

Credit Derivatives

Settlement and other Operational Issues

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Introduction	1
I. Overview of Credit Derivatives.....	3
A. Main types of Credit Derivatives	3
1. Credit Default Swaps.....	3
2. Collateralised Debt Obligations and Credit-Linked Notes.....	4
3. Total Return Swaps	5
4. Recovery Swaps	5
B. ISDA Documentation	6
C. Benefits of Credit Derivatives	7
D. Issues Associated with Credit Derivatives	8
II. Backlog of Confirmations	10
A. The Issue.....	10
B. Steps Taken to Address the Issue	11
C. Lessons Learned and Solutions for the Future	13
III. Assignments of Trades	14
A. The Issue.....	14
B. Steps Taken to Address the Issue	16
C. Lessons Learned and Solutions for the Future	17
IV. Settlement of Credit Derivatives	17
A. Conditions to Settlement	17
1. Credit Event Notice	18
2. Notice of Publicly Available Information	19
3. In Case of Physical Settlement: Notice of Physical Settlement	19
B. Physical Settlement	20
1. How It Works	20
2. Benefits of Physical Settlement.....	22
3. Issues	23
a) Determination of Deliverable Obligations	23

b)	Operational Burden of Physical Settlement	24
c)	Residual Exposure for the Seller of Protection	24
d)	Monitoring of Offsetting Positions.....	24
e)	Bonds Squeeze.....	25
f)	Bonds Redemption	28
g)	Issue of Bonds by a New Entity/Succession Issue	28
C.	Cash Settlement	30
1.	How It Works	30
2.	Benefits of Cash Settlement	32
3.	Issues	33
D.	The New Auction Protocol.....	34
1.	Transactions Covered	35
2.	Adherence to the Protocol	36
3.	From Physical Settlement to Cash Settlement.....	37
4.	The Auction Methodology	38
a)	The “Preliminary” Auction.....	39
b)	Main Auction.....	40
c)	The Values Determined by the Auction	40
(1)	Inside Market Midpoint.....	40
(2)	Adjustment Amount	41
(3)	Open Interest.....	41
(4)	Final Price.....	42
d)	Are the Trades Formed under the Auction “Physically Settled”?	42
5.	Is the new Protocol the Panacea?	44
a)	The Shift from Physical Settlement to Cash Settlement	44
b)	The Auction System	45
c)	Some Troubling Data	47
	Conclusion.....	53

Introduction

Credit derivatives are the main credit risk transfer instruments. Financial institutions use them as a flexible credit risk management tool or as an easy way to receive extra returns. The credit derivatives market is huge and still rising fast. According to ISDA, the notional principal outstanding volume of credit default swaps amounted to \$ 34.5 trillion on December 31, 2006, rising from \$ 26.0 trillion on June 30, 2006, with a notional growth of 102 percent for the whole of 2006¹. Often considered as a useful mean to manage risks, credit derivatives have also raised some suspicions among financial markets supervisory authorities. They have become a major concern since 2005, due to numerous operational and legal deficiencies.

In September 2005, the Federal Reserve Bank of New York urged fourteen major banks active in the credit derivative market to solve the issues relating to the backlog of confirmations, unauthorized assignments and settlement of credit derivatives. These issues were as follows.

First, institutions were unable to process the increasing amount of credit derivative operations: in average, more than forty business days were necessary in order to confirm plain vanilla credit derivative transactions and even more for sophisticated structured transactions. The Federal Reserve Bank of New York and other supervisory authorities required from the institutions to take the necessary steps in order to reduce

¹ ISDA, News Release, April 18, 2007, available at <http://www.isda.org/press/press041807obs.html>.

these delays. The market participants managed to largely reduce the backlogs of outstanding confirmations.

Second, financial institutions used to assign credit derivative trades to third counterparties without prior approval of the original counterparties. As a result, many institutions did not even know the identity of their counterparties. The industry, led by ISDA, took several steps to help solve the issue. In particular, ISDA published the 2005 Novation Protocol, which provides counterparties with a simple way to process assignments. The implementation of this Protocol was a success: institutions were very cooperative and efficient in processing the necessary assignments. Further to the implementation of the 2005 Novation Protocol, this issue has been almost solved.

Third, the physical settlement of credit derivative transactions have raised several problems. The acquisition and delivery of bonds – further to an event of default – became with the increasing popularity of credit derivatives more and more difficult, if not impossible, for the market participants. Moreover, the price of the defaulted bonds could be distorted because of the rush to acquire them in view of the settlement of credit derivatives. In order to solve the physical settlement issue, ISDA published ad hoc Protocols for specific defaulted cases (2005 Delphi CDS Index Protocol, 2006 Calpine CDS Index Protocol and 2006 Dana CDS Index Protocol) enabling parties to switch to cash settlement and organizing an auction in order to determine a cash settlement price. With the purpose of proposing a general solution to facilitate cash settlements, ISDA published a new Protocol enabling cash settlements of credit derivatives including single-name trades.

After an overview of credit derivatives (Part I), I will briefly analyze the issues related to the backlog of confirmations (Part II) and assignments of trades (Part III) and

the lessons we should draw. I will then focus more specifically on settlement of credit derivatives (Part IV). In particular, I will describe the respective benefits and issues of Physical Settlement and Cash Settlement. I will then analyze the new auction protocol developed by ISDA aimed at solving the bonds squeeze. How does it work? Is an auction system really appropriate to determine the price of the bonds in the cash settlement of credit derivatives? I will present some data raising concerns as regards the new auction system, and discuss its adequacy as a permanent solution for the settlement of credit derivatives.

I. Overview of Credit Derivatives

A. *Main types of Credit Derivatives*

1. Credit Default Swaps

This paper will focus on Credit Default Swaps, which are the most common credit derivatives. Under a Credit Default Swap, a party (the Seller) “sells” to another party (the Buyer) credit protection on the obligation(s) of a third party (the Reference entity)².

If the Reference Entity defaults, i.e. if a “Credit Event” occurs, the Seller compensates the Buyer for the loss of par value of the obligations³. Under a Physical Settlement, the Buyer delivers pre-agreed obligations against payment by the Seller at a pre-agreed price. Under Cash Settlement, the Buyer does not deliver obligations and the Seller pays the difference between a pre-agreed price and the current market value of the obligations.

² Paul C. HARDING., *A Practical Guide to the 2003 ISDA Credit Derivatives Definitions*, London (Euromoney Books) 2004, at 6.

³ See namely the explanations of HARDING, *supra* note 2.

When entering into their Credit Default Swap, the parties agree on the Credit Events that can trigger the settlement, the notional amount, the rate for the premium (usually expressed in basis points per annum⁴), the Settlement Method (Physical or Cash) and the maturity date of the transaction. At maturity, the Buyer stops paying the premium and the protection expires. As noted by Paul Harding, “the fixed leg is the premium paid for the credit protection and the floating leg is the payout if the protection is triggered”⁵.

