce systemic risk, this subsection describes the derivatives

safe harbor provision of the bankruptcy code in some detail and presents the arguments for its impact, in its current form, on systemic risk.

Certain types of trades,[14] including derivatives, enjoy a "safe harbor" from the "automatic stay" of bankruptcy.[15] The automatic stay prohibits most creditors from terminating agreements with an entity declaring bankruptcy and from seizing its collateral without explicit court approval. The idea is to prevent creditors from rushing to satisfy their individual claims and, in so doing, crippling the ability of the estate as a whole to reorganize or to liquidate in an orderly manner. Derivative counterparties, on the other hand, under the safe harbor, are not so bound: they may terminate their contracts; liquidate collateral to cover close-out costs; and net trades against each other in the process.

The usual argument for the safe harbor is that the automatic stay begets a particular danger to derivative counterparties and, therefore, to financial markets and perhaps even to the financial system as a whole. The particular danger to derivative counterparties arises because their business model requires that they hedge their risks in real time and in volatile markets.[16] Consider, for example, a broker-dealer which, in order to hedge its interest rate risk, had entered into an interest rate swap with another financial institution that just declared bankruptcy. Were the broker-dealer subject to the stay,[17] it would not know for some time whether the defaulting counterparty's estate would choose to continue the swap or to terminate it in exchange for an unsecured claim of damages calculated as of the date of bankruptcy. If the swap is eventually continued, the broker-dealer would have been hedged throughout the decision process. But if the swap is eventually terminated, the broker-dealer would have been exposed to interest rate risk from the filing date to the decision date in addition to the very real risk than any damages, which are treated as unsecured claims, will only be paid in part. In short, this broker-dealer bound by the stay cannot hedge its interest rate risk as of the bankruptcy filing. Furthermore, since broker-dealers tend to be highly leveraged, the inability to hedge its risk might threaten its financial viability. Finally, since broker-dealers tend to have a complex web of derivatives transactions with other financial institutions, its failure might both destabilize the relevant derivatives markets and threaten the viability of its derivatives counterparties.

In further support of the derivatives safe harbor, it has been argued that the logic of the automatic stay does not typically apply to derivatives. If a machine used to produce goods for sale were seized by creditors upon declaration of bankruptcy, the firm's estate would almost certainly not be able to reorganize or liquidate in an orderly manner. By contrast, were a derivative contract terminated, with appropriate close-out costs paid or received, the estate could typically, if it chose to do so, replace that terminated contract in the broader market. (This does assume that the estate can credibly trade with new counterparties, but this condition would also have to be met when committing to continue trades with existing counterparties.) The key distinction between the machine or similar examples and derivatives contracts is that the former are non-fungible or firm-specific while the latter are typically fungible or not firm-specific.[18] Of course, derivatives contracts can be firm-specific, like a total return swap on a subset of its assets, but such contracts are typically a relatively insignificant portion of a financial firm's derivatives books.

Moving to the other side of the debate, it can be argued that the safe harbor for derivatives simply substitutes one channel of contagion for another. As explained above, allowing counterparties to terminate trades with a bankrupt entity helps them manage their risks and may stave off a secondary round of failures. However, many counterparties' terminating and replacing their trades in response to a bankruptcy filing might destabilize markets sufficiently to engender the very failures that the safe harbor was intended to preclude.[19]

A further argument against the safe harbor for derivatives is that it may exacerbate systemic risk by making derivative trades too safe relative to other types of agreements. First, large and concentrated counterparty exposures in derivatives are tolerated more readily than they would be otherwise because of the safe harbor. Second, because many kinds of agreements can be easily recast as derivative trades and made eligible for the safe harbor,[20] agreements pertaining to particularly illiquid trades can be made more appealing than would otherwise be possible. To take a well known example, AIG's ability to write its disastrous insurance on mortgage CDO's was made possible, at least in part, by its managing to do so in the form of credit default swaps. To take a broader and more general example, *any* financing arrangement can be recast as a derivative trade by means of a total return swap.[21]

To summarize, the safe harbor for derivatives may reduce systemic risk by making it possible for financial institutions to manage their exposures effectively after the bankruptcy of a derivative counterparty. Furthermore, since derivatives contracts are usually not-firm specific, the safe harbor does not typically conflict with the purpose of the automatic stay. However, it can also be argued that the safe harbor increases systemic risk by encouraging a "run" to terminate and replace derivative contracts in the event of a bankruptcy; by making it less costly to hold large and concentrated counterparty exposures; and by making it safer to contract on relatively illiquid assets by recasting those agreements as derivatives.

