



IMF Working Paper

Credit Derivatives: Systemic Risks and Policy Options

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Jodi Scarlata, and Carlyne Spackman**

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Abstract

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Credit derivative markets are largely unregulated, but calls are increasingly being made for changes to this “hands off” stance, amidst concerns that they helped to fuel the current financial crisis, or that they could be a cause of the next one. The purpose of this paper is to address two basic questions: (i) do credit derivative markets increase systemic risk; and (ii) should they be regulated more closely, and if so, how and to what extent? The paper begins with a basic description of credit derivative markets and recent events, followed by an assessment of their recent association with systemic risk. It then reviews and evaluates some of the authorities’ proposed initiatives, and discusses some alternative directions that could be taken.

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I. INTRODUCTION

Credit derivative markets are largely unregulated, but calls are increasingly being made for changes to this “hands off” stance, amidst concerns that they helped to fuel the current financial crisis, or that they could be a cause of the next one.

For example, in the United States, market participants have structured their credit default swap (CDS) activities in a way (individual negotiation) that exempts them from regulation by the Commodity Futures Trading Commission (CFTC) under the Commodity Futures Modernization Act of 2000 (CFMA).² Furthermore, the U.S. Securities and Exchange Commission (SEC) has limited authority to enforce federal securities laws, including prohibitions against insider trading. Moreover, since these transactions are not cleared or safe-kept in regulated securities depositories, they are outside the authority of the Federal Reserve (Fed). Consequently, until recently CDS trades were neither reported to, nor effectively overseen by any public authority.³

The purpose of this paper is to address two basic questions: Do credit derivative markets increase systemic risk, and thus should they be monitored more closely and subjected to regulation and oversight, and if so, how and to what extent? The paper begins with a description of credit derivative markets and recent events, followed by an assessment of current systemic risks associated with them. It then reviews and evaluates some of the authorities’ proposed initiatives, and discusses some alternative directions that could be taken.

The paper does not address the more fundamental question whether CDS add any positive value to the economy. For many years, these instruments have been touted as an efficient means of distributing risk and promoting financial stability. However, recent events have brought these assumptions into question, and these will be the subject of future research.

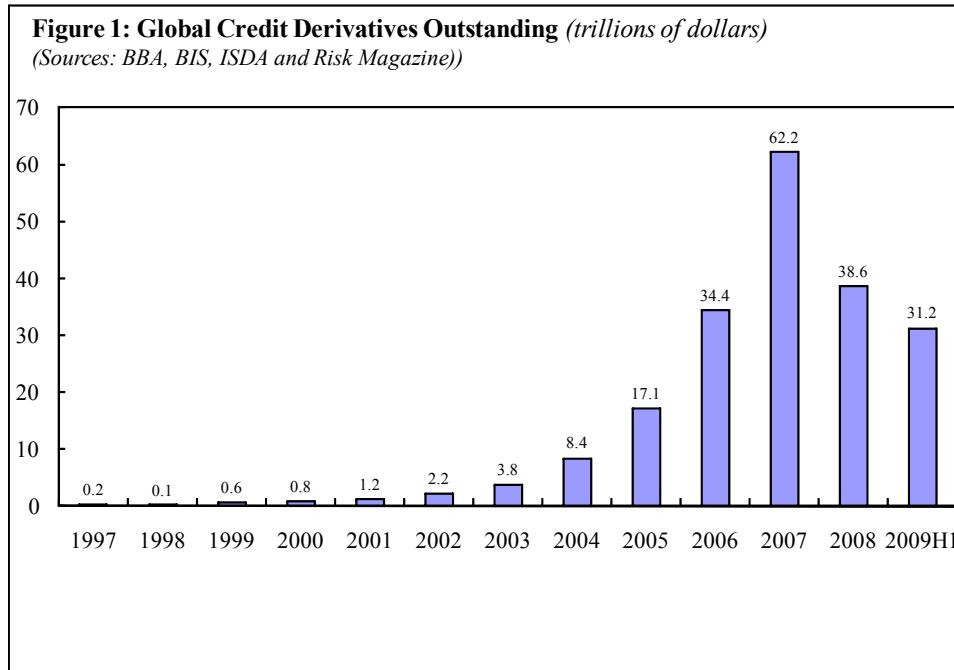
II. MARKET STRUCTURE AND RECENT DEVELOPMENTS

Credit derivative markets have grown rapidly in recent years. The aggregate gross notional amount of outstanding credit derivative contracts rose from about \$4 trillion at year-end 2003 to just over \$60 trillion at year-end 2007 (Figure 1). The outstanding notional amount subsequently fell back to about \$31 trillion by June, 30, 2009, and will likely continue to fall, partly as a result of “tear up” and “compression” operations that eliminate redundant offsetting contracts. (Compressions replace offsetting redundant contracts with a smaller

² To be more precise, the CFMA exempted CDS from various provisions of the *Commodities Exchange Act* through the “swap exemption” (see section 2(g) of the *Act*).

³ The Depository Trust and Clearing Corporation (DTCC) Warehouse Trust Company has applied for a New York State and New York Fed charter.

number of replacement contracts, while tearups eliminate them.) The outstanding gross notional amount of credit derivative contracts continues to far exceed the stock of corporate bonds and loans on which most contracts are written. On a net basis, after accounting for offsetting contracts, credit derivative outstanding notional amounts are much smaller (about 10 percent of the gross amounts). However, the actual credit risk transfer lies somewhere between the net and gross numbers.⁴



Credit derivatives are instruments that transfer part or all of the credit risk of an obligation (or a portfolio of obligations), without transferring the ownership of the underlying asset(s). CDSs are bilateral agreements to transfer the credit risk of one or more reference entities (i.e., the underlying names on which credit risk is exchanged). A CDS resembles an insurance contract, in that it protects the protection buyer against pre-defined credit events, in particular the risk of default, affecting the reference entity (or entities), during the term of the contract, in return for a periodic fee (or “spread”) paid to the protection seller.⁵

⁴ The net number for a particular reference entity is reflective of the amount of cash (or obligations for physical settlements) required to settle all of the outstanding contracts with a zero percent recovery rate after a credit event. However, such netting ignores contractual differences, such as maturities and differential credit event definitions. In addition, the netting calculation implicitly assumes that all contracts within a counterparty “family” can be legally netted, which may not be the case.

⁵ Most CDS transactions were historically “unfunded” (involving no up-front payments by the protection seller), but if counterparty risk is a concern or a credit event is considered very likely, up-front payments and/or collateral may be required. This was traditionally the case for high yield names.

The buyer of protection is therefore in a similar position as if a bond issued by the reference entity were sold short, and the market price of the CDS reflects the riskiness of the underlying credit. Following a credit event (see below), contracts settle either physically (i.e., through the delivery to the protection buyer of defaulting bonds and/or loans for an amount equivalent to the notional value of the swap) or in cash, with the net amount owed by the protection seller determined after the credit event. Credit events include the following:

Bankruptcy, including insolvency, appointment of administrators, liquidators, conservators, and creditor arrangements.

Failure to pay on one or more obligations after expiration of any applicable grace period; typically subject to a materiality threshold.

Restructuring of one or more of the reference entity's deliverable obligations due to the deterioration in creditworthiness or financial condition to the reference entity.

In addition, CDS contracts on sovereign obligations usually include the following events:

Repudiation/moratorium, triggered when the obligor repudiates or imposes moratorium and failure to pay or restructuring occurs.

Obligation acceleration, triggered when, one or more reference obligations become immediately due and payable as a result of a default or covenant breach on the reference entity's other debt instruments, subject to a materiality threshold.

Under the traditional CDS trading conventions, investment grade (IG) CDS with relatively lower spreads and high yield (HY) CDS with relatively higher spreads were treated differently by the market. IG CDS were quoted in par spread, or the spread that equates the expected net present values (NPV) of the premia paid by the protection buyer and the contingent payment by the protection seller at the time the trade was initiated. HY CDS were quoted with a standardized 500 basis point premium and an upfront payment equal to the expected NPV of the two other payment flows. However, as part of the 2009 "Big Bang," North American IG contracts trade with standardized 100 or 500 basis point premia and upfront payments. As part of the "Small Bang" European contracts trade with 25, 100, 500, and 1,000 basis point premia and upfront payments.

Increasingly diverse and complex derivative products have evolved out of the basic CDS, including nth-to-default (N2D) swaps and synthetic collateralized debt obligations (CSOs). The credit event-contingent payouts and contract termination of an N2D swap is linked to one in a series of events (such as first-, second-, or third-to-default) against a reference portfolio of typically five to seven credits. N2D swaps have been popular for transferring the risk associated with emerging market-based credits.

A CSO also references a portfolio of CDSs, but the underlying reference portfolio is usually larger and more diverse, and its performance mimics that of a collateralized debt obligation. A typical CSO tranche will be exposed only to portfolio losses that fall between predetermined “attachment” and “detachment” levels. For example, against a portfolio of 100 equally-weighted CDS, a CSO with 3 and 7 percent attachment and detachment points, will trigger a payout only if cumulative losses exceed 3 percent of the reference portfolio. However, the payout is capped at 4 percent, because all losses above 7 percent are absorbed by tranches that are more senior.

CSOs against standardized CDS indices now represent about 11 percent of outstanding credit derivatives. These indices are tradable products based on specific credit markets or market segments, including the Dow Jones CDX indices for North America and the emerging markets, and the iTraxx indices for Europe, Japan, and Asia. Index-referenced transactions account for about 42 percent of outstanding credit derivatives, according to the Depository Trust and Clearing Corporation (DTCC).

