

## Policy Issues Facing the Market for Credit Derivatives

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The financial crisis has prompted calls for revamping the market for credit derivatives. For example, in a July 2008 speech, Fed Chairman Ben Bernanke noted that, “The Federal Reserve, together with other regulators and the private sector, is engaged in a broad effort to strengthen the financial infrastructure. In doing so, we aim not only to help make the financial system better able to withstand future shocks but also—by reducing the range of circumstances in which systemic stability concerns might prompt government intervention—to mitigate moral hazard and the problem of ‘too big to fail.’” His prime example was the effort “to improve arrangements for clearing and settling credit default swaps (CDS) and other OTC derivatives” (see Bernanke 2008). In this chapter, I consider several possible reforms of the infrastructure of the credit derivative markets and evaluate their potential impacts on systemic stability and transparency.

Volumes of trade in this relatively new market have exploded, doubling more or less every year for the past decade, and placing severe strains on market infrastructure. Some commentators have expressed severe concerns over counterparty risk and a perceived lack of market transparency. This chapter focuses on several related policy initiatives, the most significant of which is clearing.

A CDS is a contract providing insurance against losses that may occur if a named borrower defaults. The buyer of protection makes periodic payments, analogous to insurance premiums, at a contractual “CDS rate.” For example, a CDS rate of 200 basis points means that for each year until the named borrower defaults, the buyer of protection pays a premium of 2% of the principal amount of debt covered by the contract. This principal amount is called the “notional” CDS position. At the default of the named borrower, the seller of protection pays the difference between the principal amount of debt insured and the market value of the debt. For example, on a notional CDS position of \$100 million, if default brings the market value of a corporation’s debt down to 40 cents on the dollar, the seller of protection would pay \$60 million to the buyer of protection.

At its default, Lehman’s senior unsecured debt recovery was about 8 cents on the dollar, for a protection payment of 92 cents per notional dollar. All scheduled Lehman CDS protection claims were paid, according to data from the Depository Trust and Clearing Corporation (DTCC). In general, there have been no known significant failures of CDS protection sellers to make good on their promises.

Credit default swaps are traded over the counter, rather than on an exchange. That is, each contract is negotiated privately between two counterparties. At the end of 2008, default swaps

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covered \$38.6 trillion of debt principal, according to data provided by the International Swaps and Derivatives Association (ISDA). The majority of these positions, however, are in the form of dealer-to-dealer CDS positions, because of the role of dealers as market intermediaries.

Proposals to reduce systemic risk and to provide additional transparency in the credit derivatives market have focused on clearing and on exchange trading. I will briefly address these and related policy issues. My general conclusion is that, thanks in part to the efforts of the New York Federal Reserve, the markets for credit default swaps are more transparent and safer than they were several years ago. More could be done to improve safety and price transparency. The advent of clearing for the CDS market, although a positive development in principle, has had some unintended adverse consequences that could be corrected by reducing the number of clearing houses and by simultaneously clearing CDS positions along with other types of over-the-counter derivatives, as I will explain. I also believe that the regulatory framework of the insurance industry, at least in its current form, is not suitable for credit derivatives. I make a proposal to improve price transparency in the over-the-counter market for credit derivatives.

### **Improvements triggered by the New York Federal Reserve Bank**

Regulators, most importantly the New York Federal Reserve Bank, have feared that dealers, which are systemically important financial institutions, could suffer debilitating losses as a result of their CDS positions. Beginning in 2005, The New York Fed put significant pressure on dealers to better document their trades in order to mitigate the risk that dealers would be unable to determine the extent of their exposures to each other in the event of a major default. Eventually, the DTCC established a “trade information warehouse” that now captures the majority of information on CDS trades covering corporate and sovereign borrowers. Although the trade details are private information, the DTCC now provides weekly data on the aggregate amount of CDS protection written on approximately 1,000 of these borrowers, adding a measure of transparency to the market. Were it not for the major improvements in documentation that were prompted by the actions of the New York Fed, it is plausible that the failure of Lehman would have caused significant confusion over settlement obligations, leading to severe additional counterparty risk and even counterparty failures. In actuality, the settlement of default claims on Lehman CDS was a relatively routine operation, without a single reported counterparty failure.