II.4 Relatively Liquid and Illiquid OTC Derivatives Handled Very Differently During the Crisis

The previous sections described why the failure of a major financial institution and the sudden unwind of its derivatives books might disrupt markets to the extent of threatening the solvency of other institutions. The experience of the crisis, however, suggests the need to differentiate relatively liquid from illiquid markets. Lehman Brothers' OTC derivatives books were for the most part, though certainly not exclusively, composed of relatively liquid contracts, e.g. vanilla interest rate swaps and CDS. And the liquidation of these books after its bankruptcy did not particularly disrupt derivatives markets or inflict solvency-threatening losses on other financial institutions.[22] As highlighted earlier it is certainly true that regulators and other financial institutions had to scramble to understand exposures to Lehman Brothers; it is certainly true that, after the filing, there was a rush to terminate and replace derivatives trades; and it is certainly true that the complexity of the derivatives books to be unwound complicated the unwind and the subsequent—and still ongoing—processing of bankruptcy claims. Therefore, it is also true that there is a role for policy to minimize the severity of such disruptions in the future. However, there is no

evidence that any significant derivatives market, i.e., interest rates, credit, equity, or foreign exchange, was so disrupted so as to become dysfunctional as a result of the bankruptcy filing.

By contrast, the OTC derivatives prominent in the failure of AIG were as albatrosses around the necks of both AIG and its counterparties and, eventually, the government. AIG essentially wrote insurance or "sold protection" in the form of CDS on illiquid securitized mortgage products packaged as CDO's (collateralized debt obligations). When the performance of the underlying mortgages deteriorated and AIG had trouble finding the cash with which to make collateral calls on its losing CDS positions, there was no market in which it could unload its portfolio, i.e., buy back the protection it had sold, at any reasonable price. Similarly, after committing to keep AIG from bankruptcy, the government found that it could only buy back the protection sold by buying the CDO's themselves at par, that is, by paying the insured value and taking ownership of the insured product. In other words, without any market in which to buy back the insurance, and without any market in which the CDO's could be sold (so that the CDS counterparties could be paid the difference between par and the price of their CDO's), the government essentially had to buy the CDO's for par and hold them, hoping for the best.[23]

The assertion here that the unwind of Lehman Brothers' derivatives books did not inflict serious and perhaps devastating losses on its counterparties requires further discussion given the magnitude of the claims filed against Lehman Brothers' estate. The Appendix explains that these claims, whether legally valid or not, most likely overstate true economic loss.

III. Policy Initiatives and Legislative Proposals

Part II described major vulnerabilities of OTC derivatives markets (i.e., inadequate MIS, book complexity, and safe-harbor licensed "runs,") and argued that the relatively liquid markets managed to absorb the massive shocks of the crisis while illiquid markets froze. This part reviews the two current efforts at reforming the OTC derivatives markets—industry "commitments" to the Fed and other regulators and the "Over-the-Counter Derivatives Market Act of 2009"—and analyzes these efforts in light of the markets' vulnerabilities and the experiences of the crisis. Before addressing these efforts, however, the first section of this part digresses to discuss clearing, a significant component of most reform discussion, although not the central topic of this paper.

III.1 "Clearing" Has Several Meanings and Does Not Necessarily Include a Central Counterparty

In the context of OTC derivatives markets, "clearing" can describe a wide variety of institutional arrangements. The minimal orderliness that could be called clearing, hereby named Clearing Level I, is when a third party prices a derivative contract and manages the process by which both initial[24] and variation margin[25] are passed from one counterparty to another. A higher level of orderliness, Clearing Level II, is when a third party acts as a central or clearing counterparty (CCP), that is, when a third party stands contractually between every pair of counterparties who are, in turn, clearing house members. In

such a system the credit risk of derivatives trading is that the CCP fails to perform on a contract or that another member fails in a manner which costs the CCP, and therefore all its members, some invested capital. Finally, at the highest level of orderliness, Clearing Level III, the CCP offers only standardized contracts, meaning that only a limited number of standard contracts are traded at a time.[26] At this level of clearing compression happens automatically: all of a member's trades in a given contract with the CCP are collapsed into a net short or long position. The following table summarizes this range of clearing arrangements:

