ECONOMIC COMMENTARY

Number 2010-6
July 7, 2010

Reforming the Over-the-Counter Derivatives Market: What's to Be Gained?

Kent Cherny and Ben R. Craig

While derivative financial instruments have made the hedging and exchange of risk more efficient, the recent crisis showed that they also pose a substantial threat to financial stability in times of systemic turmoil. Underlying much of this threat is the lack of transparent reporting in the over-the-counter market for these instruments. This *Commentary* discusses the advantages of one solution to the transparency problem: moving the settlement or trading of derivatives to exchanges or clearinghouses.

United States legislators are poised to pass comprehensive financial reform legislation. While the final form of the bill is yet to be decided, it is almost certain to contain requirements for broader regulation of derivative instruments.

The financial crisis in 2008 saw the emergency merger of Bear Stearns with J.P. Morgan Chase, the failure of Lehman Brothers, and the near-failure of the insurer American International Group (AIG), all of which were major institutional participants in the derivatives market. Problems at these firms revealed uncertainty about the amount and interconnectedness of derivatives exposure in the financial system, which, in some cases, contributed to the freezing up of markets or forced the Federal Reserve and the federal government to intervene in others.

The events of the recent financial crisis revealed that the current derivatives market framework is not robust enough to withstand a systemic disruption without exacerbating contagion concerns, requiring direct or indirect support from fiscal and monetary authorities, or both.

As we noted in a previous *Economic Commentary* (July 2009), derivatives are used by financial institutions and corporations to adjust their exposure to particular financial risks, such as the default of a borrower or wild swings in interest rates. Both in theory and practice, these products have made the hedging and exchange of risk in the financial system more efficient. In its current form, however, the derivatives market poses a substantial threat to financial stability in times of systemic turmoil. The lack of transparent reporting of trades and exposures leaves both regulators and investors uninformed about where risks are concentrated within the system. Without this information, regulators cannot monitor banks' exposure to particular risks, and investors cannot use market prices to discipline the unbalanced risk exposures of their peers.

Changing the way the derivatives market operates, particularly by providing market stakeholders with adequate trade and pricing information, would lessen the threat it poses to financial stability without closing off a vital resource for managing risk. One solution to the transparency problem is to move the settlement or trading of derivative instruments onto exchanges or clearinghouses. These frameworks—already successfully employed in other, more familiar markets such as those for stocks and options—allow for easier dissemination of market information as well as institutional oversight by government regulators, investors, and clearing entities.

ISSN 0428-1276

Derivatives Markets: Useful, but Not (Yet) Robust

It is worth reiterating the purpose that derivatives serve in the financial system: They allow specific risks to be shed or acquired without the purchase or sale of an asset. This may not sound profoundly important in abstract terms, but a practical example can clarify their usefulness, as well as outline the current structure of the market. Suppose a bank is approached by a software company looking to take out a $5 million loan, and after a thorough review of the company's financial condition, the bank underwriters determine that the loan would be a safe and profitable investment. However, the bank's risk manager informs the underwriters that the bank already has a lot of exposure to the software industry, and that making the loan would weight the lending portfolio too much in one direction. In order to make the loan, build the client relationship, and not unduly expose the bank to the software industry, the bankers turn to the derivatives market.

One kind of derivative—the credit default swap (CDS)—protects buyers from the default (that is, credit risk) of an underlying obligation, and would allow the bank to make the loan without adding more software-related credit exposure to its portfolio. There is no centralized trading for CDSs (like there is for, say, shares of stock), so the bank must utilize the over-the-counter (OTC) derivatives market. In the OTC market, the bank would call a series of CDS dealers—usually commercial and investment banks—to ask for quotes on a $5 million CDS contract on the software company in question. Once the best quote is selected and a contract is entered into, the bank can lend the software company the requested $5 million of funding. The CDS makes it possible for the bank to make a profitable loan. In turn the bank pays the dealer a risk premium for protection against a loan default, and the dealer earns the CDS premium in exchange for taking on credit exposure to the software company.

What makes this a derivatives transaction? At its inception, the CDS contract premium is priced at a level that the two sides (counterparties) believe compensates them for the risk being exchanged. The CDS is not an asset, then, but a formal exchange of future exposure, whose value over time changes in relation to the credit risk profile of the underlying company. That is, the contract derives its value from another, underlying asset: the loan. Also, note that one of the counterparties (the dealer) is exposed to the underlying loan without actually holding it, a phenomenon that differs from nonderivative securities markets.