Although most of the recent growth in credit derivative volumes has occurred among the multi-name products, single-name contracts still account for almost 60 percent of gross notional amounts outstanding (Figure 2). Of these single-name contracts, investment-grade corporate obligations (i.e., those rated BBB- and better) comprise most of the underlying credit risk transferred (about 88 percent of the total gross exposures), according to data released by the Bank for International Settlements (BIS). In terms of sectors, according to recent DTCC data, financial institution-backed single-name CDSs comprised about 25 percent of net notionals, followed by consumer and retail products and services (19 percent), and sovereigns (12 percent).⁶ Mortgage-backed securities-referenced CDS accounted for only 6 percent.⁷ However, bespoke exposures are not included in the DTCC data, which would include CDS on collateralized debt obligations (CDOs).⁸

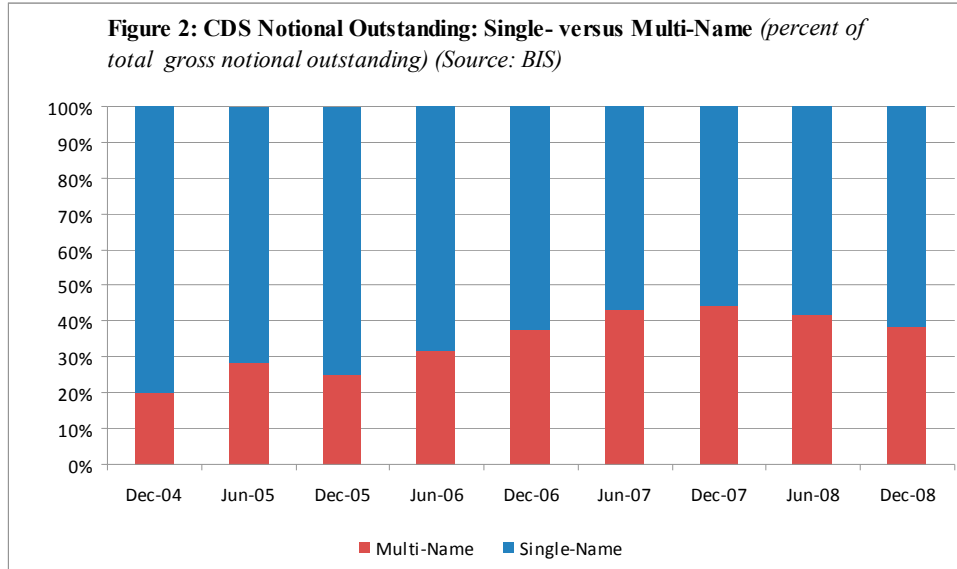
Banks and dealers are the dominant counterparties to most credit derivatives contracts, and account for about 90 percent of notional outstandings (DTCC). However, these data may underestimate the participation of hedge funds, most of which transact through prime brokers, whose transactions would be picked up as bank-dealer trades. As is the case with other over-the-counter (OTC) derivative markets, CDS market making is very concentrated,

⁶ Net notionals are calculated by summing up all the net short (or long) positions by counterparty family. A “family” may be a single account, or multiple accounts of the same or different legal entities, aggregated typically at the holding company or investment manager level. Net notionals better reflect risk transfer amounts than gross notionals.

⁷ Sourced from DTCC as of September 18, 2009.

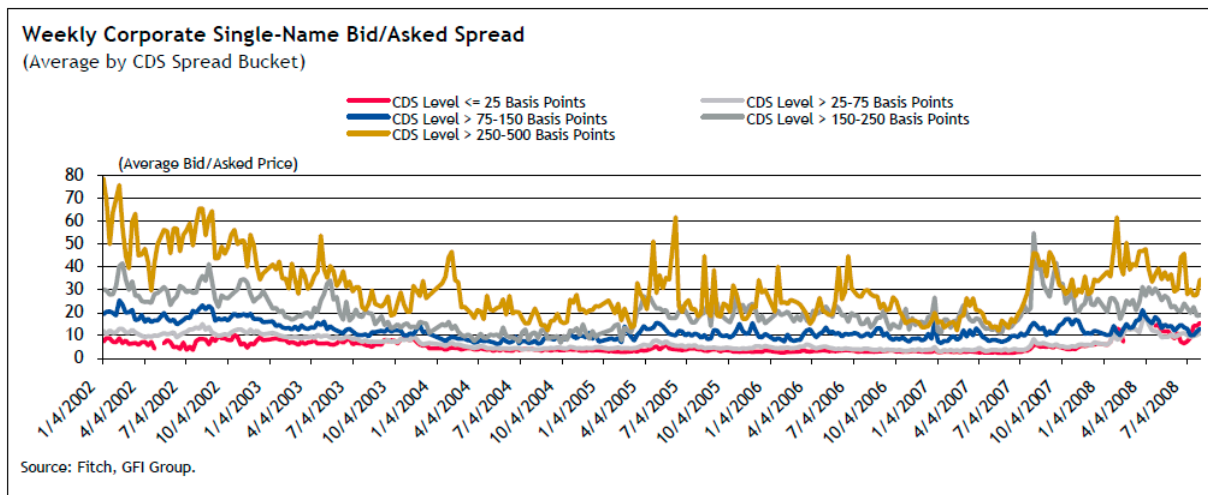
⁸ Bespoke CDS are unique structured credit products that are tailored to client-specific needs and consequently are both difficult to value and largely illiquid. Hence, data on these CDS are not presently collected by DTCC. Various estimates suggest that the DTCC data represent 80–90 percent of the CDS market.

with about 10 bank-dealers responsible for about 90 percent of trading volumes (Fitch, 2007). According to the BIS and DTCC surveys, insurance firms are only marginal participants in CDS markets, but the survey data does not include the large volumes of protection sold covering CDOs by firms such as AIG, MBIA, and Ambac.



Standardized index-based contracts are the most liquid part of the market, and although there are more than 2,000 CDS-referenced single names, perhaps only about 600 are quoted daily, and maybe only a few hundred actually trade every day. Figure 3 shows that bid/ask spreads narrow and widen with credit spread levels and volatility, but even the 20 to 40 basis point bid/ask spread range observed on riskier credits is narrower than on the underlying cash bonds, making the CDS contracts more liquid than their underlying reference obligations.

Figure 3. Weekly Corporate Single-Name Bid/Asked Spread



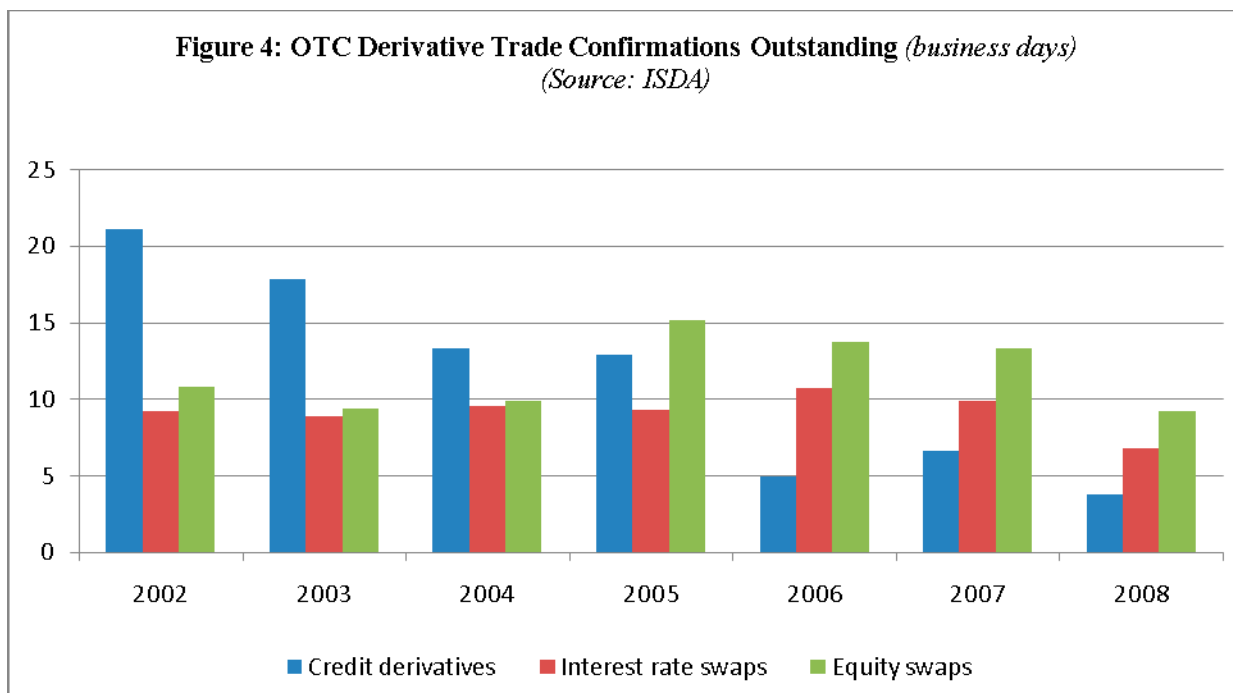
The remainder of the paper will drill down further on all of these issues. The next section will discuss the potential role of credit derivatives in increasing systemic risk, including counterparty and settlement risk. The last section will focus on potential regulatory issues, and particularly the idea of a centralized clearinghouse, and improvements to transparency and disclosure.

III. DO CREDIT DERIVATIVE MARKETS INCREASE SYSTEMIC RISK?

Although important strides have been made in reducing operational risks, counterparty risk remains a significant problem in these and other OTC derivatives markets, as underscored by the impact of the Lehman Brothers failure, which required large-scale official intervention to prevent systemic collapse. This section will discuss how credit derivative markets can increase systemic risks and inter-connectedness of large financial institutions, and how these markets are a “blind-spot” for policymakers, regulators, and market participants. The lack of transparency inherent in OTC markets is also examined for its potential to increase systemic risk.

A. Operational Risks Remain but are Continuing to Abate Amid Significant Infrastructure Improvements

Operational risks have been cited as a possible source of disruption in CDS markets, as the rapid market growth in volumes over the last five years has outstripped trade processing and risk management infrastructures. Shortcomings in the trade processing infrastructure had manifested itself in the form of large backlogs of unconfirmed trades. However, banks and dealers, encouraged by the New York Fed and other authorities, have made important infrastructure improvements (Figure 4).



Dealers have made much progress on credit derivative contract reassignment (“novation”) practices and are working towards same-day credit derivative trade matching and confirmation. In addition, dealers have consistently been meeting or exceeding benchmarks set by authorities for confirmation lag reductions. According to the International Swaps and Derivatives Association (ISDA), average confirmation lags has declined to 3.8 days in 2008 (from 13.3 in 2004), which is shorter than those for OTC interest rate and equity derivative contracts.⁹

Nevertheless, trade processing remains a source of operational risk. Although about 90 percent of credit derivatives transactions are now being confirmed electronically, compared to about 75 percent in 2004, the other 10 percent, comprised mostly of customized (“bespoke”) contracts, is associated with significant volumes of unconfirmed and failed trades.¹⁰ These are often processed with long delays, and in some cases are incomplete and inconsistent, making accurate counterparty risk management difficult.¹¹ In addition, audit trail data are not readily available and must be reconstructed manually.