Extent of Clearing Arrangement	Description
Clearing Level I	3rd party pricing and collateral management
Clearing Level II	Level I + Central or Clearing Counterparty (CCP)
Clearing Level III	Level II w/ a limited number of standard contracts

While almost all discussion of reforming OTC derivatives markets presupposes that regulation should impose a CCP, Clearing Level I is actually sufficient to achieve most policy objectives. Clearing Level I ensures complete and accurate reporting on all cleared trades, with the potential to include intra-company trades; it provides transparency with respect to pricing, risk, and margin; and it facilitates—although does not ensure—compression, by collecting and pricing large sets of trades. Furthermore, Clearing Level I is by far the easiest to implement: setting up a CCP to guarantee all trades requires that market participants and regulators agree on the set of terms through which counterparty risk management is to be outsourced from derivatives counterparties to the clearinghouse, e.g., criteria for membership, capital requirements, and uniform margin rules.

The main impetus for insisting on a CCP is the belief that such an arrangement in some sense protects the system from the effects of failing counterparties. But this supposition is far from certain. First, while it is commonly stated that a CCP "eliminates" counterparty risk, in actuality it only spreads such risk across the clearinghouse members. So, an institution that does an equal amount of bilateral business with each potential clearinghouse member faces exactly the same amount of counterparty risk as a member of a CCP doing equal business with all other members. Second, there is no theoretical reason to believe that a regulated CCP will manage counterparty risk better than individually regulated institutions doing bilateral trades. Third, if a CCP should ever default, the systemic damage would be significantly worse than one or a few counterparties defaulting in a bilateral system. Fourth, regulation that forces a subset of trades through a CCP while other trades remain bilateral can actually increase systemic risk.[27] To see this, say that a hedge fund, trading with a particular dealer, is long bond prices through a customized derivative but short bond prices through standard interest rate swaps. Without any clearing the market risk of the positions offset each other somewhat and both parties have relatively little exposure to the others' defaulting. But if the standard swaps are cleared while the customized derivative is not, exposures from the standard swaps pass to the clearing house and each party becomes relatively exposed to the others' defaulting through the market risk of the customized derivative. Fifth and last, the fact that CCP's, like public exchanges, have a relatively unblemished record with respect to handling systemic disruptions does not imply that CCP's can do so for all trades: existing public exchanges have effectively dealt with only the most liquid and easy to manage financial contracts.

In short, since Clearing Level I achieves most policy objectives with respect to OTC derivatives markets, and since it is very much an open question whether the introduction of a CCP reduces systemic risk, this paper focuses on expanding the volume of trades cleared at Level I alone.

III.2 Industry Commitments to the Fed and other Regulators

The text now returns to the analysis of existing reform efforts. On March 1, 2010 a group of 26 dealers, buy-side firms, and industry associations sent a sixth letter of commitment to the Fed and other regulators with respect to "structural improvements to the global over-the-counter derivatives markets."[28] The key themes of the commitments are increased transparency, increased clearing, and various operational improvements that are beyond the scope of this paper.

With respect to transparency for non-cleared trades, the industry committed to "continue to advance the development of global data repositories" and to deliver studies on how to increase transparency in a cost-benefit efficient manner. Work on the data repositories has begun and the "OTC Interest Rate Trade Reporting Repository" (IR TRR) was launched as of January 2010. But there does not appear to be a coherent vision about which data will be useful in helping regulators and the industry reduce systemic risk. The IR TRR, for example, reports trade volumes and gross notional amounts (with breakdowns by currency, maturity, and product), but counterparty data has been "anonymized" for confidentiality reasons.[29] Given the implications of Part II that it is crucial to understand the web of counterparty risk exposures and the relationship of notional amounts to both market and counterparty risk, it seems suboptimal to initiate a repository focused exclusively on notional amounts and without a well-developed framework for mapping counterparty interconnectedness. Also, given the implications of Part II, there should be some plan for the reporting of intra-company trades. Finally, there seems to have been no discussion at all about how to ensure that participants are supplying complete and accurate data within the parameters of the repository's stage of development. Completeness and accuracy issues are particularly important for non-cleared trades, which are the only ones currently included in the IR TRR, since these data will not have been scrubbed in the course of any clearing or settlement process.