2. Collateralised Debt Obligations and Credit-Linked Notes

In Collateralised Debt Obligations and Credit-Linked Notes, a Special Purpose Vehicle, as Seller, enters into a Credit Default Swap with a financial institution as Buyer⁶. In turn, the Special Purpose Vehicle transfers the credit risk to investors through Collateralized Debt Obligations or Credit-Linked Notes. The Sellers are the “ultimate” Sellers of protection. The return for the investors is funded by the Credit Default Swap premium received by the Special Purpose Vehicle. If a Credit Event occurs, the Special Purpose Vehicle makes the compensation payment to the financial institution. In such case, the investors will bear the loss, and will not receive full repayment of their Obligations or Notes⁷.

⁴ *Id.* at 6.

⁵ *Id.*

⁶ See mainly Hal. S. SCOTT, *International Finance: Transactions, Policy and Regulation* (Foundation Press, 13th ed., 2006), at 626-627; also HARDING, *supra* note 2, at 8-11 (Credit-Linked Notes) and 12-14 (Collateralized-Debt Obligations).

⁷ *Id.*

3. Total Return Swaps

Under a Total Return Swap, a party (“Total Return Payer”) transfers the credit and market risk associated to an asset to another party (“Total Return Receiver”)⁸. The Total Return Payer takes a “synthetic short position” in the underlying asset⁹. The result is that the market and credit performance of the referenced asset (typically a Reference Obligation) are reproduced and transferred to the Total Return Receiver, without requiring the latter to purchase the asset.

In my view, the total return swap is not a typical credit derivative, because the market risk of the asset is transferred in addition to the credit risk. However, I note that as regards bonds “credit risk” and “market risk” are closely related.

4. Recovery Swaps

Under a recovery swap, two counterparties agree to swap recovery rates following a credit event¹⁰. The parties agree on the price at which the Recovery Buyer will buy the defaulted bonds from the Recovery Seller (for example 40 percent of the par value). In contrast to a Credit Default Swap, there is no premium paid during the life of the trade. The parties simply make a “bet” on the recovery rate¹¹.

⁸ HARDING, *supra* note 2 at 11. See also SCOTT, *supra* note 6 at 626: “Another type of credit derivatives is the total return swap in which the buyer of protection pays to the seller of protection the total return on an asset, such as a loan or bond, in return for a given payment”.

⁹ HARDING, *supra* note 2 at 11.

¹⁰ See the definition by CREDITFLUX, *available at* www.creditflux.com/primers/essentials/0280b.htm.

¹¹ *Id.*

B. ISDA Documentation

ISDA documentation is used in a vast majority of credit derivatives trades¹². The “2003 ISDA Credit Derivatives Definitions”, published by ISDA and adopted with effect from 20 June 2003 in replacement of the 1999 Definitions, are the standard contractual documentation for credit derivatives. The “Confirmation” is the document confirming or evidencing a Credit Derivative Transaction. ISDA provides a template of such Confirmation in the Exhibit A to the 2003 Credit Derivatives Definitions, which the market participants tend to use with some customization to fit their special preferences and needs¹³. Hence, credit derivatives are highly standardized transactions¹⁴.

In addition to the 2003 Credit Derivatives Definitions and its Exhibits, ISDA has published various complementary documents, and in particular numerous “Protocols” such as the Novation Protocols, the CDS Index Protocols and recently the 2006 Dura CDS Protocol. The goal of these Protocols is to solve issues (backlog of confirmations, assignments of trades and settlement) which arose after the publications of the 2003 Credit Derivatives Definitions.

¹² See the estimation mentioned in Allison PYBURN, “Derivatives: ISDA Broadens Use of Cash Settlement Protocol”, *High Yield Report*, October 2, 2006.

¹³ HARDING, *supra* note 2 at 29.

¹⁴ See Frank PARTNOY/David SKEEL JR., “The Promise and Perils of Credit Derivatives” (September 11, 2006). *University of Pennsylvania Law School. Scholarship at Penn Law*. Paper 125. <http://lsr.nellco.org/upenn/wps/papers/125>, at 8: “This standardization decreases the transactions costs of credit default swaps deals, and provides the other familiar benefits of standardization”.

C. Benefits of Credit Derivatives

The most obvious benefit of credit derivatives is that they allow banks and other institutions to hedge positions for which they bear a credit risk¹⁵. They can design their risk profile by using credit derivatives with a high degree of precision. In a larger scale, credit derivatives can serve as a “shock absorber” for the financial system, by diffusing credit risks among numerous risk takers such as insurance companies. Some see the credit derivatives as an explanation for the good resistance of banks during the corporate crisis of 2001-2002: “because many of the lenders to companies like Enron and WorldCom had hedged their risk, the corporate scandals did not spread to the banking industry”¹⁶. In this respect, credit derivatives tend to reduce systemic risk.

Credit derivatives induce banks to increase and diversify their lending activity by enabling them to hedge their credit risk¹⁷. As a result, liquidity in the banking industry increases.

Moreover, credit default swaps, when their pricing is publicly available, provide an additional source of information about the reference entities’ financial health¹⁸. This information is probably more reliable and more timely than credit ratings published by rating agencies¹⁹.

¹⁵ *Id.* at 4-5.

¹⁶ *Id.* at 7.

¹⁷ *Id.* at 7.

¹⁸ *Id.* at 10.

¹⁹ *Id.* at 10.

D. Issues Associated with Credit Derivatives

Many issues are associated with credit derivatives. I mention below some of them.

First, credit derivatives reduce the banks' incentives to monitor their borrowers²⁰. More generally, credit derivatives might have "increased and redistributed credit risk in an undesirable manner"²¹. They were probably one of the reasons why the banks did not correctly monitor Enron²². The risk takers in credit derivatives lack a direct relationship with the borrowers to monitor them adequately²³, and they are also "less skilled and experienced in evaluating risk"²⁴. Credit derivatives may even give incentives to a buyer of protection to force a borrower to default²⁵. In particular, some creditors that are willing to trigger the settlement of credit derivatives transactions may refuse any concession in an insolvency procedure, even when it would lead to the destruction of economic value.

In their first days, credit derivatives also raised legal concerns. Should they be qualified as insurance products?²⁶ Are derivatives subject to restrictions related to gaming? Nowadays, these qualifications are generally denied in most jurisdictions.

²⁰ SCOTT, *supra* note 6, at 635-636; PARTNOY/SKEEL, *supra* note 14; THE ECONOMIST, "Credit Derivatives. At the risky end of finance", April 19th 2007.

²¹ See Hal. S. SCOTT, *International Finance: Transactions, Policy and Regulation* (Foundation Press, 14th ed., 2007 forthcoming), chapter 15, conclusion.