⁹ For example, the average confirmation lag for equity derivatives was 9.2 days, and for interest rate derivatives it was 6.8 days. However, OTC equity derivative backlogs have been more difficult to reduce than those on credit derivatives because a smaller proportion of equity derivative transactions are dealer-dealer compared to credit derivative transactions and also tend to be less standardized than credit derivatives.

¹⁰ The operational data is sourced from various editions of ISDA’s *Operations Benchmarking Surveys*.

¹¹ See the Testimony Concerning Credit Default Swaps by Erik Sirri, Director, Division of Trading and Markets at the U.S. SEC, before the SEC Before the House Committee on Agriculture, November 20, 2008.

Settlement risks may also arise because the gross notional value of some CDS contracts far exceeds the outstanding amount of underlying deliverable obligations.¹² Almost all CDS contracts specify “physical” delivery upon a credit event, whereby the protection buyer delivers a qualifying physical obligation in return for receiving the par amount from the protection seller. This can obviously lead to problems when CDS contracts outstanding exceed the stock of deliverable obligations.¹³ However, the opt-in cash settlement protocol introduced in September 2006 by ISDA has successfully smoothed the settlement process in 74 credit events up to July 31, 2009 (see Box 1).¹⁴

¹² However, for only a few reference entities do net notional amounts of CDS contracts outstanding exceed outstanding deliverable obligations. A recent tabulation by JP Morgan showed that this was generally only the case in situations where there was a paucity of deliverables.

¹³ In the worst case, a squeeze on the underlying deliverable instrument, where one party amasses a large portion of the stock of outstanding reference obligations and drives up their prices, could cause price spikes and multiple failures to deliver on the contract by other parties.

¹⁴ The cash-opt in settlement protocol allows counterparties to settle in cash at a price determined in an ISDA auction of the defaulted bonds, or opt to continue to settle their trades with physical delivery of the bonds.

Box 1. Forerunner to the Big Bang: the ISDA Cash Opt-In CDS Settlement Protocol

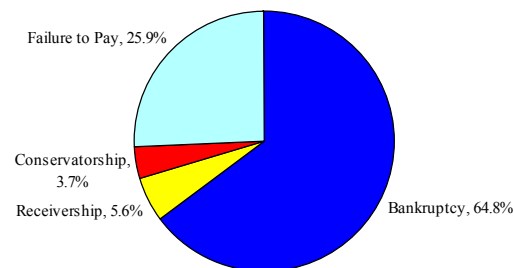
Most standard CDS contracts specify that after a credit event, the protection buyer must deliver qualifying physical obligations to the protection seller in return for the par amount of the obligations. Some contracts specify a cash settlement, in which the buyer and seller agree to settle based on the market values of a qualifying obligation. For example, if the market value is 40 percent of par, the seller pays 60 percent to the buyer.¹

However, physical settlement has become problematic, if not impossible, as notional CDS outstandings have come to far exceed outstanding deliverable obligations. At the very least, such conditions can create squeezes that distort the economics of the settlements. Hence, ISDA introduced a cash opt-in CDS protocol for the May 2005 Colins & Aikman default that gives market participants to the option of settling at a price determined by an auction process.²

The figures below summarize some of the key results for the 74 CDS settlements that used the protocol (up to July 30, 2009). There is usually a large open interest to sell physical bonds into the auction, some of this is due to investors taking the opportunity to sell illiquid distressed bonds, and also the need to unwind negative basis trades (Helwege and others, 2009). In a negative basis trade, the investor buys physical bonds and buys CDS protection to earn a positive carry.

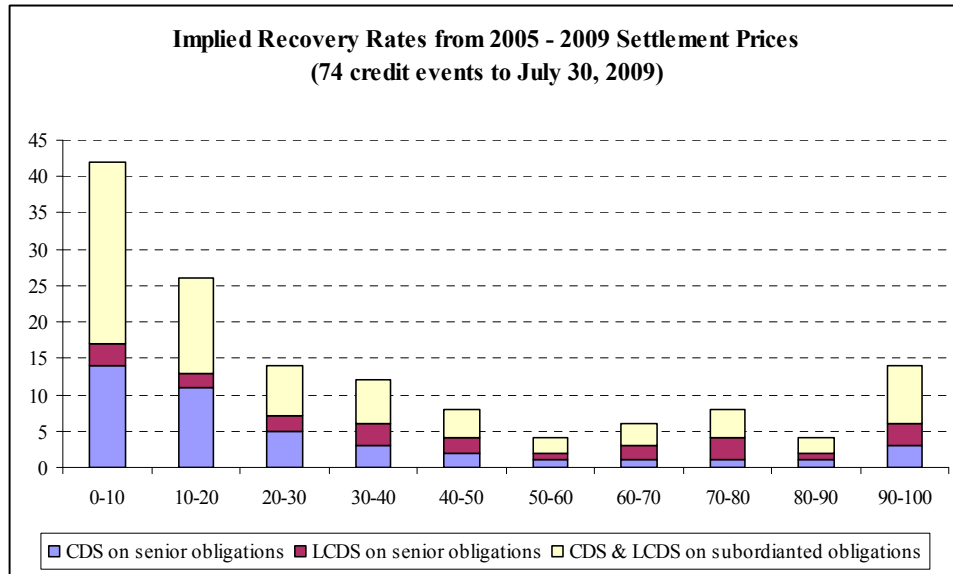
The protocol can be used to settle single-name contracts, as well as index and tranching indices, and although the protocol is optional, opt-in has been almost universal, with institutional participation rates generally exceeding 90 percent according to the DTCC. The protocol has only been used for “bankruptcy” and “failure to pay” credit events, but a “restructuring” event could be problematic. This is because for a restructuring event, the qualifying obligations are CDS contract-specific, and there is more flexibility as to the event trigger timing. Investment grade contracts in North America have traded with modified restructuring, however, under the new North American trading conventions, dealers will begin quoting CDS that do not specify restructuring as a credit event in an attempt to phase out those that do.

The figure to the right demonstrates that restructuring has not yet taken place as a credit event under the ISDA protocol since 2005, while the majority of credit events to date have been bankruptcy (65 percent) followed by failure to pay (26 percent). In the United States, Liz Claiborne did make changes to its revolving credit facility but this was considered a restructuring credit event. In Europe, modified-modified restructuring will generally be considered a credit event under CDS contracts, because it is difficult in some jurisdictions to file for bankruptcy and because the practice of writing restructuring into the CDS contract provides banks with the benefit of regulatory capital relief. However, in practice, even though a number of restructuring proposals have been considered they have all been rejected.



Market convention is to assume a fixed recovery rate of 40 percent for investment-grade debt and 20 percent for lower-rated debt. However, actual recovery rates on senior unsecured debt on the 32 credit events that have settled since 2005 have ranged from 0.125 to 99.9 percent (see figure below).³ Banks, for example, tend to be associated with low recovery values because they have few tangible assets, and this is true for both senior and

subordinated debt. Firms with more tangible assets tend to have higher recovery rates, and subordinated debt recovery rates are usually lower. Senior bondholders do not always receive more than subordinated bondholders do, as was the case in the Fannie Mae and Freddie Mac conservatorships.



¹ The market values of qualifying obligations are set by a dealer poll.

² See Taksler (2008) for more detail on the mechanics of the CDS settlement protocol.

³ For more detail, see Helwege and others (2009) and the Creditex website (www.creditex.com/credit-auctions.html).

The “Big and Small” Bangs” Will Further Reduce Operational Risk and Facilitate Centralized Clearing

Although the ISDA opt-in cash settlement protocol has very effectively reduced settlement risk, participants can opt in and out from one credit event to another. However, in April 2009, North American industry participants launched the “Big Bang” initiative, which, among other changes, “hard wired” the cash settlement protocol into the standard CDS contract (ISDA, 2009).¹⁵ This took place in tandem with a number of other significant changes designed to reduce operational risks and pave the way for central clearing.¹⁶

¹⁵ Under the new contracts, trades can still be unwound prior to the auction for those wishing to bypass the auction procedure.

¹⁶ For more detail on the “Big Bang” see Markit (2009a). Another important change was the creation of regional “determination committees” to better formalize the process by which it is determined whether a credit event has occurred, its type and date, plus the setting of specific auction terms, including deliverable obligations. ISDA has created a special one-stop web page for such information (www.isda.org/credit/).

Dealers are now quoting single-name North American corporate CDS with index-style fixed premia of either 100 or 500 basis points, in order to facilitate contract netting.¹⁷ Standard industry practice has been to set the premia at the prevailing “par spread” so that no upfront cash exchange is required. However, offsets of such contracts can leave one of the counterparties with residual risk. For example, an investor who bought five-year protection at 150 basis points and offset it at 375 basis points could be left with a 225 basis point annuity that would be lost if a credit event subsequently takes place. A complete offset could be effected with an upfront payment of about nine percent of notional, but this just transfers the annuity risk to the dealer.¹⁸ The standardized 100 and 500 basis points premia will eliminate these residual annuities by reflecting annuity values in upfront payments when contracts are initiated and unwound.¹⁹

In addition, in order to make contracts even more fungible, new North American single-name contracts now trade with full first coupons. CDS contract maturity dates have always been standardized to a quarterly cycle (March 20, June 20, September 20 and December 20) based on the International Monetary Market (IMM) cycle (the third Wednesday of March, June, September, and December). The old market practice was for the first premium payment to be a “stub” amount for contracts that traded between these dates.²⁰ Under the Big Bang protocol, accrued interest is exchanged at trade inception, and a full premium paid at the first quarterly payment date. That is, overpayment by the protection buyer for the period during which he did not hold the position is offset by a payment from the protection seller at the time of the trade.