With respect to clearing, the industry pledged to expand both the range of products eligible for clearing and the proportion of eligible trades actually cleared, with clearing meaning a CCP and, where possible, standardized contracts. This initiative, and the progress the industry has already made along these lines, will certainly incrementally improve the robustness of OTC derivatives markets: it will improve the quality of MIS and, to the extent that clearing includes compression, reduce notional amounts relative to risk. But toward what regime are the regulators and the industry moving? Which trades should be eligible for clearing and which should be required to be cleared? Should the answers depend on voluntary industry initiatives and on *ad hoc* regulatory behests?

It is impractical to demand that all OTC derivatives trades be cleared: there will always be a demand for customized trades that will not conform to clearing house specifications and, as mentioned in the section on clearing, there will always be situations in which it is desirable to face a particular

counterparty directly rather than a CCP.[30] Regulators and the industry recognize this, but have made little to no progress on deciding which trades should be cleared. To put it bluntly, definitions to date are circular. Eligible trades are defined as trades of an eligible product between counterparties who have a common relationship with an eligible CCP; eligible products are defined as contracts that are available to be cleared by an eligible CCP; and an eligible CCP is defined as one who is authorized to clear an eligible product![31]

To summarize, industry initiatives and commitments at the behest of regulators will improve the robustness of OTC derivatives markets through more transparency and more clearing. But no framework has been proposed to define which trades have to be reported and cleared, to ensure the completeness and accuracy of such reports, and to guarantee that clearing actually occurs when appropriate. Put another way, without such a framework, it is not hard to imagine that a particularly dangerous set of trades with respect to systemic risk winds up not being reported or cleared.

III.3 Over-the-Counter Derivatives Markets Act of 2009

In December 2009 the U.S. House of Representatives passed the "Over-the-Counter Derivatives Markets Act of 2009" (OTC DMA).[32] In March, 2010 the U.S. Senate Banking Committee passed a very similar version of this act as Title VII of a broader bill. This paper is concerned with only two elements of the OTC DMA, namely clearing and reporting requirements.[33]

The decision rule to determine which contracts have to be cleared is, as in the industry commitment letters, circular. In the OTC DMA regulators are to determine which contracts have to be cleared, but one of the criteria to be used is whether an authorized clearing house exists that is able to clear that contract! And since the act in no way seems intended to outlaw non-cleared contracts, it would seem that the scope of clearing will continue to depend on market forces and the *ad hoc* suasions of regulators. Putting this aside for the moment, it is not clear whether the act envisions "clearing" as requiring a CCP or not. On the one hand, the act mentions "credit support infrastructure" and "insolvency" in connection with swap clearinghouses, phrases that presume a CCP. On the other hand, the act seems to leave the question open by stating that regulators "shall by rule or regulation define the scope of the clearing functions that are necessary to satisfy the [clearing] requirement…"[34]

With respect to reporting, the OTC DMA requires that clearing houses report cleared trades and that counterparties themselves report non-cleared trades to data repositories or, to the extent such repositories do not exist for particular products, directly to regulators. The regulators are expected to determine which data is necessary for their oversight and which for public consumption. But, again, as in the industry commitment letters, there is no mechanism to ensure the accuracy or completeness of data pertaining to non-cleared trades nor does there seem to be any provision for the reporting of intra-company trades.

It is worth noting that the broader Senate bill provides for the creation of an "Office of Financial Research" inside the Treasury Department to collect, process, and analyze data for use by the Financial

Stability Oversight Council and other regulators. This provision has broader ambitions than improving the robustness of OTC derivatives markets, namely, ensuring financial stability. Nevertheless, this seems to be the only recognition in the various legislative and regulatory initiatives that recognizes the immense challenge of assembling and making use of a massive amount of data spanning the breadth of financial markets.