²² PARTNOY/SKEEL, *supra* note 14 at 19.

²³ SCOTT, *supra* note 6 at 635; PARTNOY/SKEEL, *supra* note 14 at 19.

²⁴ PARTNOY/SKEEL, *supra* note 14 at 19.

²⁵ SCOTT, *supra* note 6 at 635; PARTNOY/SKEEL, *supra* note 14 at 21.

²⁶ For the United Kingdom, see HARDING, *supra* note 2 at 18-19.

Moreover, the effectiveness of netting provisions, initially unclear in many jurisdictions, is by now largely secured.

Because the transactions are mainly traded over the counter, credit derivatives markets are quite opaque²⁷. In addition, a substantial part of ISDA documentation is not freely available to the public. This relative opacity makes it difficult for supervisory authorities and scholars to have a clear view of the risks involved.

The credit derivatives market is largely self-regulated. Self-regulation has clear advantages, but it has also its downsides²⁸. In particular, ISDA may tend to favour its members, and maybe even only a few of them, at the expense of others²⁹.

The duty of confidentiality of the banks towards their clients may be problematic: “banks need to be careful about what information they pass on about a borrower whose loan is the Reference Obligation in the credit derivative”³⁰. A related issue is insider trading, with some data strongly suggesting that banks use private information to trade on the credit default swaps market³¹.

The impact of credit derivatives on systemic risk is not fully clear. On the one hand, credit derivatives seem to reduce systemic risk by dispersing credit risk among numerous financial institutions, which helps the financial system absorb economic shocks. On the other hand, some investors such as hedge funds use substantial leverage.

²⁷ PARTNOY/SKEEL, *supra* note 14 at 23.

²⁸ *Id.* at 25.

²⁹ *Id.* at 25.

³⁰ HARDING, *supra* note 2 at 22.

³¹ See the study by Viral V. ACHARYA/Timothy C. JOHNSON, “Insider Trading in Credit Derivatives”, Working Paper (September 2005).

Credit derivatives raise concerns because of the size of the market and its exponential growth³². In particular, massive operational deficiencies in the credit derivatives market could threaten the soundness of the financial system.

Finally, several operational difficulties recently affected the credit derivatives markets. My paper will focus on these questions, i.e. the backlog of confirmations, the assignment of trades and the settlement issue.

II. Backlog of Confirmations

A. *The Issue*

Credit derivatives are almost exclusively traded over the counter. Counterparties typically conclude their transactions over the phone directly or through a broker³³. In principle, the parties should “capture” the trade in their internal systems for post-trade processing and risk management (“trade capture”)³⁴. Some counterparties choose to go through an additional step of verifying together some key economic details of the trade (“economic affirmation”)³⁵. Finally, the parties review and incorporate the full terms of the trade in a document called “confirmation”. Ideally, these confirmations should be made immediately or very shortly after the trade. In practice, until recently, dealers encountered considerable delays in their processing. The backlog of confirmations was

³² See namely THE ECONOMIST, *supra* note 20. See also PARTNOY/SKEEL, *supra* note 14 at 9: “Thus, while credit default swaps can diminish systemic risk (...) the market also has the potential to cause precisely the opposite effect”.

³³ Committee on Payment and Settlement Systems (CPSS), *New developments in clearing and settlement arrangements for OTC derivatives*, 12, available at www.bis.org/publ/cpss77.htm.

³⁴ *Id.* at 12.

³⁵ *Id.* at 18.

inflated by the practice of assigning trades without obtaining the prior consent of the original counterparties³⁶.

By 2004, the average backlog for large dealers represented more than twenty-three trading days³⁷. This situation raised considerable concerns among the supervisory authorities. Even though verbal contracts are enforceable in many jurisdictions, the lack of written confirmation is highly problematic, bringing much uncertainty to the market. First, parties may be unable to prove the details of a transaction in dispute³⁸. Second, the absence of documented transactions disrupts the information flow in firms, with errors in the books and records of a firm remaining undetected³⁹. As a result, firms may wrongly measure and manage their credit and market risk⁴⁰. Finally, a backlog leads to “margin and payment breaks and other problems in the trade life cycle”⁴¹.

B. Steps Taken to Address the Issue

In September 2005, supervisory authorities met the 14 major credit derivatives dealers and urged them to solve the issues of outstanding confirmations and assigned trades. The market participants promptly reacted.

³⁶ *Id.* at 2.

³⁷ *Id.* at 17.

³⁸ *Id.* at 18.

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.*

First, they increased their back office resources and made them work intensively to process the unconfirmed trades⁴².

Second, in order to prevent new backlogs from arising, the market participants progressively moved towards automated processing and information systems. Together with the Depository Trust & Clearing Corporation (DTCC), they developed a trade information warehouse, launched in November 2006, to provide a “trade database for credit derivatives and a central support infrastructure to facilitate automation and centralised processing of post-trade events” such as cash flows, novations and terminations⁴³. Moreover, electronic confirmation platforms such as Deriv/Serv now offer a way to speed up and improve the confirmation process⁴⁴. Thus, the percentage of trades electronically confirmed doubled between September 2005 and August 2006, with more than 80 percent of the total trade volume in August 2006⁴⁵. However, these platforms are designed for plain vanilla transactions. The lack of standardization of other products impedes them from being confirmed through automated systems⁴⁶. Moreover, it seems that many buy-side clients are waiting to see which automated

⁴² See for example Thomas F. HUERTAS, “One down, two to go? Challenges facing the global derivatives industry”, speech given on September 19, 2006 available on FSA website: www.fsa.gov.uk: “Industry literally attacked the legacy, with teams of operations experts pouring over old documentation and, in many cases, locking themselves in a room with similar groups of experts from their most frequent counterparties to confirm outstanding trades and/or to conduct a new trade that cancelled a large number of transactions”.

⁴³ CPSS, *supra* note 33 at 2.

⁴⁴ *Id.* at 19.

⁴⁵ *Id.*

⁴⁶ *Id.* at 20.

system will prevail⁴⁷. Though understandable, this approach might slow down the move towards automation. In addition to these changes, electronic trading of credit derivatives, to distinguish from electronic confirmation processing, is making its way. Eurex introduced exchange-traded credit derivatives contracts on March 27, 2007.

More generally, the market participants strove to improve industry practices and to implement them. In particular, they developed procession guidelines⁴⁸. These various moves have been a major success, resulting in a massive reduction of the backlog.

C. Lessons Learned and Solutions for the Future

The problem of backlog of confirmations has been largely solved. What are the lessons that we should draw? What are the long lasting solutions to ensure that the problem remains under control?