Also, a standardized rolling look back window for credit events was introduced. Prior to this, a CDS provided protection against credit events that occurred one business day after the trade date (the “effective date”) until the maturity of the contract. Hence, for example, two contracts initiated within days of each other are not quite fungible, which could be problematic if a credit event occurs between trade dates, but is only noticed by the protection buyer after the trade date of the second contract. Going forward, the effective date will always be the current date less 60 days (90 days for succession events).

¹⁷ Where single-name CDS contracts reference only one entity, index-based CDSs have a set fixed coupon based on the underlying spreads of multiple credits. Every six months the composition of the index is reconstituted and a new contract series trades with the new higher or lower coupon. In addition, CDS on high-yield credits have always traded on an up-front basis plus a fixed 500 basis point annual premium.

¹⁸ In 2006, some dealers tried to introduce annuity swaps as a standalone product to help them to manage annuity risk. However, the product did not offer anything compelling for investors and never took off.

¹⁹ In the example, the protection was bought for 100 basis points per annum plus about two percent of notional upfront, and unwound (or cancelled) in return for a lump sum of eleven percent of notional.

²⁰ If the trade date was more than 30 days before the first coupon date, the protection buyer paid a short-stub premium on the first payment date. If it is within 30 days of the first payment date, a long-stub premium is paid on the following quarterly payment date.

Lastly, dealers now quote North American CDS without including allowance for a “restructuring” event, for which the cash settlement protocol does not work. The problem is that the eligible deliverable obligations for restructuring events depend on the remaining CDS term.²¹ Also, the protection buyer has control over the triggering of a restructuring event, so settlements could occur at different points in time.²² The new trading protocols have been enthusiastically accepted by market participants, with almost 2,100 counterparties having signed up.

However, banks and dealers have been less successful in getting market participants to convert pre-Big Bang contracts into new contracts that incorporate the new standardized coupons, etc. Specifically, they proposed to replicate old trades with combinations of new 100 and 500 basis point standardized coupon contracts. For example, where the current spread trades between 100 and 500 basis points, single contracts will have to be replaced by two contracts (i.e., weighted 100 and 500 basis point contracts). The idea was to facilitate trade compressions and tearups, and facilitate the transfer of single-name CDS contracts to centralized clearing.²³ However, many non-dealer market participants have been averse to work and expense of re-couponing.

European CDS traders introduced their own version of the Big Bang (the “Small Bang”), which looks very similar to the one in the United States. The European protocol has four fixed coupon levels (25, 100, 500 and 1,000 basis points).²⁴ However, it was decided not to drop the restructuring event from European contracts, because protection buyers would not be adequately protected if restructuring were excluded, because Europe lacks an equivalent to the U.S. Chapter 11 bankruptcy process, which allows for many restructuring scenarios under its definition of bankruptcy. Also European banks seem to be more sensitive to the higher capital charges for banks hedge loan positions with CDS that do not include restructuring events.²⁵ Hence, the European “Small Bang” introduced new post-settlement rules designed to facilitate the implementation of auction settlements of restructured

²¹ For example, the deliverable obligations on a four-year contract against a restructuring event would be different from those that are deliverable against a five-year contract (see annex).

²² For example, rather than trigger an immediate restructuring event, protection buyers may prefer to wait for a possible bankruptcy event, after which the price of the deliverable bonds is even cheaper.

²³ The compression service for portfolios run by Markit and Creditex has already reduced gross notionals by over \$1 trillion. TriOptima’s “TriReduce” tearup service eliminated about \$30 trillion notional of redundant, mostly index-based multi-name, CDS contracts in 2008, and about \$9 trillion in the first half of 2009. According to the DTCC there were about \$27 trillion notional of CDS contracts registered in its Trade Information Warehouse on September 18, 2009.

²⁴ For European CDS, two additional coupons (300 and 750 basis points) have been implemented on an interim basis to facilitate the re-couponing of legacy trades.

²⁵ Under Basel II, protection that does not include the restructuring event is discounted 40 percent, even though the counterparty risk weight for contracts with regulated CCPs will be zero, versus the 20 percent on a bilateral contract with a high-quality bank.

obligations. The solution involves creating five maturity-related “buckets” for settling credit events that include restructured obligations.²⁶ The Thomson restructuring, determined as such on August 12, 2009, will give the maturity bucket settlement mechanism probably some time in October 2009.

Asian (ex-Japan), Australian, New Zealand, and emerging markets in Central and Eastern Europe, the Middle East, Africa and Latin America have adopted the North American fixed coupon protocol (100 and 500 basis points), but restructuring clauses will not be dropped (Markit, 2009c). Japanese CDS will trade at 25, 100 and 500 basis point coupons.

B. Counterparty Risk Exposures Remain a Systemic Concern

Counterparty risks arise in the CDS market because each contract is subject to the potential risk that the protection seller will fail and be unable to uphold the original contract. The failure of Lehman Brothers on September 15, 2008 highlighted the potential for systemic disruption following the simultaneous failure of a major CDS protection seller and an actively traded reference entity, due to the large overhang of offsetting bilateral contracts. Such offsetting contracts proliferate because, rather than closing out existing contracts, counterparties often write another contract. The size of this overhang has been reduced during the last few years among banks and dealers by multilateral terminations (compressions and tearups) of offsetting contracts.

However, despite all of these very positive developments, the bankruptcy of Lehman Brothers resulted in some significant knock-on effects, because Lehman was an important CDS reference entity as well as one of the largest CDS market counterparties (Fitch, 2007). The logistical part of closing out derivative trades (and not just CDS trades) with Lehman went quite smoothly, as did the settlement of Lehman-referenced CDS under the cash settlement protocol. More difficult was the mass reestablishment of positions in already-stressed CDS markets (Moody’s, 2008).

Existing counterparty risk mitigation practices have generally been effective. These include the netting of bilateral positions, frequent bilateral portfolio reconciliations, and the collateralization of residual net exposures, including ratings-based triggers. However, some recent events have revealed unintended systemic consequences of these practices. For example, good collateralization practices have been sucking liquidity and high-quality collateral, such as government bonds, out of the market and creating squeezes (Singh and Aitken, 2009).

²⁶ For European settlements involving restructured obligations there would be one bucket for CDSs with less than 2.5 years to maturity (which would include restructured obligations of up to 5.0 years and non-restructured obligations of up to 2.5 years); a 2.5 to 5.0 year bucket (5.0 and 5.0 years), a 5.0 to 7.5 year bucket (7.5 and 7.5), a 7.5 year+ bucket (10.0 and 10.0); and a “seller” bucket (30.0 and 30.0). For more detail, see Markit (2009b).

In addition, rating-based triggers may have been responsible for the near-demise of AIG. Prior to being downgraded below AA- in September 2008, AIG was not obliged to post collateral against rapidly mounting mark-to-market losses on their mortgage-backed CDS positions. However, the downgrade to A forced AIG to post additional collateral (reportedly about \$15 billion), which they did not have, and because of their systemic importance, the U.S. Federal Reserve decided to supply AIG with an \$85 billion line of credit.

Central counterparties (CCPs) can go a long way towards alleviating many of these counterparty risks. In fact, one such CCP launched in December 2008, another started in March 2009, and two more had been slated to launch in 2009 (see below). A CCP reduces systemic risk by applying multilateral netting, but as discussed below, the need for multiple CCPs is questionable.

C. Poor Disclosure and Transparency Standards Leave Authorities in the Dark

Some of the concerns about systemic risks in credit derivative markets could be alleviated if policymakers and market participants had access to more detailed counterparty- and reference asset-specific transaction information. Authorities, including the BIS and IMF, have been calling for more and better data on credit derivative transactions. One might argue that market forces should have provided better systemic risk control, but accounting statements generally reveal very little CDS risk exposure information beyond notional amounts and market values and very little detail has been provided to buyers of CDS contracts. These issues will be discussed in greater detail below.

D. Lack of Transparency and Market Surveillance Compromises Market Integrity

There is potential for abuse in CDS markets compounded by a lack of transparency and regulatory oversight. One potential form of manipulation, for example, participants with a stake in increasing the cost of debt to a competitor company have been able to manipulate thinly traded markets in CDSs, driving up CDS spreads, which thus influences the actual cost of debt. Another strategy could involve taking a short position in a target firm's equity, and buying default protection in the CDS market, to push out spreads, and give the impression that the firm is edging towards bankruptcy, reducing the price of the equity for a net gain.

Because the CDS market has been entirely over-the-counter and because regulatory responsibility for surveillance of the market has not been established, information on positions and prices is not centralized, much of this information is not known, and this creates an opportunity for market abuse. The lack of a clear mandate to regulate trading in the CDS market has meant no market surveillance and little enforcement in the markets.

IV. SHOULD CDS MARKETS BE REGULATED MORE CLOSELY?

Until recently, government authorities have focused their attention on the markets for exchange-traded derivatives, while maintaining a very hands-off approach to OTC derivative markets. One of the main reasons for the difference in treatment has been that the OTC markets are considered wholesale markets for professional participants who have the competence and the ability to assess the inherent risks, while the markets for exchange-traded contracts are seen as also involving retail investors. However, the recent financial turmoil has shown that OTC derivative markets can negatively affect other functioning financial markets and can be a serious risk to the health of the banking system. These observations have prompted the authorities to re-examine their hands-off stance, and there have been increasing calls for the regulation and oversight of OTC derivatives markets, and especially CDS markets.

This section discusses some recent and ongoing initiatives being considered by the authorities. These include the establishment of one or more clearinghouses, and further improvements in credit derivative exposure disclosures and transparency, including vis-à-vis supervisors.

A. Centralized Clearinghouses Will Reduce Counterparty Risk

A CCP interposes itself between the seller and buyer and assumes the rights and obligations of both parties. In particular, the two counterparties “novate” (legally assign) their trades to the CCP so that it becomes the counterparty for the seller and the buyer, and ensures that all payments are made on time. A CCP reduces systemic risk by applying multilateral netting of trades, which not only reduces counterparty risk, but minimizes cash flows between counterparties (see Box 2). Moreover, the CCP increases the transparency of the CDS market, as it maintains records of CDS transactions, including the volumes and identity of each party.