IV. Limiting the Safe Harbor to Trades that are Cleared will Make OTC Derivatives Markets More Robust

The analyses of the previous parts of this paper can be combined into the following conclusions:

1. Relatively liquid OTC derivatives markets are probably able to withstand the liquidation of the books of a significant financial institution, particularly if book complexity is limited and if adequate MIS has been provided to the markets and regulators over time.
2. Level I Clearing, meaning third party pricing and collateral management,
    a. naturally provides complete and accurate MIS for the set of cleared trades;
    b. clarifies the exposures of one legal entity versus another;
    c. when combined with compression, by standardizing contracts or by facilitating third party compression programs, further reduces book complexity;
    d. is relatively easy to achieve for liquid and generic derivatives but difficult to achieve for illiquid and highly customized derivatives.
3. Safe harbor provisions applied to relatively liquid derivatives reduce systemic risk by allowing otherwise solvent institutions to manage risk in a stressed environment without affecting a bankrupt estate's orderly liquidation. But safe harbor provisions applied to illiquid derivatives probably exacerbate systemic risk by licensing a "run" to liquidate contracts in a market not able to handle the volume; by having encouraged the re-labeling of illiquid contracts as derivatives; and by suddenly stripping a bankrupt estate of contracts that are not easy to value or replace.

In light of these conclusions, this paper recommends that the derivatives safe harbor be changed so as to apply only to derivative contracts that have been cleared, where clearing requires third party pricing and collateral management. This change should apply to all trades across legal entities, including trades within a broader financial institution (e.g., holding company). Narrowing the safe harbor in this way will have the following systemic advantages:

- Because counterparties to derivatives trades very much value safe harbor treatment, the market will be strongly motivated to clear all relatively liquid trades. The resulting expansion of clearing volume will automatically provide complete and accurate MIS for many more trades and will facilitate compression either through standardization or by better accommodating the needs of third party compression programs.[35]
- Regulators will have position, price, margin, and risk statistics from clearing houses on the trades that matter most in a crisis, namely those that will be closed out under a safe harbor.
- Safe-harbor close-outs will occur only in those markets most able to absorb such stress, namely in the relatively liquid markets.

- Maintaining the safe harbor for relatively liquid contracts allows counterparties and markets to manage past the event and uncertainties of a default in a manner consistent with the preservation of orderly markets and the interests of the defaulted estate.
- Eliminating the safe harbor for relatively illiquid or highly customized derivatives trades, by causing these assets to be disposed of through the normal bankruptcy process, will protect bankrupt estates from those liquidations most likely to be disorderly.
- Eliminating the safe harbor for highly customized derivatives transactions will stop financial engineering from jumping the queue of creditors by recasting financing and other transactions as derivatives trades.
- The clearing of trades that will be closed-out in a stressed environment leaves an audit trail that can be used by a bankruptcy court to assess the inevitable claims of the defaulting estate and its erstwhile derivative counterparties.

It should be emphasized that the proposal of this paper is aimed at the robustness of OTC derivatives markets, not at problems of solvency that may arise through the use of derivatives. So, for example, the paper does not resolve the problem of inadequate MIS for non-cleared trades (which will not be liquidated in a crisis). This issue and others relating to the overall risk of individual financial institutions are better handled by focusing on an institution as a whole, for example, by overall capital requirements, rather than by focusing on an individual market. More concretely, a list of derivatives trades will not provide much insight into an institution's overall risk without placing these trades in the context of the institution's other trades, its funding profile, its risk management paradigm and procedures, etc.

V. Conclusion

Markets are complex and incentives matter. Practical policy proposals should recognize that all OTC derivatives are not alike: some are plain-vanilla and highly liquid; some are more customized and less liquid; and some are non-fungible insurance contracts or highly customized financing arrangements masquerading as derivatives. Practical policy proposals should also recognize that economic agents will optimize their way around mandates: if clearing and reporting are not aligned with the incentives of market participants, it will be difficult to enforce compliance with the spirit and intent of these mandates.

This paper's proposal offers the proverbial carrot of the safe harbor in order to induce derivatives markets participants to conduct their affairs in a manner conducive to the reduction of systemic risk. In the long run this approach will foster market robustness better than mandates around which the next generation of financial engineers will dance.