First, the issue has revealed a problem of information processing not only between the market participants, but also between the market and the prudential authorities. Before 2005, the authorities did not seem to have a clear view of what the financial institutions were doing in the credit derivatives market. It is unclear to what extent the situation has improved. We should pursue the efforts to improve the information flow between the major market participants and the supervisory authorities. The existing meetings to assess the progress made in the reduction of the backlog are a first step in the right direction. More generally, the issue underscored the lack of transparency in the OTC credit derivatives market.

⁴⁷ *Id.* at 20.

⁴⁸ *Id.* at 19.

Second, the market participants should put procedures in place to ensure that a major backlog will not reappear⁴⁹. Appropriate resources should be allocated on a permanent basis to the back office. As there will always be trades waiting to be confirmed, market participants should at least monitor the backlog and manage the risk associated with the residual unconfirmed trades⁵⁰.

Finally, the move towards electronic processing should be pursued, and, as far as possible be extended to non-plain vanilla products. Electronic trading brings even more certainty and swiftness, and should also be fostered.

III. Assignments of Trades

A. *The Issue*

The assignment (or novation) of a credit derivative trade is “the replacement of a contract between two initial counterparties to an OTC derivative trade (...) with a new contract between the remaining party and a third party”⁵¹. Assignments of trades are authorized by the ISDA master agreement for derivatives⁵² and the Credit Derivatives Definitions (see sections 10.1 and following). However, the transferors must obtain the prior written consent of the original counterparty.

⁴⁹ *Id.* at 18.

⁵⁰ *Id.* at 21.

⁵¹ *Id.* at 4

⁵² See *Id.* at 33.

Ten years ago, the assignments of trades were rare. This practice has grown with the rise of hedge funds, which are now major participants in the credit derivatives market. Indeed, hedge funds often get out of their credit derivative positions through assigning their trades rather than by entering into an offsetting position or negotiating a termination of the contract⁵³. Hedge funds or others prefer assignments, because termination forces them to accept the price proposed by the original counterparty, and offsetting generates additional counterparty exposures and potentially additional margin requirements⁵⁴. As a result, assignments are very common nowadays. The March 2007 Report of the Committee on Payment and Settlement Systems indicates that, for interviewed dealers, the share of assignments in their OTC credit derivatives trades is roughly 25 percent⁵⁵.

It appeared that the market participants, and in first place hedge funds, often assigned trades without obtaining the prior consent of the counterparty⁵⁶. This practice was dangerous in many respects. First, it created legal uncertainty as regards the validity of assignments done without consent⁵⁷. Second, it increased the backlog of confirmations. Third, it confused the market participants about the identities of their counterparties, undermining the effectiveness of credit risk management. Fourth, it increased operational risk, with failures to make timely payments⁵⁸. Finally, on a large

⁵³ *Id.* at 4.

⁵⁴ *Id.* at 34.

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ *Id.*

scale, the confusion could ultimately undermine the “orderly resolution” of a default, thereby increasing systemic risk⁵⁹. The supervisory authorities raised their concerns in September 2005, urging the dealers to solve the issue together with the backlog of confirmations.

B. Steps Taken to Address the Issue

ISDA, supported by the dealers, developed a Novation Protocol, published in September 2005⁶⁰. The Novation Protocol requires written consent by close of business on the date the trade is assigned. The consent can be given through an exchange of electronic communications. If the consent is not obtained in that timeline, the transferor is deemed to be bound by two contracts, one with the original counterparty and the other one with the new counterparty⁶¹. Thanks to the mechanism, the market participants quickly processed the consent requests.

Moreover, the industry slowly moved towards electronic systems to automate the consent process. In particular, several electronic platforms, such as Deriv/Serv, added a functionality facilitating the assignment of trades, in particular the request for consent from the remaining party⁶². However, the process remains largely manual⁶³. Thanks to

⁵⁹ *Id.* at 34.

⁶⁰ The Novation Protocol, and its successor the Novation Protocol II, are *available at* www.isda.org.

⁶¹ See Annex 1 to the Novation Protocol II, art. 2 (e) (ii)(B). See also CPSS, *supra* note 33 at 34.

⁶² CPSS, *supra* note 33 at 15.

⁶³ *Id.* at 35.

the swift reaction of the market participants, “widespread inaccuracies in the remaining parties’ books seem to have disappeared”⁶⁴.

C. Lessons Learned and Solutions for the Future

The problem of assigned trades without prior consent has been largely solved. The lessons learned are the same as for the backlog of confirmations. First, the prudential authorities discovered very late the scale of the problem. They should put in place procedures giving them a better vision of the OTC markets. Second, the market participants should maintain procedures to monitor the risk of resurgence of the problem, and mitigate it⁶⁵. Finally, the move towards automated processing should be pursued.

IV. Settlement of Credit Derivatives

The most recent and most problematic operational issue is the settlement of credit derivatives. First, I will briefly present the conditions that trigger the Settlement of a Credit Derivative Transaction (A). I will then discuss Physical Settlement (B) and Cash Settlement (C). Finally, I will analyze the new Auction Protocols and how they relate to Physical and Cash Settlement (D).

A. Conditions to Settlement

When entering into their Credit Derivative Transaction, the parties choose the Settlement Method, i.e. Cash Settlement or Physical Settlement, and specify it in the Confirmation. They also specify in the Confirmation which Credit Events (Bankruptcy,

⁶⁴ *Id.* at 35.

⁶⁵ *Id.* at 18.

Failure to Pay, Obligation Acceleration, Obligation Default, Repudiation/Moratorium or Restructuration) trigger the Settlement.

If a Credit Event occurs, and provided the required notifications are made, the parties shall perform their respective obligations in accordance with the applicable Settlement Method (Section 3.1 of the Credit Derivatives Definitions), i.e. Cash Settlement or Physical Settlement. In addition to the occurrence of the Credit Event, the Credit Derivatives Definitions require some formal notices (Section 3.2 (a) of the Credit Derivatives Definitions). Cash Settlement requires a Credit Event Notice (Section 3.3 of the Credit Derivatives Definitions), and if specified in the related confirmation, a Notice of Publicly Available Information (Section 3.5 of the Credit Derivatives Definitions). Physical Settlement requires a Credit Event Notice, a Notice of Physical Settlement (Section 3.4 of the Credit Derivatives Definitions) and, if specified in the related Confirmation, a Notice of Publicly Available Information (Section 3.5 of the Credit Derivatives Definitions). I note that the Credit Event as such is not a condition for the Settlement, but is formalised in the Credit Event Notice.

1. Credit Event Notice

The Credit Event Notice (Section 3.3 of the Credit Derivatives Definitions) is “an irrevocable notice that describes a Credit Event that occurred on or after the Effective Date and on or before the Scheduled Termination Date”⁶⁶. A Credit Event Notice must describe in reasonable details the facts relevant to the determination that a Credit Event has occurred (Section 3.3 of the Credit Derivatives Definitions).

⁶⁶ See HARDING, *supra* note 2 at xiv.