In this example, the OTC derivatives market appears to have improved the efficiency of the financial intermediation process. After all, the loan might not have been made without the bank's ability to hedge against the software company's credit risk. A world devoid of derivative instruments might still have allowed the bank to hedge its exposure—by short-selling $5 million of the software company's bonds, for instance. But when these alternatives become sufficiently complex and expensive, then derivatives can, theoretically, improve financial market efficiency by providing an economically viable method for risk transference where one did not previously exist.

Still, the overall usefulness of derivatives must consider any costs they impose, and in this respect they currently possess a significant downside. Although industry-developed standards for the OTC derivatives market exist, there is no formal regulation or reporting requirements universal to all transactions that occur. And while banks' aggregate derivative holdings may show up in their regulatory filings, their trading partners and individual exposures are generally not documented.

Perhaps more importantly, there is no central mechanism in place to locate exposures as they change hands through trading. To use our previous example, if the CDS dealer decides it no longer wants the risk exposure associated with the software company, it can effectively sell its $5 million of software company exposure by buying a CDS from another dealer or an investor in the OTC market. By layering the contracts in this fashion, the CDS dealer has no net exposure to the software company. However, simply looking at the lender's balance sheet will not tell you that the default risk exposure to the software company has been transferred to a third party.

The practice in the OTC market of removing exposure by buying an offsetting contract makes it difficult and costly for an outside party looking at the transaction or financial system as a whole to know where the risk now resides. To illustrate, figure 1 shows how an investor can buy a CDS and then offset the exposure by selling his contract to a new buyer. Such chains can grow very large, and although risk is being transferred, the parties' balance sheets will show large aggregate CDS holdings (because of offsetting contracts), which provide little or no information about actual exposure to particular borrowers or counterparties.

This lack of transparency is a serious problem for derivatives market oversight, regardless of whether such oversight is in the form of market discipline or official supervision by regulatory agencies. Both approaches to oversight are directed toward maintaining the robustness and integrity of the market, particularly in relation to counterparty risk—the risk that one side of a derivatives transaction is unable to fulfill its commitment. In a credit default swap, for example, counterparty risk appears in the probability that the CDS

buyer stops paying premiums or the CDS seller becomes unable to repay the buyer in the event of an underlying asset default. While market participants obviously fear counterparty risk because they stand to lose money because of it, regulators are also concerned about it for a couple of reasons. Counterparty risk is a source of contagion in the financial system, and can limit the ability of regulators to discipline large troubled financial firms since the disruption of a major market participant's operations can ripple through the positions of all linked counterparties. Second, during periods of financial stress, uncertainty about risk exposures has the potential to seize up the financial system and spill over to the wider economy, as institutions seek to limit their exposures to each other by pulling out of existing positions en masse.

Mechanisms for mitigating counterparty risk in the system include pricing and limits on exposure. For example, market participants will increase the risk premium charged in transactions with overexposed counterparties or stop dealing with them altogether. Financial market supervisors may implicitly price the counterparty risk by requiring that additional capital or loss reserves be set aside as exposure to a counterparty increases. They may also set strict limits on exposure to a single counterparty.

Of course, market and supervisory mechanisms for handling counterparty risk depend critically on being able to accurately measure such exposures at any point in time. The current organization of the OTC derivatives market makes such assessments difficult at best, inhibiting market-based and supervisory-based discipline, with negative implications for the stability of the financial system. Fortunately, the clearinghouse and exchange models provide a compelling solution.