Appendix: Economic Losses vs. Bankruptcy Claims of Lehman Brothers' Derivatives Counterparties

The text asserts that the unwinding of Lehman Brothers' derivatives books did not inflict serious and perhaps devastating losses on its counterparties. This point is worth further discussion given the claims filed against the estate of Lehman Brothers Holdings Inc. (LBH) and its derivatives subsidiary, Lehman Brothers Special Financing Inc. (LBSF). After all, the estate reported 3,222 claims against LBSF totaling $88 billion and, in another cut of the data, 4,077 claims relating to derivatives contracts and ISDA master agreements totaling $111 billion.[36] These are mind-boggling numbers, bearing in mind, for example, that LBH reported a Value-at-Risk (VaR) for the entire company (ex-real estate) as of May 31, 2008 at less than $150 million[37] and that the net income of LBH as a whole from 2000-2007 totaled $22.5 billion. But there are strong reasons to believe that the claims, particularly those filed by derivatives dealers, while perhaps valid from a legal standpoint, significantly overstate true economic loss.

Counterparties have the right to terminate derivatives trades, replace them, and, subject to commercial reasonableness, treat replacement costs (net of collateral seized and sold) as claims against the estate. But how should a claimant calculate the replacement costs of a portfolio of many trades? One method is to apply a transaction cost—most likely that prevailing in the midst of the crisis—to each and every trade terminated and then sum the results. While this calculation may or may not clear the standard of commercial reasonableness, it clearly overstates economic loss. Any trading manager responsible for a large book of derivatives would execute a few large trades to hedge the overall market risk arising from having terminated the trades with the failing counterparty. Then, over time, the manager would opportunistically replace individual trades as necessary while unwinding the overall hedge as appropriate. Hence, the true economic replacement cost for a dealer would typically be only somewhat larger than the transaction costs of executing the large, overall hedge. Furthermore, this true replacement cost would typically be substantially below the sum of trade-by-trade replacement costs. In fact, Goldman Sachs, in one of its claims against LBSF, states that a trade-by-trade approach would have yielded a claim of $4.2 billion while its claim, calculated by applying transaction costs against the net risk of the portfolio, amounts to only $1.5 billion.[38]

Other reasons that claims might exceed true economic costs include applying representative, rather than realized transaction costs, and opportunistically assigning trades as replacement trades. To understand the latter, imagine that a dealer has terminated a trade in which it had bought protection on a particular credit so that it has to replace that trade by buying protection on that same credit from another party. But, in the course of business in the days after the bankruptcy, it buys and sells protection on that credit many times over. Which "buy" should be assigned as the replacement trade? Putting the answer to that question aside, it is not hard to imagine that a more expensive "buy" trade would be assigned as the replacement trade, thus enlarging the claim beyond true economic cost. Furthermore, with markets as volatile as they would be after the bankruptcy of a major broker-dealer, the potential to opportunistically assign replacement trades, particularly for derivatives dealers, would be quite large.

Without analyzing the detailed, non-public data supporting the claims against LBSF and LBH, it is impossible to establish definitely that the claims do significantly exceed true economic cost. However, there are three empirical indications that this is indeed the case. First, balance sheets prepared by the estate as of the bankruptcy filing show LBSF derivative assets of $20.8 billion and derivative liabilities of $7.4 billion. It is true that these values use prices provided by Lehman Brothers' systems and it is true that these values in no way reflect transaction costs of replacement. However, since these derivatives book were relatively balanced market-making books and consisted mostly of relatively liquid contracts, a swing from a positive net value of $13.4 billion to a post-liquidation value of negative $80 to $100 billion, as represented by the claims, stretches credulity. Second, hardly any of the dealers' press releases of their earnings over the period including Lehman Brothers' bankruptcy mention the losses described in the claims. There were twelve dealers who submitted derivatives claims of $500mm or more against LBSF, magnitudes which would most probably constitute material losses if claims represented true economic loss. However, only two of these twelve dealers make any reference in their earnings releases to losses resulting from the termination and replacement of derivatives contracts in September 2008.[39] Third, dealers' claims have been trading at a discount to non-dealer claims, revealing a consensus that the dealers' claims will not be recognized as representing even their legally valid claims, let alone the true economic costs incurred.

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[1] Regulators and investors were also fearful of particular exposures, taken in derivatives form, leading to losses that threatened firms' viability, e.g., AIG's writing of insurance on mortgage assets in the form of CDS. This fear, however, has to do with the solvency of an entire institution rather than the liquidity of its derivatives books, and is not the subject of this paper.