In another move to reduce systemic risk in the CDS market, the New York Fed has pressed dealers to have their trades cleared. Once two counterparties agree on the terms of a credit default swap, they can “clear” the CDS by having a central clearing counterparty, commonly known as a “clearing house,” stand between them, acting as the buyer of protection to one counterparty and the seller of protection to the other. The original counterparties are thus insulated from direct exposure to each other’s default, and rely instead on the performance of the clearing house.

Clearing can in principle reduce counterparty exposures because it allows positive and negative counterparty exposures to be netted against each other more easily. For example, suppose that Dealer A has bought CDS protection on \$100 million notional amount of debt from Dealer B. Suppose that Dealer B has an identical position as buyer of protection on a credit default swap with Dealer C, who in turn has the same position as buyer of protection on a CDS with Dealer A.

All three dealers are exposed to a counterparty default. That circle of exposures could be eliminated by clearing all three trades through the same clearing house. Because of the opportunity to net long against short positions, and because in this simple example each dealer is long and short by the same amount, the clearing house and the three dealers would have no risk at all.

The failure of the dealer community to develop central clearing of CDS positions before this year may have been due to the cost and complexity of setting up an effective clearing house, and to the fact that individual dealers do not fully internalize the benefits of systemic risk reduction. The systemic-risk externality associated with large-dealer derivatives exposures leaves some scope for regulatory intervention. The U.S. Treasury Department has announced that, in the future, clearing will be required for all credit default swaps whose contractual terms (most importantly, maturity, named borrower, and the specific credit events that are contractually ) are sufficiently standard..

Counterparties typically post collateral with their counterparties, including clearing houses, as a form of margin against their contractual obligations. According to data from ISDA, about two thirds of CDS positions are collateralized. The amount of collateral to be posted against a CDS position is normally adjusted with changes in the market value of the position. For example, if the estimated market value of a CDS contract to the buyer of protection rises, then the seller of protection may be required to post additional collateral. Whenever clearing reduces counterparty exposures, this also typically reduces the amount of collateral that would be demanded as a form of guarantee against performance. Collateral is a scarce resource, especially during a financial crisis.

A significant reduction in CDS exposures has already occurred through “compression trades,” which have the effect of terminating redundant circles of CDS positions such as those of the example above described, using a “tear-up” procedure. In such a compression trade, the several dealers involved would legally cancel their offsetting obligations to each other, settling with each other in cash for the market values of any minor differences in the original contractual terms.

Compression trades organized by TriOptima are responsible for the termination of approximately \$30 trillion notional in CDS positions in 2008 alone. Largely as a result of compression trades, the aggregate notional size of the CDS market has been reduced from roughly \$60 trillion in mid 2008 to about \$39 trillion at this point. Central clearing can achieve reductions in counterparty exposures, beyond those available through compression trades, because, unlike compression trades, clearing does not rely merely on offsetting long and short positions on the same named borrower.

### **Potential Unintended Adverse Consequences of Clearing**

Because any active clearing house is by nature a highly systemic financial institution, it should be extremely well capitalized and have impeccable operational controls. In normal practice, each member of a clearing house is required to contribute to a guarantee fund that backs the performance of the clearing house in the event that one of its members fails to perform and that member’s collateral is found to be insufficient to cover the failed position. Setting up a clearing

house for derivatives also requires standardization of the derivatives to be cleared and of the collateral requirements. Minimum standards have been proposed by the International Organization of Securities Commissions (IOSCO). In the United States, clearing houses are regulated by the Fed and the Commodity Futures Trading Commission (CFTC), and operate for now under a temporary exemption from regulation by the Securities and Exchange Commission. The first two U.S. clearing houses were approved in 2009. One of these is operated by the Intercontinental Exchange (ICE). Another is operated by the Chicago Mercantile Exchange in a joint venture with Citadel, a major hedge fund.

In addition to these two U.S. clearing houses, five more have been set up or proposed in Europe. Unfortunately, some of the benefits of netting described above are lost with each additional clearing house. The efficient netting of positive against negative exposures is difficult if some of the CDS positions of a derivatives dealer are cleared through one clearing house and others are cleared through a different clearing house. With sufficient standardization of contracts and collateral terms, netting across clearing houses might be feasible, but this is not part of any existing proposals. As clearing houses compete for market share, it is important that they do not attempt to attract business by relaxing collateral standards or guarantee fund contributions.