The Credit Event (Section 4.1 of the Credit Derivatives Definitions) is one of an agreed list of events of default specified in the Confirmation. The potential Credit Events are “Bankruptcy”, “Obligation Acceleration”, “Obligation Default”, “Failure to Pay”, “Repudiation/Moratorium” and “Restructuring” (see Sections 4.2-4.7 of the Credit Derivatives Definitions for a definition of these various Credit Events).

The parties may specify that the Notifying Party will be the “Buyer” or the “Buyer or Seller” (Section 3.2 b) of the Credit Derivatives Definitions). If they specify “Buyer or Seller” in the Confirmation, or if they do not specify anything, then the Credit Event Notice is satisfied by the delivery of a Credit Event Notice either by the Buyer of Protection or by the Seller of Protection to the other party (Section 3.2 b) (ii) of the Credit Derivatives Definitions).

2. Notice of Publicly Available Information

If specified in the related confirmation, the party delivering the Credit Event Notice shall also deliver a Notice of Publicly Available Information (Section 3.6 of the Credit Derivatives Definitions) which “evidences the existence of a Credit Event from pre-agreed sources of published information”⁶⁷.

3. In Case of Physical Settlement: Notice of Physical Settlement

If the Physical Settlement Method is applicable, the Buyer must deliver a Notice of Physical Settlement to the Seller no later than 30 days after the other notices are delivered (Section 3.4 of the Credit Derivatives Definitions). The Notice of Physical Settlement (i) irrevocably confirms that the Buyer of Protection will physically settle

⁶⁷ *Id.* at xiv.

the Credit Derivative Transaction and (ii) contains a detailed description of the Deliverable Obligations that the Buyer of Protection will deliver to the Seller.

B. Physical Settlement

Credit derivatives began “as a method for banks to transfer risk off their balance sheets”⁶⁸, for which Physical Settlement was the natural Settlement Method because the banks used to hold the Reference Obligations. While Physical Settlement remains the main method of settlement (73 percent of all trades according to a 2006 survey by the British Bankers’ Association)⁶⁹, it is giving ground in favour of Cash Settlement. This shift is supported by the major supervisory authorities, mainly the Federal Reserve Bank of New York and the Financial Services Authority, because of the bonds squeeze issue that I will describe later.

1. How It Works

As noted above, the Parties may choose, at the Trade Date, to physically settle their Credit Derivatives Transaction by specifying “Physical Settlement” in the Confirmation. Simultaneously, the parties agree on the nature and the characteristics of the assets – the Deliverable Obligations (Section 2.15 of the Credit Derivatives Definitions) – that the Buyer may deliver to the Seller to fulfil his obligation. The Deliverable Obligations may, but do not have to, include the Reference Obligations.

To be triggered, Physical Settlement requires a Credit Event Notice, a Notice of Physical Settlement and, if specified in the related Confirmation, a Notice of Publicly

⁶⁸ PYBURN, *supra* note 12.

⁶⁹ BRITISH BANKERS ASSOCIATION, *Credit Derivatives Report 2006*, 2006, at 7. available at http://www.bba.org.uk/content/1/c4/76/71/Credit_derivative_report_2006_exec_summary.pdf

Available Information (section 3.2 (a) of the Credit Derivatives Definitions). In the Notice of Physical Settlement, the Buyer describes in detail the Deliverable Obligations that he will deliver to the Seller, including their nominal value and accrued but unpaid interests (Section 3.4 of the Credit Derivatives Definitions). The Buyer then presents the Deliverable Obligations to the Seller for payment of the notional amount of the transaction (“Physical Settlement Amount”)⁷⁰.

The 30-day notification deadline (Section 3.4 of the Credit Derivatives Definitions) and the delivery deadline are especially meaningful when the total notional amount of Credit Derivatives transactions is higher than the total notional amount of Deliverable Obligations⁷¹. Indeed, if all parties to Credit Derivatives Transactions had to physically settle their transactions the same day, there would certainly be a shortage of bonds. With the time window offered by the notification and delivery deadlines, the same bonds can be used to settle different transactions on different days since some Sellers of Protection do not to keep the bonds they receive from Buyers of Protection but eventually resell them to third parties⁷². However, as we will later see, these time windows are no more sufficient to physically settle all trades and avoid a bonds squeeze, since the total notional amount of Credit Derivatives Transactions is nowadays

⁷⁰ See section 8.5 of the Credit Derivatives Definitions 2003: Physical Settlement Amount = Floating Rate Payer Calculation Amount x Reference Price. According to section 2.4 of the Credit Derivatives Definitions, the Reference Price “means the percentage specified in the related Confirmation or, if a percentage is not so specified, one hundred percent”.

⁷¹ See Chris CROWLEY/Nishul SAPERIA, “CDS: Physical vs Cash Settlement”, *Derivatives Week*, January 16, 2006.

⁷² *Id.*

a multiple (more than 10 times in the case of Delphi⁷³) of the total notional amount of Deliverable Obligations.

2. Benefits of Physical Settlement

The most obvious advantage of Physical Settlement is that it “avoids the problem of price discovery inherent in Cash Settlement”⁷⁴. The Seller of Protection receives the “insured” assets (bonds or loans), which have an objective value that the parties do not need to discover. As a consequence, Physical Settlement does not require the determination of the current price of the bonds or loans. In contrast, the calculated Final Price in the Cash Settlement Method may not accurately reflect the real value of the Reference Obligations, because the quotations of defaulted bonds are highly unstable.

Secondly, the Seller may prefer Physical Settlement over Cash Settlement if he thinks he can obtain a higher recovery price by holding the assets or joining a work-out group⁷⁵.

Finally, under Physical Settlement, the Seller receives the Deliverable Obligations. If he holds them, he will be able to exercise certain rights in the insolvency procedure/bankruptcy to protect his claims. In contrast, under a Cash Settlement, the Seller bears the credit risk of the Obligations without having the rights associated to the latter. This situation is similar to that of an investor exposed to the market risk linked to

⁷³ FITCH RATINGS, “Delphi, Credit Derivatives, and Bond Trading Behavior After a Bankruptcy Filing”, November 28, 2005, *available at* www.fitchratings.com: “the total credit derivatives market for Delphi is approximately \$28 billion, versus only \$2.2 billion par of bonds and \$3 billion in loans outstanding”.

⁷⁴ HARDING, *supra* note 2 at 134.

⁷⁵ *Id.* at 134.

the shares of a corporation without being able to exercise any shareholder's rights, for example because his shares are on loan.

3. Issues

a) Determination of Deliverable Obligations

A first issue is the determination of the Deliverable Obligations.