[2] By contrast, institutions are usually able to produce detailed reports on the market risk of their positions.

[3] The notional amount of a derivative is the quantity used to calculate the cash flows of the derivative. For example, committing to pay 5% on the fixed side of an interest rate swap with a notional amount of $100mm is a commitment to pay $5mm per year. It is important to note that the notional amount of a derivative is usually not a useful measure of its risk. Continuing with the swap example, the net interest payments of the fixed and floating sides of the swap are at risk should a counterparty default, not the $100mm notional amount.

[4] "Lehman Monday Morning Lesson Lost with Obama Regulator-In-Chief," by Alison Fitzgerald and Christine Harper, Bloomberg, September 11, 2009.

[5] "Give Bankruptcy a Chance," by David Skeel, The Weekly Standard, June 29, 2009.

[6] "A special report on financial risk," The Economist, February 13th 2010, p. 8.

[7] See "Credit Default Swaps and Counterparty Risk," European Central Bank, August, 2009. See, in particular, Executive Summary, p. 7, and Chapter 3.

[8] "Missing Lehman Lesson of Shakeout Means Too Big Banks May Fail," by Bob Ivry, Christine Harper, and Mark Pittman, Bloomberg, September 8, 2009.

[9] BIS Quarterly Review, December 2009, Table 19: Amounts outstanding of OTC derivatives, p. A103.

[10] "Credit Default Swaps and Counterparty Risk," European Central Bank, August, 2009, p. 16.

[11] The Trade Information Warehouse (TIW) reported that, as of March 19, 2010, gross notional CDS on the top 1000 reference entities was $14.8 trillion while net notional was only about $1.2 trillion. (Net notional nets the longs and shorts of a given credit held by a single counterparty.) This implies that a substantial amount of the gross notional could probably be eliminated without affecting true risk transfers. Note that the gross notional cited here is substantially less than the BIS quantity cited in the text because the TIW has significantly narrower coverage of non-dealer institutions.