Beyond the netting opportunities that are lost with more than one CDS clearing house, there are additional lost netting opportunities whenever clearing houses are dedicated solely to credit default swaps. In addition to their CDS positions, major derivatives dealers have large positions in interest rate swaps and other types of OTC derivatives. Typically, a credit default swap is part of a master swap agreement by which the two counterparties net their aggregate bilateral exposure across all types of OTC derivatives.

For example, if Dealer A has an interest rate swap with Dealer B with a market value of \$150 million in favor of Dealer A, while at the same time Dealer A has a CDS with Dealer B with a market value of \$100 million in favor of Dealer B, the net exposure of Dealer A to default by Dealer B is the difference, \$50 million, before considering collateral. If the two dealers clear the default swap through a CDS-dedicated clearinghouse, they cannot net their exposure from this contract against the interest rate swap exposure. As a result of clearing the CDS, the exposure of Dealer A to Dealer B would therefore rise to \$150 million. The collateral that Dealer B posts to Dealer A would also rise precipitously. In addition, the clearing house is now exposed to Dealer A by \$100 million, so Dealer A must now post collateral to the clearing house against that exposure. Further, Dealer B now has an exposure to the clearing house of \$100 million.

Although clearing houses are likely to have relatively low default risk, clearing houses have defaulted in the past. Ensuring their safety and soundness is expensive and requires regulatory attention. The more clearing houses that are set up, the greater will be the total exposure that they pose to their counterparties, and the larger will be the number of systemically important financial institutions whose risks must be monitored by regulators.

Recent research suggests that, for the current structure of OTC markets, dedicating clearing houses to credit default swaps, only, actually *increases* average counterparty exposures when all types of over-the-counter derivatives are considered, because of the reduced opportunity to net credit derivatives exposures against other OTC derivatives exposures (see Duffie and Zhu 2009).

Along with any increase in average counterparty exposure comes an increase in demands for collateral (a scarce resource) and for contributions to clearing-house guarantee funds..

In sum, opportunities should be taken to limit the proliferation of redundant clearing houses and to clear credit derivatives along with interest rate swaps and other types of OTC derivatives.

### **Clearing would not have prevented the AIG Fiasco**

AIG's recent massive losses, covered by large U.S. government bailouts, were the result of immense credit default swap positions, by which AIG FP, a subsidiary of AIG, promised to cover default losses on residential mortgages and other debt instruments with a total principal amount estimated at over \$400 billion. The master swap agreements governing these credit default swaps required AIG FP to post additional collateral in the event that its credit rating is downgraded. Because of the immense mark-to-market loss that AIG had incurred on these CDS by this point, it would have been unable to obtain the necessary collateral. As the downgrade became imminent, a large government bailout ensued.

Clearing houses would not have prevented the AIG fiasco. Most of the AIG credit derivatives were customized to specific collateralized debt obligations, and would not have met any reasonable test of standardization, so would not have been cleared. Only better risk management by AIG or better supervisory oversight by its regulators would have prevented the AIG catastrophe, even if clearing houses for credit derivatives had been in place years ago.

### **Regulation of Default Swaps as Insurance?**

Investors are not required to be a lender to the named borrower, or to be otherwise exposed to the borrower's default, in order to buy CDS protection. Both buyers and sellers of protection may use default swaps as a method of speculation over a firm's prospects, just as equity investors are permitted to buy or short sell the firm's equities or equity options. Some have suggested that speculative protection buying should not be allowed, analogous to outlawing the short sale of equities (see, for example, Soros 2009). Eliminating this form of speculation would make CDS markets less liquid. Investors could find it more difficult and more costly to trade; CDS rate quotations would be less reliable as a source of information to investors and others on the prospects of the named borrowers.