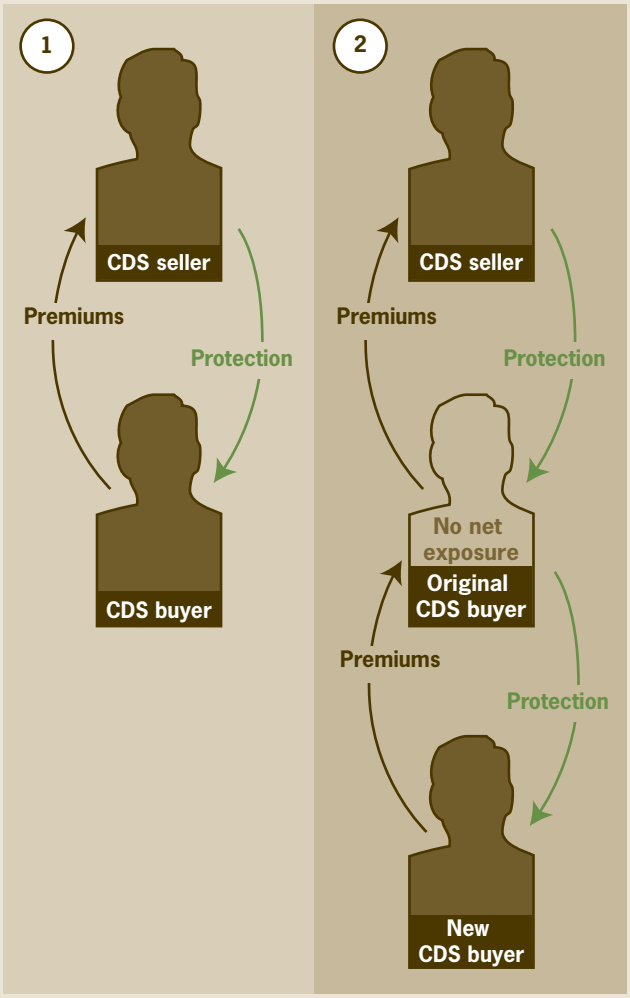
Central Counterparty: A Robust Alternative

Both counterparty risk and information opacity in the derivatives market can be remedied by centralizing derivatives clearing and trading through a single entity, the central counterparty. Clearinghouses and exchanges (like a stock exchange) are two approaches to creating a central counterparty.

The Clearinghouse

In the clearinghouse model, derivative contract negotiations are conducted bilaterally as they are now, but once the terms are set, the two counterparties enter into the contract with the clearinghouse, which takes each side of the transaction. To use our ongoing example, the clearinghouse would sell a $5 million CDS to the bank and buy a $5 million CDS from the dealer, thus becoming the counterparty to both sides of the negotiated contract. A default by either the bank or the dealer would be absorbed by the clearinghouse, as opposed to potentially rippling through a cascade of bilateral OTC contracts and disrupting financial markets.

Figure 1. Exiting a CDS-Buyer's Contract in the OTC Market



In order to manage its own risk, the clearinghouse would likely employ at least two tools: contract standardization and margin enforcement. Standardization of contract terms and amounts would make valuation easier for both market participants and the clearinghouse, since heterogeneous terms—such as differing definitions of "default" for a CDS, or an atypical benchmark rate for an interest rate swap—would become rarer, and trading volume would increase in more basic or essential derivatives, aiding price discovery. Clearer price signals would aid in margin requirements—the posting of capital and collateral by counterparties as the value of derivative contracts fluctuate. The clearinghouse would use margin requirements to protect itself against a counterparty default, in which case the accumulated margin would be used to compensate the counterparty on the other side of the contract while protecting the clearinghouse itself from losses.

By moving counterparty risk out of the banking system (where it now resides) and concentrating it in a supervised central counterparty, mandated clearing of derivatives would centralize information about new and existing contracts, as well as simplify market monitoring by eliminating redundant contracts. Clearinghouses could publish pricing and volume information that would be useful for market participants, and regulators could require reporting of all contract holders' net positions to monitor exposure concentrations within institutions and systemwide. And because all transactions would occur through a clearinghouse, the derivatives exposure reported by an institution would represent its net exposure (as opposed to a tangle of potentially offsetting contracts), greatly simplifying the monitoring process.

Recent history illustrates the importance of such monitoring. The insurer AIG nearly collapsed in 2008 due to a large, unhedged CDS exposure to mortgage securities. The full extent of AIG's position was unknown to investors, counterparties, and regulators at the time of its rescue by the Federal Reserve through the extension of a massive, emergency discount window loan. A central counterparty model for the derivatives market would prevent such information lapses from again spiraling into systemic events.

What's more, a central counterparty can use the aggregated positions of individual counterparties to net out their margin requirements. For example, if a bank has to post $1 million of margin for a CDS contract, but another contract the bank has outstanding moves $1 million in its favor, the clearinghouse can simply cancel the two out since it is counterparty to all contracts in the market. In this way, the centralization of trade information lessens the constant (and expensive) burden of posting capital in the derivatives market, particularly compared to the current OTC market.

The Exchange

An exchange-trading model for derivatives would maintain the benefits of central counterparty guarantees and information collection, but would add a pricing service. Remember that in the clearinghouse model as outlined, two counterparties agree upon the terms of a contract and then clear it through a clearinghouse. An exchange, on the other hand, would actually facilitate the terms of the contract by soliciting buy and sell offers from participants for standardized contracts.