The Credit Derivatives Definitions deal with the determination of the Deliverable Obligations in Sections 2.15 and following. The parties specify in the Confirmation the Category (Payment, Borrowed Money, Reference Obligations, Bond, Loan, Bond or Loan, only one of which may be specified in the Confirmation) and the Characteristics of the Obligations (Not subordinated, Specified Currency, Not Sovereign Lender, Not Domestic Currency, Not Domestic Law, Listed, Not Contingent, Not Domestic Issuance, Assignable Loan, Consent Required Loan, Direct Loan Participation, Transferable, Maximum Maturity, Accelerated or Matured and Not Bearer). According to Sections 2.16 and 2.17 of the Credit Derivatives Definitions, parties may also expressly exclude some Obligations.

Despite the detailed rules provided by the Credit Derivatives Definitions (section 2.15 and following), some uncertainty remains⁷⁶. In particular, the "Subordination" Characteristic was recently discussed in the context of the Calpine bankruptcy⁷⁷, where

⁷⁶ Before the 2003 Credit Derivatives Definitions, there were discussions concerning the "Non Contingent" Characteristic, see the cases cited and described in HARDING, *supra* note 2 at 68-69. Concerning the Deliverable Obligations and the related issues, see mainly SCOTT, *supra* note 6 at 630-635.

⁷⁷ DERIVATIVES WEEK, "Calpine sparks debt classification debate", *Derivatives Week*, December 26, 2005.

it was unclear whether “contingent convertible notes” were subordinated or not. ISDA is currently working on standards setting up a dispute resolution system to address any disagreement as regards the determination of Deliverable Obligations. The new system should be integrated in the 2007 Credit Derivatives Definitions⁷⁸. However, the process of identifying experts without bias appears to be strenuous⁷⁹.

b) Operational Burden of Physical Settlement

Physical Settlement requires the determination of Deliverable Obligations and their delivery to the Seller, which involves some operational efforts. Moreover, the Buyer does not often hold the Deliverable Obligations and needs to purchase them in the market. The search for bonds is often operationally burdensome, in particular when many other Buyers of Protection rush on the same Deliverable Obligations further to, or just before, the occurrence of a Credit Event. Even more problematic is the effect of this rush on the price of the bonds, as we will see later.

c) Residual Exposure for the Seller of Protection

The Seller of Protection takes delivery of the defaulted Obligations. If he keeps them, he will bear a residual exposure to the defaulted company, creating a position that must be managed. The process can be time and resource consuming⁸⁰.

d) Monitoring of Offsetting Positions

Market participants have sometimes offsetting positions in Credit Derivative Transactions: they are Sellers in some transactions and Buyers in others. In such cases,

⁷⁸ PYBURN, *supra* note 12.

⁷⁹ Allison PYBURN, “ISDA Seeks Experts Sans Bias”, *Bank Loan Report*, November 20, 2006.

⁸⁰ CROWLEY/SAPERIA, *supra* note 71

the participants should monitor both the input and output of bonds and strive to discover which bonds they will receive before having to announce which ones they will deliver. If there are “multiple Deliverable Obligations trading at different prices”, the participants should avoid purchasing expensive bonds (which they will in turn deliver as Buyers), while receiving cheaper bonds as Sellers⁸¹. Inadequate monitoring may result in substantial losses.

e) Bonds Squeeze

The most important issue for Physical Settlement is the so-called “bonds squeeze”.

The problem can be summarised as follows⁸². With Physical Settlement, the Buyer must provide the Seller with Deliverable Obligations after occurrence of the Credit Event. If the Buyer does not own the Deliverable Obligations, which is quite usual, he must purchase them in the market. If the total notional value of Credit Derivatives is much larger than the total notional value of Deliverable Obligations, then a shortage of Deliverable Obligations may occur. The Buyer can avoid this problem by keeping Deliverable Obligations or purchasing them in anticipation, i.e. not waiting for the occurrence of the Credit Event to acquire them.

The shortage is problematic in two respects. First, the Buyer may face operational difficulties in purchasing the bonds and may even not get them on time. Second, a shortage has a substantial impact on the price of the bonds. As a consequence, the economics of the Credit Derivatives Transactions might be substantially distorted. The Buyer will bear higher costs, because he must purchase the Deliverable Obligations

⁸¹ *Id.*

⁸² See mainly FITCH RATINGS, *supra* note 73.

at an inflated price, while he will receive a fixed amount from the Seller, i.e. the notional amount of the Credit Derivative Transaction.

The issue of “bonds squeeze” has become crucial due to the exponential growth of the Credit Derivatives market. The first striking case involving a “bonds squeeze” was the Delphi’s bankruptcy, which showed the impact that the Credit Derivatives market can have on defaulted bonds’ prices. At the time of the bankruptcy filing in October 2005, the volume of outstanding Credit Default Swap transactions was ten times larger than the volume of the Obligations⁸³.

A study by Fitch Ratings shows that trading volumes on Delphi’s bonds in the weeks after the bankruptcy filing have been at “extremely high levels”, even multiples of the trading volume registered before the bankruptcy filing⁸⁴. The study contrasts the situation of Delphi with that of other bankrupted issuers during the same period, for which volumes declined very fast after a rise in trading volume around the time of the filing, likely because of a smaller Credit Derivatives market for these issuers⁸⁵. Moreover, these trades were mainly driven by sellers (i.e. there was a net selling interest), whereas the trades in Delphi’s bonds were driven by buyers (i.e. there was a net buying interest) in the weeks following the bankruptcy filing⁸⁶.

The classical explanation for the existence of a buying interest in bonds of a distressed entity is that the buyers consider the ultimate recovery value of the bonds as

⁸³ Saskia SCHOLTES, “Dura provides test for new settlement rules”, *Financial Times*, November 2, 2006.

⁸⁴ FITCH RATINGS, *supra* note 73 at 2.

⁸⁵ *Id.* at 2-4.

⁸⁶ *Id.* at 5.

being higher than the current trading price⁸⁷. The sellers tend to discount their bonds to avoid an uncertain and time-consuming recovery procedure. However, this theory was insufficient to explain the level of intensive trading and the rise of the bonds price in the Delphi case. In particular, Fitch Ratings assigned an R6 recovery rating to Delphi's senior unsecured obligations, corresponding to a recovery of 0-10 percent, which was "far below current trading levels"⁸⁸. Therefore, the most likely explanation for the intensive trading and the open buying interest was that (i) Buyers of Protection rushed on the market in search for Deliverable Obligations and (ii) some other participants anticipated the "bonds squeeze" and purchased bonds to realize a quick gain⁸⁹.

The Fitch Ratings' study correctly concludes that the trading was probably technically driven as opposed to fundamentally driven. Technically driven trading may cause dislocations in price that could ultimately reverse, depending on the real economic recovery prospects⁹⁰. The result is a substantial economic distortion, with a loss for the Buyer of Protection. As highlighted by the Delphi case, settlement is not only a back-office issue, but may affect on the economic essence of credit derivatives⁹¹. In view of the major threat posed by this issue to the Credit Derivatives market, ISDA reacted very fast to find solutions, in particular by developing new Protocols which I

⁸⁷ *Id.* at 5.