There are different clearing procedures for exchange-traded derivatives and for OTC derivatives.²⁷ For exchange-traded derivatives, the CCP catches the trade information automatically in real time from the trading platform, and becomes the direct counterparty after trade execution. This immediately reduces credit risk because trades are novated to the CCP as soon as they have been conducted and received by its systems. However, for OTC instruments, there is no automated linkage between the CCP and the trading platform, as trades are pre-negotiated bilaterally.

In recent years, some derivatives clearinghouses, such as the London International Financial Futures and Options Exchange (LIFFE) and Eurex, have developed processing services that can register OTC derivatives transactions. However, it is still the responsibility of the

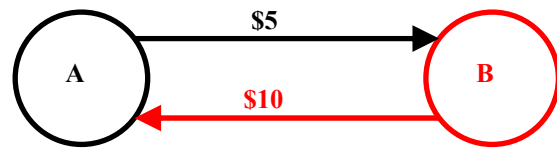
²⁷ Outstanding exchange traded derivatives are less than 20 percent of outstanding OTC derivatives.

participants to send their trading information to the trade registration system. Furthermore, the CCP only nets novated OTC transactions at the end of the business day rather than immediately. This means that the credit risk is present until the end of the day when the novation takes place, and the daily positions of a defaulting participant will not be covered if the default occurs before novation is processed.

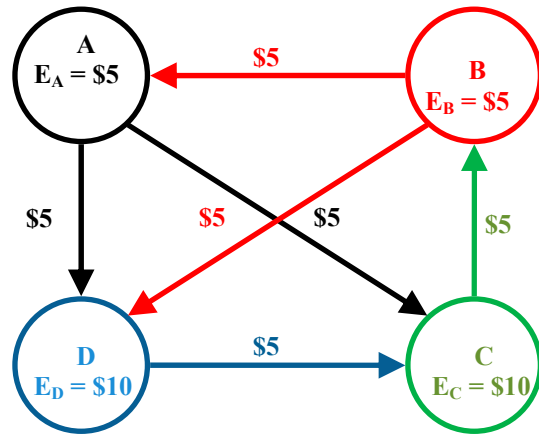
Box 2. Basics of OTC Counterparty Credit Risk Mitigation¹

A central counterparty (CCP) reduces systemic counterparty credit risk by applying multilateral netting. This box discusses key tools of OTC counterparty credit risk mitigation, including netting and the collateralization of residual net exposures, and explains how a CCP reduces systemic counterparty risks.

An OTC contract is exposed to counterparty default risk prior to the contract's expiration while it has a positive replacement value. In the absence of bilateral closeout netting, the maximum loss to a defaulted counterparty is equal to the sum of the individual contracts' positive replacement values. The figure shows two bilateral contracts. **A** owes **B** \$5 on one contract, and is owed \$10 from **B** on the second one. **A** faces a \$10 loss if **B** defaults.¹

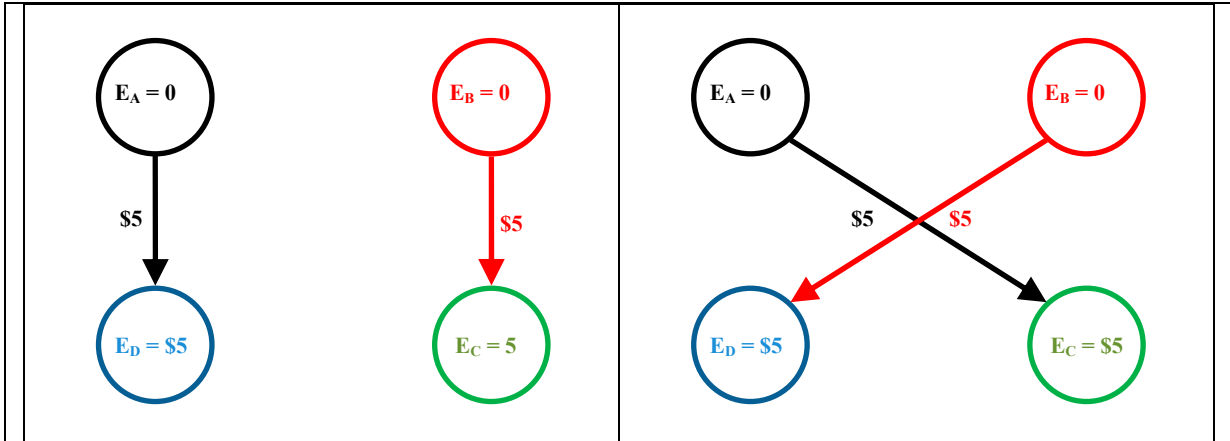


Closeout netting aggregates all exposures between the counterparties, under a default, and contracts with negative values can be used to offset those with positive values. Hence, the total exposure associated with all contracts covered by the particular master agreement is reduced to the maximum of the sum of the replacement values of all the contracts and zero. **A** loses \$5 if **B** defaults.²

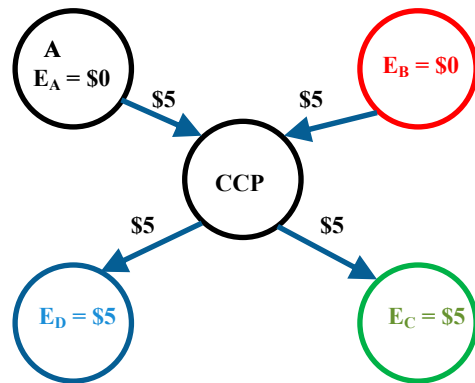


The second figure shows contracts across four counterparties, all of whom have bilateral closeout netting master agreements with each other applies. The numbers on the arrows indicate the net bilateral flow (**A**, **B**, **C** and **D**, clockwise from the top left corner), and the subscripted "E" indicates the maximum counterparty exposure for the counterparty. Thus, $E_D = \$10$, because both **A** and **B** owe **D** \$5. Each counterparty faces a maximum counterparty default-related loss of either \$5 or \$10. **C** loses \$10 if both **A** and **D** fail, and **D** is vulnerable to the simultaneous default of **A** and **B**. Hence, **A** and **B** should each provision against \$5 of potential counterparty credit losses, and **C** and **D** should each provision for \$10, for a total of \$30, even though the maximum potential loss among all four is only \$10.

Multilateral netting, typically operationalized via "tear-up" or "compression" operations that eliminate redundant contracts, reduces both individual and system counterparty credit risk. In this case, it could eliminate four contracts, and eliminate all **A**'s and **B**'s counterparty credit risk exposure, and leave **C** and **D** with \$5 of maximum potential individual losses. The third figure shows the two possible post-netting configurations. The leftmost configuration eliminates the circular $B \rightarrow A \rightarrow C \rightarrow B$ flow, and replaces the $B \rightarrow D \rightarrow C$ flow with a more direct $B \rightarrow C$ flow. The rightmost configuration just needs to eliminate the circular $B \rightarrow A \rightarrow D \rightarrow C$ flow. Using such tearup operations, TriOptima's TriReduce service eliminated about \$30 trillion notional of credit default swap contracts in 2008.



A sound CCP takes the multilateral netting principle a step further, with all counterparties dealing with only one counterparty (the CCP). It interposes itself between the seller and buyer and assumes both the rights and obligations of both parties. The likelihood of knock-on failures is reduced by requiring the participants to post margin, and by loss sharing among other clearinghouse members. Other typical arrangements include capital funds comprised of clearing member contributions and accumulated profits and transaction fee rebates (see Bliss and Steigerwald, 2006).



¹ See Bliss and Kaufman (2006) for more detail on OTC derivative collateral and netting. The figure assumes that the counterparties have signed a master agreement with the appropriate closeout provisions that covers both transactions. If they had not, **B** could “cherry pick” **A** by defaulting on its obligation to pay the \$10, but insisting that **A** still pay the \$5. In this case, **A** loses \$15.

² The exposure can be further reduced by requiring counterparties to post collateral (cash and highly-rated liquid securities) against outstanding exposures, usually based on the previous day’s valuations. See CPSS (2007) and ISDA (2007) for a survey of recent OTC derivative counterparty credit risk exposure practices, including collateral policies. See CRMPG (2005 and 2008) for guides to best practices.

Four separate CDS CCP initiatives were originally launched (Table 1). In Europe, LIFFE opened up clearing operations for index-based credit derivatives on December 22, 2008, and Eurex is set to follow in 2009.²⁸ In the United States, Intercontinental Exchange Trust (ICE Trust) opened index-based credit derivative clearing operations on March 9, 2009, and the Chicago Mercantile Exchange’s (CME) had planned to follow shortly.²⁹ In addition, on

²⁸ NYSE LIFFE is a subsidiary of NYSE Euronext, and Eurex is jointly owned by Deutsche Börse and SIX Swiss Exchange.

²⁹ The ICE has formed ICE US Trust, LLC as limited purpose bank subject to regulation by the Federal Reserve System and the New York Banking Department. Having received Fed approval on March 4, 2009, and an

(continued)

March 3, 2009, ICE Clear Europe, a wholly owned subsidiary of ICE Trust, announced that it would be clearing CDS contracts in Europe. But by fall 2009, only ICE and Eurex were clearing CDS.³⁰ Initially, only dealers have been able to clear their contracts through CCPs, but on June 2, 2009 they committed to make CDS central clearing available to investors by mid-December. ICE has said it plans to be clearing buy-side contracts in November. By end-June, NYSE Liffe/LCH.Clearnet had failed to clear a single contract and placed their clearing initiative under review and the CME had still not attracted any business.

However, the efficiency of counterparty risk mitigation associated with the CCP structure diminishes as the number of CCPs clearing the same product type increases (Duffie and Zhu, 2009).³¹ The CCP industry typically exhibits network externalities, which means that the value of the services offered by a clearing system to an investor depends on the number of investors purchasing the same services. Thus, an increase in the number of participants joining the CCP will have benefits that accrue to existing participants, as they will be able to clear with more counterparties. In addition, the CCP industry exhibits important economies of scale, which means that the average cost per transaction declines with an increase in the number of transactions. The information technology infrastructure, such as a database engine, the clearing platform, networks and interfaces, have high fixed costs. In sum, a single provider might have the lowest costs, but it might also have significant market power and might thus need to be regulated in a manner similar to a public utility.