Related to suggestions to more tightly regulate the purposes for which CDS protection may be obtained, some have proposed to treat credit default swaps as a legal form of insurance contract, bringing sellers of protection under the regulatory framework of the insurance industry.<sup>2</sup> Unfortunately, insurance is currently regulated within a patchwork of state-level laws and supervision. Until a relatively standard federal or international system of insurance regulation can effectively treat credit default swaps, it seems inadvisable to me to bring credit derivatives into this regulatory framework. If and when that happens, special carve-outs will presumably be needed in order for dealers to make markets effectively, recognizing that the vast majority of

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<sup>2</sup> Robert Litan argues that insurers operating across states, as CDS dealers would, should have the option to operate under a new federal insurance regulator, analogous to the optional federal charter system that applies to the banking system (see Litan 2009).

dealer positions are offsetting. Clearing will be especially helpful in justifying such exemptions, provided that the clearing house itself is safe and sound.

### **The Migration of Credit Derivatives Trading onto Exchanges**

Although clearing does not require exchange trading, some have suggested that CDS trading should be conducted only on exchanges, which offer clearing as well as superior price transparency. The prices and quantities of each trade would become publicly available. Of course, as usual for exchange trading, the counterparties to trades would remain private, just as they are in the over-the-counter market. The benefits of exchange trading, however, are to be traded against the benefits of innovation and customization that are typical of the over-the-counter market. The market for default swaps was built by the dealer banks in the 1990s, at some cost. Now that the CDS market is large and profitable for the dealers, they are naturally reluctant to push trading onto exchanges.

Meanwhile, the relative opaqueness of the OTC market implies that bid-ask spreads are in many cases not being set as competitively as they would be on exchanges. This entails a loss in market efficiency.

The DTCC now provides data on the outstanding amounts of CDS on 1,000 different corporate and sovereign borrowers. Which of these 1,000 types of credit derivatives are ready for exchange trading? Exchange trading is natural for the most actively traded default swaps, such as CDS index products, but we do not have a mechanism in place for the selection and migration of specific types of credit derivatives from the OTC market to exchange trading.

### **Additional Price Transparency is Possible**

An intermediate solution may be to add more price transparency to the OTC market with a scheme for reporting the key terms of credit derivatives trades, especially the CDS rate, along the lines of TRACE, a system now used for the post-trade reporting of transaction prices of most over-the-counter corporate and municipal bond trades. Academic research using TRACE data suggests that dealers may exploit market opaqueness when setting bid-ask spreads, and that the dissemination of TRACE data is in some cases responsible for a reduction in bid-ask spreads (see Goldstein et al 2007 and Green et al 2007). Currently, however, credit derivatives are not regulated as securities, which may limit the ability of regulators to require transaction price reporting.

The government could require post-trade price reporting directly from the CDS trading records collected by the DTCC, although this might require new regulations. A case can be made that requiring this additional level of price transparency could actually reduce market liquidity in the less actively traded credit default swaps, if dealer profit margins were as a result reduced to the point that they could not cover their fixed costs for making markets. Another argument against a U.S. regulation requiring post-trade price transparency is the potential migration of CDS trading to jurisdictions that do not apply such a rule.

### **References**

Bernanke, Ben (2008), “Financial Regulation and Financial Stability,” speech delivered at the Federal Deposit Insurance Corporation's Forum on Mortgage Lending for Low and Moderate Income Households, Arlington, VA, July 8, available at <http://www.federalreserve.gov/newsevents/speech/bernanke20080708a.htm>.

Duffie, Darrell and Haoxiang Zhu (2009), “Does a Central Clearing Counterparty Reduce Counterparty Risk?” Working Paper, Graduate School of Business, Stanford University.

Goldstein, Michael A., Edith S. Hotchkiss, and Erik R. Sirri, (2007), “Transparency and Liquidity: A Controlled Experiment on Corporate Bonds,” *Review of Financial Studies* 20, pp. 235-273.

Green, Richard C., Burton Hollifield, and Norman Schurhoff, (2007), “Financial Intermediation and the Costs of Trading in an Opaque Market,” *Review of Financial Studies* 20, pp. 275-314.

Litan, Robert (2009), “Regulating Insurance after the Crisis,” *Fixing Finance Series 2009-02*, Washington, DC: Brookings Institution, Mar. 4.

Soros, George (2009), “The Game Changer,” *Financial Times*, Jan. 28.