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Id.*

will discuss later. Physical Settlement is becoming impractical because of the sheer size of the market⁹².

f) Bonds Redemption

As noted by Hal S. Scott, “the underlying problem with physical settlement is the unavailability of bonds”, and this can be taken to an extreme in case of bonds redemption⁹³. In April 2006, there was some speculation that Air France might buy back its Euros 450m convertible bonds. Because the security is Air France’s only bond issue, investors feared that there would be no bonds to deliver in the Credit Default Swap. As a result, the price of Air France default swaps lost more than 20 percent. The Sellers of Protection would be, of course, extremely favoured in this case, because they would not have to pay the compensation in case of the occurrence of an Event of Default since the Buyer of Protection would not be able to trigger the protection mechanism by delivering the bonds⁹⁴.

g) Issue of Bonds by a New Entity/Succession Issue

Bonds might be unavailable for other reasons than “bonds squeeze” and bonds redemption, with an effect on the price of the Credit Default Swaps. For example, a company may issue bonds from a subsidiary (new entity) not referenced in the Credit Default Swap⁹⁵. After the bonds issued by the parent entity have come to maturity, the Credit Default Swaps are worthless, because the Buyer of Protection is no longer able to

⁹² PYBURN, *supra* note 12.

⁹³ SCOTT, *supra* note 6 at 632.

⁹⁴ *Id.* ; see also I. SIMENSEN, “Price Dip for Air France’s CDS”, Financial Times, April 21, 2006.

⁹⁵ See SCOTT, *supra* note 6, at 637.

present the Deliverable Obligations and trigger the payment by the Seller of Protection. When Rentokil Initial issued bonds from a new entity in March 2006, Credit Default Swaps prices fell because investors realised that the Buyers of Protection could not deliver the new bonds to trigger the payment and that the bonds previously issued would soon come to maturity⁹⁶. In reaction to this case and to similar cases (ITV, GUS, WPP, VNU, Cablecom), Cliver Horwood commented that corporations must “recognize that they need to care about their CDS investors and that the old attitude of concentrating on the requirements of bondholders alone will no longer wash”⁹⁷. Moreover, he notes that a growing number of investors in Credit Default Swaps also buy the underlying bonds in order to have a “place at the table” when something possibly detrimental to their CDS contracts happens.

Succession events raise critical concerns for Credit Default Swaps. “Succession” occurs when one corporate entity succeeds another as a result of a “merger, consolidation, amalgamation, transfer of assets or liabilities, de-merger, spin-off, or other similar event” (Section 2.2 (b) of the Credit Derivatives Definitions). Succession may also be problematic for the settlement, because it may lead to the situation where there are no more bonds as referenced in Credit Default Swap contracts, with the Buyer being unable to deliver the bonds and, thus, trigger the payment obligation from the Seller. As a result, the protection by the Seller becomes worthless. ISDA is currently working on the Succession issue⁹⁸.

⁹⁶ SIMENSEN, *supra* note 94.

⁹⁷ Cliver HORWOOD, “Corporates and the CDS Market – Know your Market”, *Euromoney*, January 2007.

⁹⁸ See DERIVATIVE FITCH, “CDS Update: Cash Settlement Protocol, Loan CDS Index, and Successor Events”, November 17, 2006, *available at* <http://www.fitchratings.com/dtp/pdf4-06/iupd1117.pdf>.

C. Cash Settlement

Cash Settlement is the alternative Settlement Method to Physical Settlement (26 percent of all Credit Derivatives Transactions according, to the BBA Survey⁹⁹). In view of the issues raised by Physical Settlement, supervisory authorities favour Cash Settlement, which is becoming increasingly widespread.

1. How It Works

Under a Cash Settlement procedure, the Seller transfers a cash amount to the Buyer after the occurrence of a Credit Event (“Cash Settlement Amount”). The Buyer of Protection does not have to deliver the bonds.

The Cash Settlement Amount is sometimes a fixed amount determined in advance by the parties (only 3 percent of Credit Derivatives Transactions according to the BBA survey 2006¹⁰⁰). More often, the Cash Settlement Amount is the result of a calculation based on the market prices for defaulted Reference Obligations (23 percent of Credit Derivatives Transactions¹⁰¹). More precisely, the Cash Settlement Amount (Section 7.4 of the Credit Derivatives Definitions) is the Floating Rate Payer Calculation Amount multiplied by the Reference Price minus the Final Price (but minimum 0). In other words, the Seller pays the Buyer the notional amount of the trade (Floating Rate Calculation Amount) multiplied by the loss of value of the defaulted Reference Obligations. By doing so, the Seller covers the loss of value of the Reference Obligations caused by the Credit Event.

⁹⁹ BRITISH BANKERS ASSOCIATION, *supra* note 69 at 7.

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

The Floating Rate Payer Calculation Amount (Section 2.13 of the Credit Derivatives Definitions) is an amount specified in the Confirmation. It is the quantitative measure of the Credit Derivative Transaction, the “notional amount of the Credit Derivative Transaction”¹⁰².

The Final Price (Section 7.4 of the Credit Derivatives Definitions) is the price of the Reference Obligation, expressed as a percentage, determined in accordance with the specified Valuation Method. The Calculation Agent, usually the Seller¹⁰³ but possibly the Buyer or a third party, is responsible for the determination of the Final Price. The Final Price is determined through a Valuation Method (Section 7.5 of the Credit Derivatives Definitions). The parties choose, at the time of the trade, between methods based on the “market value” of the Reference Obligations, and methods based on the “highest quotations” of the Reference Obligations. The degree of complexity of the Valuation Method and the choice opened to the parties depend on the number of Reference Obligations and on the number of Valuations Dates involved. There is often only one Valuation Date¹⁰⁴.

If the parties specify only one Reference Obligation and one Valuation Date (Section 7.5 (a) of the Credit Derivatives Definitions), the Valuation Methods available to them are “Market Value” (Final Price equals the Market Value of the Reference Obligation) and “Highest Value” (Final Price equals the highest quotation obtained by the calculation agent with respect to the Valuation Date).

¹⁰² HARDING, *supra* note 2 at 121.

¹⁰³ *Id.* at xii.

¹⁰⁴ CROWLEY/SAPERIA, *supra* note 71.

If the parties specify one Reference Obligation but more than one Valuation Date (Section 7.5 (b) of the Credit Derivatives Definitions), the Valuation Methods available to them are “Market”, “Highest” and “Average Highest” (Final Price equals the mean of the highest quotations obtained by the calculation agent with respect to each Valuation Date).