Moreover, the introduction of a CCP leads to the concentration of credit and settlement risks in a single entity. A CCP faces the risk of loss from default by participants, yet it will still have obligations to surviving participants. It therefore needs to go to the market and purchase or sell contracts identical to those held by the defaulting parties. To protect itself, a CCP applies effective risk control measures in terms of adequate participation requirements, financial resources, sufficient margin requirements, collateralization, well-defined member default procedures, and a transparent and effective governance structure. The appropriate risk management procedures are analogous in many respects to those applied by organized

exemption from the SEC on March 6, 2009, it announced the closure of The Clearing Corporation (that had developed the clearing infrastructure for ICE Trust,) and ICE Trust began clearing some CDX tranches on March 9, 2009. The initial participants in ICE US Trust were include Bank of America, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, JPMorgan Chase, Merrill Lynch, Morgan Stanley, and UBS. The CME has set up a joint venture with Citadel Investment Group called CMDX, which received regulatory approval from the CFTC and Fed in December 2008, and a special exemption from the SEC on March 13. The special SEC exemption was required so that it could use its existing clearing membership structure to clear CDS.

³⁰ ICE cleared about \$3 trillion between March and October 2009 (\$2.3 trillion in ICE Trust US and \$750 billion in ICE Clear Europe) after which open interest stood at about \$300 billion.

³¹ Duffie and Zhu (2009) also make the important point that adding a CCP for just CDSs could reduce netting efficiency, and suggest that the optimal solution involves a single CCP that clears CDSs, interest rate swaps, and other OTC derivatives. In fact, Japan may see the launch of an all-encompassing CCP in early 2010. However, Duffie and Zhu (2009) do not address the concentration risk that arises from having only one clearing entity.

exchanges. Prudential regulation and oversight of CCPs will thus also be desirable to ensure that risks are adequately managed.

Table 1. Initial CDS Clearinghouse Proposals

	Based in the United States		Based in Europe	
	CME Clearing	ICE Trust	Eurex Clearing	NYSE Liffe/ LCH.Clearnet
Trading Platform	Yes	Yes	No	Yes
Associated Exchange	CME	ICE	Eurex	NYSE Liffe
Types of Contracts	Index-based and single-name	Index-based, single-name and bespoke	Index-based at the start, single names later	Index-based only
Margin Requirements	Model-based, incorporating portfolio risk and other factors ¹	Initial and Mark-to-Market margin, at least daily, and intraday at ICE discretion	Margin model CVar used for initial margin, Eurex also uses intraday risk based margin that may apply when the product is launched	Initial margin based on volatility, with a set size of EUR 100,000 per contract. Portfolio-based margin on daily market to market positions
Guarantee / Capital Fund	\$7 billion ²	\$20 million charged per member, and contributions from ICE, \$10 million initially and a commitment of \$100 million within two years	Total guarantee <i>position</i> of €49 billion as of end-October 2008 ³	Approximately £600 billion as of end-January 2009

¹ According to CME's proposal, portfolio risk will be determined based on exposure to various shocks and stress scenarios. The model includes Monte Carlo, CoVar, VAR, single name price volatility, with a rule-based overlay. Risks addressed are: systematic risk, curve risk, spread convergence/divergence risk, sector risk, idiosyncratic risk, liquidity risk, and basis risk.

² However, the contingent risk capital assessment powers comprise \$4.81 billion of this total. In the event of a clearing member default, \$2.48 billion in collateral and 1.85 billion in surplus funds and deposits would be available to cover obligations, after which the \$4.81 billion in contingent risk capital would be assessed against clearing members for any of the remaining unsatisfied obligations. Any default remaining would be shared among the members up to 27.5 percent of the aggregate security deposit of the clearing membership. If a default of one member affects the capacity of other members to pay their contingent liabilities under the contingent risk capital assessment, one might question the ability of the CME to raise these funds as anticipated.

³ This position includes funds derived from defaulted members in the liquidation of open positions, liquidation of collateral, and a guarantee fund. It also includes Eurex reserves, the guarantee fund of all the non-defaulting members, Eurex Clearing equity capital, and a guarantee from Eurex's parent firm, the Deutsche Börse/Swiss Exchange. It is unclear how much the guarantee fund comprises of this total, but according to Eurex, the guarantee fund does include a deposit of Members that is the highest of: "EUR 5 million for GCM or EUR 1 million for DCM (minimum amount), 2 percent of the 30-day average of the total margin requirement, or, 2 percent of the 250-day average of the total margin requirement."

Riskier instruments will need to incorporate larger initial margins to account for the greater risk to which the CCP is exposed.³² Further, margin requirements for less liquid instruments should incorporate the potential losses that might occur over a longer liquidation period during a potential default. Margining requirements should therefore not only account for the risks of a particular product, but also such elements as sector risk (that is, the default of a single-name CDS could indicate a greater probability of an entire industry being at risk, such as the auto industry) and liquidity risk (where wider bid/ask spreads require higher margins in case of liquidation). Both of these risks demonstrably have the capacity to evolve quickly into systemic problems. In light of the complexities of pricing credit derivatives, one of the key challenges faced by the new CCPs will be the appropriate calculation of margin requirements.

The failure of a CCP, for whatever reason, will affect the functioning of the entire financial market. Thus, authorities have an important role to play in ensuring that a CCP has adequate risk mitigation and management procedures and tools to protect the integrity of the markets and the interests of its participants. There is also a need for authorities to have contingency plans and appropriate powers to ensure that the financial failure of a CCP does not lead to systemic disruptions in markets. This includes planning for emergency liquidity provision and resolution.

B. Need for Regulatory Coordination

An internationally active CCP would by definition clear transactions originated outside its local jurisdiction. Positions would then be netted and held in accordance with the rules of the local CCP and the law of the country in which it is located, giving rise to potential conflicts with the law of the countries in which the transactions originated. Although the public discussion on establishing a CCP for CDS was initiated by the U.S. authorities, the CDS market is global and about half of the contracts are traded out of Europe.

A single global CCP might be the most cost effective means of mitigating counterparty risk. However, jurisdictional considerations and competing economic interests are likely to make it difficult or impossible to establish such an entity. The systemic importance of a CDS CCP might lead authorities in any given country to favor retaining the CCP under national regulatory and supervisory oversight. Similarly, national authorities may find it difficult to oversee a global entity that is likely to be the subject of jurisdictional disputes. Also, no central bank will provide emergency liquidity to a CCP located outside its currency area, so that the single global CCP scenario is unlikely. Consequently, a second best scenario would be one in which there are several interlinked CCPs serving their respective jurisdictions.

³² Initial margin, the amount required to be collateralized to initiate a position, and variation margin, which accounts for the daily offsetting of losses and gains required to keep the position open, allows for intra-day monitoring and margin posting as well as end-of-day settlement of positions. Variation margin is based on daily mark-to-market pricing; positions are liquidated if variation margin cannot be met.

However, to ensure that maximum multilateral netting benefits are achieved and regulatory arbitrage opportunities are minimized, authorities should coordinate prudential standards, and require appropriate guidelines to ensure sound standards-based interoperability and cross-margining of linked CCPs.³³

However, even multiple separate internationally active CCPs will require intensive cross-border coordination of regulatory and supervisory frameworks, both to avoid regulatory arbitrage and to mitigate systemic risk. These frameworks need, in particular, to ensure that sound and efficient linkages and clearing mechanisms are established across CCPs, without unduly constraining multiple-currency or cross-border transactions. At present, there are various legislative, regulatory, and market proposals to deal with CCP organizations. These cover issues such as the standardization and documentation of CDSs and the responsibilities of CCPs and their members.

For example, the European Central Bank (ECB) recently hosted a meeting with European stakeholders on the establishment of a European-wide CCP for CDS. The ECB and the participants “underlined the merits of multiple solutions in general and of at least one European solution.” The ECB therefore does not currently favor a CCP for CDS traded in Europe that is located outside its jurisdiction. This policy, which is in line with the ECB’s previous policy on CCPs for cash markets, is motivated at least in part by the consideration that a CCP that clears CDS denominated in euro may have an impact on the ECB’s mandate to maintain monetary stability (ECB, 2001). The ECB considered that the “natural geographical scope” for a CCP that clears instruments denominated in euro is the euro area.

In the United States, there is no unique assignment of regulatory responsibility for CCPs for CDS. If the CCP were established as a bank, it would need to be chartered by the appropriate authority and become a member of the Federal Reserve system, while the SEC or CFTC would be the main regulatory bodies if the CCP were set up as a part of an exchange.³⁴ In order to address this regulatory gap, the Board of Governors of the Fed, the SEC, and the CFTC recently signed a memorandum of understanding (MOU) on oversight of future CCPs.³⁵ The principal objective of the MOU is to facilitate the regulatory approval process. Furthermore, the MOU establishes a framework for consultation and information sharing on issues related to CCPs for CDS.

³³ Cross-margining agreements would enable a CCP to access a defaulting participant’s assets at another CCP. According to ECB(2007), “interoperability means agreeing on common processes, methods, protocols, and networks to enable cooperation between central counterparties at the technical level. This would allow central counterparty clearinghouses worldwide to develop links between eachother.”

³⁴ In the United States, a bank is either nationally chartered by the Office of the Comptroller of the Currency (OCC), or state-chartered by the specific state banking department.

³⁵ The MOU was signed on November 13, 2008 as one of a series of initiatives of the President's Working Group on Financial Markets to strengthen oversight and the infrastructure of the OTC derivatives market.

However, it is unlikely that the U.S. MOU will suffice to create a fully effective regulatory framework for CCPs. The MOU is not legally binding and it covers only information sharing. Furthermore, different CCPs, providing similar services and products, may be subject to different rules and regulations depending on their regulatory authorities that granted the license. This may lead to competitive distortions and potentially higher systemic risk as CCPs have an incentive to relax their risk management standards in order to gain market share. On the other hand, the U.S. MOU does serve as a useful template for further cooperation toward the implementation of an effective regulatory framework for multiple CCPs.