A dealer bank, for example, might offer to buy a $5 million CDS contract on our software company for a 200 basis point annual spread (premium) or to sell a similar contract for 210 basis points. Out of such price quoting from multiple dealers and risk management end-users, an active derivatives market would emerge, with centralized, instantaneous pricing. Gone would be the days of calling up multiple dealers to search for the best price. Instead, the exchange would supply a single price for a given standardized contract, and in turn would allow for more dynamic margin and collateral calls if prices fluctuate sharply. Mandated exchange-trading of derivatives would therefore provide even more transparency and standardization than a central clearinghouse.

An Imperfect Solution

Either a clearinghouse or exchange-trading mandate for derivatives would go a long way toward removing the problems of opacity and counterparty risk—including their contribution to systemic risk—from the market. Because in the past these issues have contributed to the possibility of contagion (such as through the default of a major dealer bank), migrating counterparty risk to a central counterparty will lessen the too-big-to-fail (TBTF) problem as it currently exists.

But as is nearly always the case, the policy change would not be a free lunch. Rather, central clearing and trading will simply move part of the TBTF problem out of the banking system and into one or a handful of clearinghouse or exchange institutions. These new TBTF institutions would have to be appropriately supervised to ensure the integrity of their risk management practices and management. In all, though, the central counterparty model should be seen as partially mitigating TBTF since it provides clarity in terms of how financial firms and markets are connected through the derivatives markets—increasing the ability of markets and financial system supervisors to discipline firms with excessive exposures to specific types of risk or to other financial firms.

Another imperfection that central counterparties exhibit relates to the inefficiencies of standardization. Both clearinghouses and exchanges would opt to standardize contracts because it would simplify product offerings (making it easier to use them), improve pricing and market thickness, and improve institutional risk management for the

central counterparties themselves. For those looking to hedge, some efficiency may be lost as hedging strategies have to be "shoehorned" into standardized instruments. But clearinghouses and exchanges will have the financial incentive—just as they do in existing organizations like the New York Stock Exchange and the Chicago Mercantile Exchange—to create instruments that meet the needs of their customers. If nonstandardized derivatives are still created and traded, they are likely (and ought) to be costlier and subject to higher capital standards to compensate for illiquidity. If in the past derivatives have been subject to lower or less rigorously enforced capital standards than are now being proposed, it suggests that additional pressures were externalized to the financial system itself, with tremendous downside risk and consequences.

Finally, a central counterparty mandate is not a magic bullet as it does not address the more fundamental regulatory and economic questions about how much incremental complexity derivatives—especially those used for speculation as opposed to hedging—contribute to the distribution of risk in the financial system. Even so, uniformly applied clearing and trading of derivatives would represent a meaningful improvement over the current OTC market framework. Such a system would engender robustness in this useful market by allowing both regulators and market participants to manage its safe, efficient operation in a newly transparent environment.

Recommended Reading

"Policy Perspectives on OTC Derivatives Market Infrastructure," Federal Reserve Bank of New York, staff report.

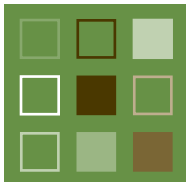
"Credit Default Swaps, Clearinghouses, and Exchanges," Council on Foreign Relations, working paper.

"The Reduction of Systemic Risk in the United States Financial System" by Hal S. Scott (See Section III, "Clearinghouses and Exchanges for Derivatives"), SSRN working paper.

Federal Reserve Bank of Cleveland
Research Department
P.O. Box 6387
Cleveland, OH 44101

PRSRT STD
U.S. Postage Paid
Cleveland, OH
Permit No. 385

Return Service Requested:
Please send corrected mailing label to the above address.



Kent Cherny is a research assistant at the Federal Reserve Bank of Cleveland, and Ben R. Craig is a senior economic advisor at the Bank. The views they express here are theirs and not necessarily those of the Federal Reserve Bank of Cleveland or the Federal Reserve Board.

Economic Commentary is published by the Research Department of the Federal Reserve Bank of Cleveland. To receive copies or be placed on the mailing list, e-mail your request to 4d.subscriptions@clev.frb.org or fax it to 216.579.3050. *Economic Commentary* is also available on the Cleveland Fed's Web site at www.clevelandfed.org/research.