[12] "TriOptima's multilateral termination service triReduce eliminates $14.5 trillion in CDS notional and $25.8 trillion in IRS notional in 2009," TriOptima press release, January 14, 2010.
[13] Report and Recommendations of the Cross-Border Bank Resolution Group, Basel Committee on Banking Supervision, September, 2009.
[14] The safe harbor provisions cover securities contracts (i.e., the purchase or sale of a security); commodities and forward contracts for physical delivery by a commodity broker or financial participant; repurchase agreements on various short-term debt obligations, U.S. or U.S. agency debt, mortgage-related securities, and various foreign government debt; swap agreements; and master-netting agreements governing these covered trade types.
[15] For background information on safe harbors, see "Bankruptcy Code Safe-Harbor Provisions for Financial Contracts, by Michael Cook, Schulte Roth & Zabel LLP, New York City, March 2009; "Bankruptcy Code Safe-Harbor Protections for Parties to Financial Contracts," by Raniero D'Aversa, Jr., Andrew D. Shaffer, and Weston T. Eguchi, *The Review of Banking & Financial Services*, Volume 22(2), February 2006; "Derivatives in Bankruptcy," by Shmuel Vasser, *Business Lawyer*, Volume 4, 2005.
[16] See Vasser, op. cit.
[17] This discussion assumes that derivatives outside a safe harbor would be treated like other executory contracts outside a safe harbor.
[18] See "Derivatives and the Bankruptcy Code: Why the Special Treatment?" by Franklin R. Edwards and Edward R. Morrison, *Yale Journal on Regulation*, Volume 22, 2005.
[19] See "Derivatives and Systemic Risk: Netting, Collateral, and Closeout, by Robert R. Bliss and George G. Kaufman, Federal Reserve Board of Chicago, Working Paper 2005-03, May 10, 2005; "Dealing with the Shadow Banking System," by Isaac Corre, The New York Times DealBook, October 8, 2009; Edwards and Morrison, op. cit.; "Narrowing the Bankruptcy Safe Harbor for Derivatives to Combat Systemic Risk," by Bryan G. Faubus, *Duke Law Journal*, Volume 59(4), January 2010; "Give Bankruptcy a Chance," by David Skeel, The Weekly Standard, June 29, 2009.
[20] See Edwards and Morrison, op. cit.
[21] Say that a dealer is willing to lend funds to a company that will buy some asset with the money. The dealer could make the loan or it could execute transactions with identical cash flows as the loan but with safe harbor protection. In particular, the dealer: buys the asset itself; engages in a total return swap with the company through which the dealer pays the rate of return on the asset to the company and receives some interest rate from the company over the life of the swap; and sells the asset when the swap expires.
[22] This statement is by no means meant to imply that other aspects of Lehman Brothers' bankruptcy, e.g., the default of its commercial paper or the recognition that significant financial institutions would be allowed to fail, did not disrupt markets sufficiently to threaten to overwhelm other institutions.
[23] More precisely, the Fed loaned money to specially created entities, Maiden Lane II and Maiden Lane III, whose only other liabilities are relatively small subordinate infusions from AIG.
[24] Say that a small hedge fund enters into a derivative contract with a large broker-dealer (B/D). The hedge fund might post *initial margin* of $10 in cash or securities so that if it should owe up to $10 to the broker-dealer as a result of the derivatives contract but fail to perform on that obligation, the B/D would have access to that $10 to fully cover or mitigate its loss. (Any amount above $10 owed by the hedge fund could be pursued as an unsecured claim by the B/D.)
[25] On any given day, the value of a derivative contract will increase for one counterparty and decrease for the other by exactly the same amount. At the end of the day the counterparty losing value pays the amount of that loss to the counterparty gaining value as *variation margin*. This practice ensures that, at the end of each day, neither counterparty has exposure to the other.
[26] A CCP is not necessary in a clearing system with standardized contracts, but has always traditionally been part of such a system.
[27] See "Does a Central Clearing Counterparty Reduce Counterparty Risk?" by Darrell Duffie and Haoziang Zhu, Stanford University, July 1, 2009.
[28] This letter can be found at http://www.newyorkfed.org/newsevents/news/markets/2010/100301_letter.pdf
[29] See the description on TriOptima's website:
http://www.trioptima.com/services/interest_rate_trade_reporting_repository

[30] See footnote 6 of the industry commitment letter, *op.cit.* Also see Duffie and Zhu (2009), *op. cit.*
[31] See the appendices of the industry letter dated September 8, 2009.
[32] The act was part of the larger "Wall Street Reform and Consumer Protection Act of 2009."
[33] For a full analysis of the act, see "Clients & Friends Memo: Over-the-Counter Derivatives Market Act of 2009," by Steven D. Lofchie *et al.*, Cadwalader, Wickersham, and Taft, August 20, 2009.
[34] "Over-the-Counter Derivatives Markets Act of 2009, H.R. 3795, Section 113, October 13, 2009, p. 25.
[35] The author would support more direct encouragement of compression by, for example, notional (in addition to risk-based) capital charges. The logic is that large notional amounts do, in crisis, represent incremental risk.
[36] "Lehman Brothers Holdings Inc., The State of the Estate," Alvarez and Marsal, November 18, 2009. See pages 32 and 33, respectively.
[37] Lehman Brothers Holdings Inc., Form 10Q for the quarter ended May 31, 2008, p. 95.
[38] Proof of Claim of Goldman Sachs Bank USA against Lehman Brothers Special Financing Inc., September 22, 2009, available online from Epiq Systems. In the claim of Goldman Sachs International against LBSF, the trade-by-trade and net claim numbers are $1.5 billion and $1 billion, respectively. To the author's knowledge, no other claims have supplied similar calculations.
[39] The twelve dealers are: Bank of America, Deutsche Bank, Citibank, Merrill Lynch, Goldman Sachs, Barclays, Morgan Stanley, Credit Suisse, Royal Bank of Scotland, and Nomura. These claims are available online from Epiq Systems. In its press release on third quarter 2008 earnings Merrill Lynch noted write-downs of $3.8 billion "principally from severe market dislocations in September, including… the default of a U.S. broker-dealer." Royal Bank of Scotland noted in its press release on fourth quarter 2008 earnings that it "incurred £5,776 million of losses, write-downs or reserves … [including] counterparty failure (notably Lehman and Madoff)…"

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