In that regard, the September 2009 establishment of the “OTC Derivatives Regulators’ Forum” is a welcome development. The Forum is comprised of all of the relevant financial regulators, and one its key objectives is to “adopt, promote, and implement consistent standards, such as the CPSS-IOSCO *Recommendations for Central Counterparties (RCCPs)*, in setting oversight and supervisory expectations.” Also, in July 2009, the CPSS and IOSCO set up a working group to review the application of the 2004 RCCPs to clearing arrangements for OTC derivatives. It is also encouraging that in its October 2009 communication, the European Commission underscored the need to ensure globally coherent CCP policy implementation to avoid regulatory arbitrage.³⁶

While the establishment of a CCP for CDS has advantages in terms of transparency and financial stability, the following policy considerations will need to be borne in mind. First, in order to preserve the soundness of the financial sector and the integrity of the market place, a CCP should be established as an independent entity. This is important to ensure that financial risks cannot be imported from other unrelated clearance activities. Second, due to its systemic importance, a CCP should be subject to the oversight of a systemic risk regulator, in addition to oversight by securities and futures regulators, who also have an oversight role in ensuring the orderly functioning of the market. Third, relevant authorities in other countries should be involved in the oversight of CCPs that clear substantial trades executed outside their local jurisdictions.

C. Improving Disclosure of Credit Derivatives Transactions

The recent financial turmoil has stimulated considerable debate on transparency and disclosure in financial markets for financial assets and liabilities, both marked-to-market and marked-to-model. Regulatory standards did not keep up with the development of increasingly sophisticated financial instruments and outdated regulation permitted new instruments to remain opaque and out of view of regulators and investors. What was missing in the area of disclosure was the ability of regulators and investors to gain insight into the underlying structure of these new instruments and vehicles and understand where exactly the risks lay.

³⁶ See: http://ec.europa.eu/internal_market/financial-markets/derivatives/index_en.htm

There are also important gaps in the information reported to regulators and other authorities. This was made apparent when authorities were considering the policy responses leading up to the bailout of AIG and the demise of Lehman Brothers. It seems that too little information was available to authorities to assess the potential knock-on impact of the failure of the two institutions through their credit derivative (and other transactions) transactions. While individual country authorities have some access to such information, there remain cross-market and cross-currency gaps. In addition, many key market participants, such as hedge funds, remain outside the regulatory perimeter.

D. Improving Disclosure in Financial Reporting of Credit Derivatives

While there is general agreement that more disclosure is needed, the questions of how much disclosure and to whom are more difficult. As a result, both International Financial Reporting Standards (IFRS) and U.S. Generally Accepted Accounting Principles (GAAP) have increasingly required enhanced reporting and transparency of banks' exposures. Of particular importance is that both accounting frameworks require all derivatives to be fair valued and thus subject to detailed standards for disclosure. Both IFRS and U.S. GAAP have strengthened guidance on and greater disclosure of the details involved in pricing complex, narrowly traded products. This includes accounting procedures for the consolidation of off-balance sheet credit exposures that would increase the need to bring these vehicles onto banks' balance sheets and under greater scrutiny.

In March 2008, FAS 161 on "Disclosures about Derivative Instruments and Hedging Activities," was introduced. It includes requirements pertaining to counterparty risk and key issues underlying the proposed CCPs for credit derivatives.³⁷ The new standard not only increased transparency in the amounts and the location of derivative instruments in financial statements, but also how they affect the financial position, financial performance, and cash flows of the institution. Greater disclosure about an institution's liquidity position is required, and to improve clarity, derivative instruments and their gains and losses are to be in a tabular presentation.

Counterparty relations were especially opaque during the crisis. FAS 161 requirements related to the disclosure of counterparty risk include information on concentrations, maximum potential exposure to credit losses, and the degree to which master netting arrangements can mitigate maximum losses due to credit risk.³⁸ While proposals for clearinghouse arrangements may address counterparty risk for such products as single-name CDS and CDS indices, increased disclosure for bespoke credit derivatives that remain outside of clearinghouses will still be necessary.

³⁷ This amends FASB Statement No. 133. FASB has provided additional guidance on FAS 133 (*Accounting for Derivative Instruments and Hedging Activities*) to provide more detailed direction in this area.

³⁸ FAS 161, paragraph A47.

Since the introduction of IFRS 7 and FAS 157, increased disclosure has been required of structured credit products by both the U.S. SEC and FASB, as well as by IASB. In September 2008, the SEC and FASB issued a joint statement providing additional guidance on fair value measurement, which was accompanied by a description of the detailed disclosure requirements for financial reporting and by letters sent to public companies on MD&A disclosures regarding the application of FAS 157.³⁹ Disclosures include greater details on credit risk and its effect on the valuation of derivatives, as well on counterparty credit risk—its effect on valuation of derivative assets, the resulting gains/losses. Importantly, SEC recommended disclosures on the deterioration in counterparty credit risk, the ability of the SEC to collect such information, and the potential impact on the financial statement. In March 2009, IASB published amendments regarding accounting for “Embedded Derivatives,” clarifying the accounting treatment for embedded derivatives and would require all embedded derivatives to be assessed and, if necessary, separately accounted for in financial statements.⁴⁰

Similarly, in September 2008, an IASB expert advisory panel drafted guidance on “Measuring and disclosing the fair value of financial instruments in markets that are no longer active,” noting also that the guidance would be useful more generally “in meeting the objectives and requirements of IFRS.” In October, the IASB proposed improvements to financial instrument disclosure by way of amendments to IFRS 7 in order to improve the information available regarding the valuation of financial instruments and liquidity risk. Specifically, the proposed guidance on disclosure has now been expanded such that financial instruments fair valued within each [fair value] (FV) class will be subject to the same detailed disclosure and guidance is provided for implementation.

In reviewing 2006 and 2007 annual reports for five major CDS issuers, disclosure of information regarding credit derivatives improved considerably between the two reporting periods (see Table 2). Nevertheless, disclosures of structured credit products varied significantly across institutions surveyed in both quantity and quality of information. In comparing different institutions, it should be noted that the more active participants in the CDS market tended to adopt the disclosure requirements earlier and provided a greater level of detail in their disclosures.

³⁹ Management’s Discussion and Analysis of Financial Condition.

⁴⁰ An imbedded derivative is an implicit or explicit term in a contract, such as a bond, that meets the definition of a derivative even though the entire contract or instrument may not.

Table 2. Disclosure Improvements of Major CDS Dealers

Dealer	2007				
	Bank of America	JPMorgan Chase	Morgan Stanley	Goldman Sachs	Citigroup
FAS 161					
Tabular presentation of derivatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tabular presentation of gains/losses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industry concentrations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Maximum exposure to credit losses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Degree of master netting arrangements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FAS 157					
Valuation effects of credit risk on derivative liabilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gains/losses from credit risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deterioration of counterparty credit risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Ability to collect from counterparty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Impact on financial statements		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Detailed explanations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improvement over 2006?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dealer	2006				
	Bank of America	JPMorgan Chase	Morgan Stanley	Goldman Sachs	Citigroup
FAS 161					
Tabular presentation of derivatives	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Tabular presentation of gains/losses	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Industry concentrations	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>
Maximum exposure to credit losses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Degree of master netting arrangements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
FAS 157					
Valuation effects of credit risk on derivative liabilities		<input type="checkbox"/>			
Gains/losses from credit risk		<input type="checkbox"/>			
Deterioration of counterparty credit risk		<input type="checkbox"/>	<input type="checkbox"/>		
Ability to collect from counterparty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Impact on financial statements		<input type="checkbox"/>	<input type="checkbox"/>		
Detailed explanations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

Sources: Annual Reports.

Note: Checkmarks denote full compliance, where tildes before checks indicate that some effort toward full disclosure has been made.

Specifically, 2007 witnessed a marked improvement in the tabular presentation of disclosure information from all institutions. For example, industry concentration was occasionally presented in 2006, but even as it appeared more regularly in the disclosures for 2007, the presentation tended to vary, with some institutions only presenting the most general of breakdowns (e.g., financial/nonfinancial), and others detailing sectors of commercial counterparties. Given that 2007 was the first year most institutions began providing the disclosures, the information gap might narrow further going forward.

Exposures by credit rating distribution appeared in some disclosures in 2006 but with greater frequency in 2007. Additionally, new disclosures in 2007 even included exposures to specific derivatives such as CDO-squared, while others better explained institutions' exposures to monoline insurers. It would be desirable to see other institutions following with such disclosures of their derivatives portfolios.

Counterparty risk and the valuation effects of credit risk on derivatives did not receive similar attention, even in 2007. However, gains and losses of credit risks were recorded. In the former case, institutions tended to discuss the potential for counterparty risk rather than provide detailed breakdowns of the credit quality of their counterparties or a numeric example including downgrade scenarios of their counterparties concurrent with the possible effect on the balance sheet. Additionally, the maximum degree of concentration exposure to single counterparties should have been presented. One institution provided a detailed explanation of valuation changes affecting credit quality and its impact on the financial statements, based on different market scenarios, such as a mild or deep recession, which we would like to see more institutions provide.

The ability to collect cash flows from a counterparty was in almost all cases explained descriptively, but in better cases was addressed by presenting the cash collateral provided against the derivatives contracts. More detail might have been provided on how and to what degree the available collateral would have been adequate to cover losses in the event of counterparty distress. Additionally, institutions explained where data did or did not reflect the effects of legally enforceable master netting arrangements, but they did not explain the percentage composition of overall contracts subject to those agreements.

E. Improving Disclosure of Credit Derivatives Transaction Data to Authorities

Chapter 2 of the April 2009 *Global Financial Stability Report* (IMF, 2009) discusses in more detail the importance of authorities gathering data and monitoring cross-market and cross-country linkages. However, given that the DTCC Trade Information Warehouse stores trade information pertaining to the vast majority of credit derivative transactions, keeping track of systemically important linkages in these markets should be relatively straightforward. However, the fallout of the AIG and Lehman Brothers debacles underscores the importance of authorities accessing this information and processing it in a systematic fashion. Also, it is

understood that almost all of AIG's CDS contracts were of a non-standard variety that were not amenable to being captured in the DTCC data warehouse.

Furthermore, tracking of such linkages requires more information sharing among intra-national and cross-border authorities. For example, authorities charged with financial stability responsibilities require access to some of the micro-prudential data collected by supervisors. In this regard, the June 2, 2009 commitment (by the major OTC derivative market participants to the New York Fed and other national supervisory authorities) to important market design and risk management improvements, is a positive development.⁴¹ The signatories will record all of their credit derivative transactions in central trade repositories (most likely the DTCC Trade Information Warehouse) and/or CCPs by mid-July 2009. These will include non-standard contracts. There is also an implicit commitment to share this information with the appropriate regulators.

However, with the bulk of credit derivatives trades taking place in either Europe or the United States, strong information-sharing agreements should be in place between the authorities on the two continents. These could be bilateral agreements among national authorities or between the DTCC Trade Information Warehouse (and any other trade repositories and CCPs) and each of the national authorities. Furthermore, the authorities might look to some of the methodologies discussed in IMF (2009) to process this information.

F. Improving Market Integrity and Surveillance

Establishing a level of market integrity ensures that market participants are not able to manipulate prices and that price discovery is efficient. Market abuse in the CDS market might, for example, take the form of manipulation of CDS spreads aimed at bringing down the company's equity price (perhaps to allow the company to be more easily acquired) or manipulation of CDS spreads to the advantage of a competitor of the company. There are two aspects to market integrity: regulation that discourages market abuse (through greater transparency, trading rules for market participants) and enforcement of those rules. Neither aspect has been present in CDS markets.

Because CDS are contracts sold and traded bilaterally between institutional counterparties, the contracts are not subject to traditional disclosure regulation that would be present in an exchange traded or retail market (i.e., there are no prospectus or continuous disclosure requirements that would require a certain level of disclosure by the issuer to the buyer). This is no different from other OTC institutional markets—the policy view has been that buyers and sellers in these markets do not require regulatory protection as they have sufficient bargaining power to elicit sufficient disclosure. However, this lack of disclosure and the

⁴¹ The full text of the letter can be found on the New York Fed's website (www.newyorkfed.org/newsevents/news/markets/2009/ma090602.html).

bilateral nature of trading render the market opaque, which makes surveillance difficult. A greater attention to counterparty risk by market participants and the use of a central clearing system will undoubtedly bring about greater disclosure in the contracts themselves as parties demand more and better information.

The two chief challenges for market surveillance are that (i) the CDS market is not transparent; and (ii) detecting market abuse would require connecting trading in the CDS market to trading in underlying bonds or other related interests. Hence, the CDS market is difficult to observe. Since virtually all trading is bilateral, no one person or institution knows the identity of traders or clients, the size or price of orders or the size of the market in aggregate. There are no general rules applicable to trading in CDS instruments, and no authority with a clear mandate to carry out surveillance of the market.

Surveillance requires coordination both domestically and internationally and this is very challenging. Because markets are over-the-counter, there is no clear responsibility for surveillance. The banking supervisor has some responsibility for regulated banks that trade in the market but banking supervisors do not focus on trading behavior and are not responsible for all market participants. Securities and futures markets regulators are responsible for secondary markets in general but may or may not have explicit authority over CDS markets, although presumably this can be easily corrected if there is sufficient political interest to pass new legislation). But neither agency has complete responsibility. Further, the underlying and related markets (markets in stock of the company whose bonds are insured, or the market in those bonds) can be regulated by exchanges, self-regulatory organizations and other regulators. These considerations clearly show the need for thorough reforms that enable improved surveillance. With a specific assignment of responsibility, and with political and institutional commitment, regulators would have a better chance of obtaining additional authority or additional technology to begin surveillance.

More complex still is international coordination of regulation and enforcement. There is a clear risk that if a single jurisdiction imposes regulations on the market—such as requiring all CDS to be exchange traded—market activity could well move to other jurisdictions, with a net reduction in transparency. Regulators in the major jurisdictions, therefore, need to work closely with their counterparts to ensure coordinated implementation of new rules and enforcement. There is also a risk of a “race to the bottom” as some jurisdictions will seek to attract derivatives business by deliberately setting lower regulatory standards. An international process may be needed to discourage such non-cooperative behavior.

However, the successful centralization of CDS clearing and settlement will be a catalyst for improved market transparency.⁴² Prices will be established in clearing and this will translate

⁴² Not all CDS issuances would be destined for clearing and settlement systems—this would only apply to the most liquid issuances.

to improved price transparency that should mitigate the risk of price manipulation. The increased transparency gives participants more information, which can also be used for better calibration of counterparty risk. Also, because trades are now settled upfront, and CCPs will be requiring regular margin level maintenance, CDS market participants will have a more substantial economic stake in the valuation of their instruments, which should act as a natural discipline on price discovery.

Some have been calling for the elimination of any speculative protection buying as a way to curb market abuse; meaning that buyers of CDS would be required to also hold the underlying bond. The term “naked” trading has arisen to describe those who buy protection but do not have an interest in the underlying bond. The U.S. House of Representatives has occasionally considered legislation that would prohibit naked trading, making an exception for market makers (who have offsetting positions in any event), to more general reforms of financial regulation, and at one point it considered a bill that would ban all CDS trading.⁴³ A variation of this idea is to recharacterize CDSs as insurance contracts and bring them under insurance regulatory frameworks. These proposals would have a significant impact on CDS market liquidity. Data suggests that a large portion of CDS buyers do not hold an underlying bond but are either speculating on default or are using the CDS protection to hedge other interests. Most derivatives markets involve a high degree of trading by investors with no interest in the underlying instrument. In the case of CDS, this has been pointed to as a potential source of abuse because the market is so large and because it is opaque. However, additional transparency and appropriate prudential regulation will improve pricing and reduce possibilities for abuse.

Aside from the political and legal challenges of reform, there are also some practical difficulties, notably the allocation of scarce supervisory resources. Detection of market abuse (surveillance) is resource intensive. Enforcement (the application of consequences for abuse) requires further resources. Regulation, supervision, and enforcement in the credit derivatives markets must thus be weighed against competing supervisory priorities.

V. SUMMARY AND CONCLUSIONS

Although important strides have recently been made in reducing operational risks, counterparty risk remains a significant problem in CDS and other OTC derivatives markets.

⁴³ U.S. Congresswoman Maxine Waters introduced the *Credit Default Swap Prohibition Act of 2009*, but it seems to have gained no traction. In July 2009, the U.S. House of Representatives passed the *American Clean Energy and Security Act of 2009* that would make it “unlawful for any person to enter into a credit default swap unless the person would experience financial loss if an event that is the subject of the credit default swap occurs.” However, the bill includes language that would make the CDS provisions null and void if any other legislation around CDSs or OTC derivatives is passed. In July 2009, In December 2008, the New York insurance department made and then withdrew a similar proposal. More recently, the House Financial Services Committee is considering the *Over-the-Counter Derivatives Market Act of 2009*, which does not propose banning or recharacterizing CDS transactions.

The recent CDS CCP launches in Europe and the United States are promising developments. However, a single global CCP would accomplish the largest reduction in systemic counterparty risk, benefit from the largest network and scale economies and a larger pool of counterparties and resource base, and limit opportunities for regulatory arbitrage and competitive distortions. There is a risk of a “race to the bottom” as each CCP has an incentive to fight for market share by economizing on risk management, and lowering margining requirements and contributions to a guarantee fund. Evidence of this can be seen, in part, as competition for market share has resulted in the fallout of two of the four initial CCP proposals.⁴⁴ International cooperation is needed to avoid national regulators contributing to such a race to the bottom.

Some CDS market systemic risk concerns could be alleviated if policymakers and market participants had access to more detailed transaction and position information. Better information would also enable authorities to detect market abuse. More effective CDS market surveillance will require clearer regulatory and supervisory mandates. However, even with the right mandates, enforcement resources are stretched, and there are many pressing issues that regulators must balance.

The recent U.S. Treasury proposal for a comprehensive regulatory framework that would cover all OTC derivatives is a step in the right direction.⁴⁵ Not only does it call for the centralized clearing of all standardized OTC derivatives, but also for the imposition of comprehensive reporting requirements, even on trades that do not clear through CCPs. Aggregate data on all trades will have to be reported to the public, and individual trade details to federal regulators. The International Organization of Securities Commissions (IOSCO) has made a similar proposal, although it covers only standardized credit derivatives (IOSCO, 2009).

In addition, accounting statements generally reveal very little CDS risk exposure information beyond notional amounts and market values. While there has been general agreement that more disclosure is needed, discussions have tended to get bogged down in questions of how much disclosure and to whom. Although accounting standard setting bodies are moving toward requiring enhanced reporting and transparency of bank’s exposures, important gaps should be filled. For example, the maximum degree of concentration exposure to single counterparties should be presented. Also, valuation changes affecting credit quality and their impact on the financial statements, based on different market scenarios, such as a mild or deep recession, would be useful.

⁴⁴ Prior to putting their operations on hold, in the spring of 2009, LCH.Clearnet cut its fees further by “at least 50 percent” as it revealed an initial 30 percent discount on clearing of four continental European cash equities markets (Financial Times, 2009).

⁴⁵ The U.S. Treasury’s “proposed framework” was outlined in a letter from Timothy Geithner to a number of Congressional leaders on May 13, 2009 (www.financialstability.gov/docs/OTCletter.pdf).

Finally, regulators and other standard setters in the major jurisdictions need to work closely with their counterparts to share transaction and position information relevant to assessing systemically important linkages through these markets. Furthermore, as noted above, they need to work to ensure coordination in implementation and enforcement, in order to prevent regulatory arbitrage.

Some important topics were not covered in this paper. These include legal issues surrounding takeover directives, and the impact of CDS contracts on the competing rights of shareholders, creditors and other investors. In addition, concerns have been raised about “empty creditor” issues, whereby creditors who have bought protection in the CDS market are unmotivated to participate in restructuring negotiations (in the extreme, such creditors may be highly motivated to actually push for bankruptcy). This was seemingly only an academic problem (see Hu and Black, 2008), but it appears to have become relevant in the wake of recent bankruptcy activity.⁴⁶

It should be noted that the paper did not address more fundamental questions about whether CDS trades add positive value to the economic system. For many years, credit derivatives have been justified as an efficient way to distribute risk and promote financial stability. However, recent events make it difficult to argue that the markets for these instruments have materially limited the negative outcomes of this crisis, and there is a widespread view that they may have exacerbated systemic instability.

⁴⁶ Morgan Stanley apparently forced the Kazakh bank, BTA, into bankruptcy in order to crystallize the value of its CDS contracts on the bank (Buiter, 2009).

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