If the parties specify more than one Reference Obligation and only one Valuation Date (Section 7.5 (c) of the Credit Derivatives Definitions), the Valuation Methods available to them are “Blended Market” (Final Price equals the mean of the Market Values for each Reference Obligation with respect to the Valuation Date) and “Blended Highest” (Final Price equals the mean of the highest quotations for each Reference Obligation with respect to the Valuation Date).

If the parties specify more than one Reference Obligation and more than one Valuation Date (Section 7.5 (d) of the Credit Derivatives Definitions), the Valuation Methods available to them are “Average Blended Market” (Final Price equals the mean of the average Market Values obtained for each Valuation Date) and “Average Blended Highest” (Final Price equals the mean of the average Highest Values obtained for each Valuation Date).

2. Benefits of Cash Settlement

Cash Settlement avoids many of the flaws of Physical Settlement. First, there is no need to determine the Deliverable Obligations. Second, Cash Settlement does not require any physical transfer of bonds from the Buyer to the Seller. Third, the Seller of Protection

does not have any residual exposure to the defaulted entity, because he does not receive any bonds¹⁰⁵.

Most importantly, the Buyer of Protection does not have to hold or purchase the bonds, and then to deliver them to the Seller of Protection in order to perform his obligations. As a consequence, Cash Settlement reduces the problem of “bonds squeeze”, because the Buyers do not need to rush on the market to purchase the defaulted bonds when a Credit Event occurs.

3. Issues

The most obvious issue in Cash Settlement is the price discovery¹⁰⁶, i.e. the determination of the value of the Reference Obligations. The Cash Amount to be paid by the Seller to the Buyer depends on the price of the Reference Obligations, which must be determined. In a Physical Settlement, there is no need to determine their price: the Buyer delivers the Deliverable Obligations and the Seller pays a notional amount.

The problem of price determination becomes extreme when there is a “bonds squeeze”, typically caused by the Physical Settlement of other Credit Derivatives Transactions. The “bonds squeeze” distorts the price of the bonds, as previously explained. This is an issue for Physical Settlement, caused by the Physical Settlement of many Credit Derivatives Transactions, but it is also a problem for Cash Settlement, because the parties need a market price to calculate the Cash Amount that the Seller must pay to the Buyer. In contrast to Physical Settlement, the Buyer cannot anticipate

¹⁰⁵ *Id.*

¹⁰⁶ HARDING, *supra* note 2, at 134, who refers to the “inherent” problem of price discovery in Cash Settlement.

the problem by holding the bonds or purchasing them in anticipation before the occurrence of a Credit Event.

D. The New Auction Protocol

The bonds squeeze was a threat to the existence of the credit derivatives market. Financial institutions could flee from the market because of the economic distortion caused by the bonds squeeze. More cynically, the existence of a very lucrative business was at stake.

Beginning with the Delphi case, ISDA developed Protocols to solve the problem¹⁰⁷. The major features of the Protocols are (i) a massive shift from Physical Settlement to Cash Settlement and (ii) an auction system to determine the price of the Reference Obligations.

ISDA first developed CDS Index Protocols. Each CDS Index Protocol was designed for a specific case of default, and covered index trades, i.e. excluding single-name trades: 2005 Delphi CDS Index Protocol, 2006 Dana CDS Index Protocol and 2006 Calpine CDS Index Protocol. However, the exclusion of single-name trades left bonds vulnerable to shortages: for example, the price of Delphi's bonds increased from about 55 cents on the dollar to about 70 cents before falling after the auction¹⁰⁸.

ISDA prepared a new Protocol designed to include single-name trades¹⁰⁹. The bankruptcy of Dura brought the first opportunity to implement and test the new Protocol (hereafter "the Dura Protocol"). ISDA plans to integrate the new Protocol in the new

¹⁰⁷ All Protocols are available at www.isda.org.

¹⁰⁸ SCHOLTES, *supra* note 83.

¹⁰⁹ PYBURN, *supra* note 12.

2007 Credit Derivatives Definitions. The whole process set up by the Dura protocol was short, with only one month between the publication of the Dura Protocol (November 8, 2006) and the Cash Settlement of Covered Transactions (December 12, 2006). The Auction took place on November 28, 2006. Trades formed under the Protocol were settled on December 4, 2006. The Cash Settlement of Covered Transactions took place on December 12, 2006.

I will analyse some major features of the new Protocol, based on the version used for the Dura bankruptcy. First, the new Protocol covers a wide range of transactions, including index and single-name transactions (1). Second, the Protocol only applies to the participants who adhered to it (2). Third, the Protocol provides the adhering parties with an easy way to amend their transactions from Physical Settlement to Cash Settlement (3). Fourth, it sets up an auction system, whose main goal is to determine a Final Price for the Cash Settlement of all Covered Transactions (4). Finally, I will discuss the pros and cons of the new Protocol and present some troubling data (5).

1. Transactions Covered

The new Protocol is applicable to outstanding transactions documented under either the 1999 or the 2003 Credit Derivatives Definitions, with a specified Reference Entity (“Dura” in the Dura Protocol). The new Protocol covers most types of transactions¹¹⁰: tranching or untranching transactions referencing an index or a portfolio, single name CDS transactions, constant maturity swap transactions; principal only and interest only transactions, first to default and nth to default transactions (“nth” meaning that the

¹¹⁰ See the definitions of covered transactions in the Section 6 of the Dura Protocol; see also ISDA, *Plain English Summary of the Auction Methodology in the 2006 Dura CDS Protocol*, available at www.isda.org.

settlement occurs after the default of a specified number of Reference Entities), recovery lock transactions and swaptions.

Moreover, the Protocol may expressly exclude some transactions. Thus, the Dura Protocol excluded some Index Transactions¹¹¹ and some non-index transactions (such as Reference Obligation Only Transactions, Loan Only Transactions, Preferred CDS Transactions and Fixed Recovery Transactions)¹¹².

2. Adherence to the Protocol

The application of the Protocol is limited to the adhering parties. After the publication of the Protocol (November 8, 2006 for the Dura Protocol), the participants must deliver their adherence letters (see Exhibit I of the Dura protocol) before a certain deadline (November 17, 2006 for the Dura Protocol). 327 parties adhered to the Dura Protocol, with only 12 participating bidders to the auction. According to ISDA, “dealers have reported that more than 95 percent of their counterparties with respect to a particular name adhered to the Protocols”¹¹³. ISDA acts as agent in the process.

By adhering to the Protocol, the parties amend the documentation governing the Covered Transactions entered into between them (see art. 1 of the Dura Protocol). Thus, the Protocol enables the adhering parties to modify the contractual terms of their Credit Derivatives Transactions in a centralized, large-scale and standardized way. There is no room for negotiation when adhering (see Art. 2 c of the Dura Protocol).

¹¹¹ See Dura Protocol, art. 6 Definitions, “Excluded Index Transaction”.

¹¹² See Dura Protocol, art. 6 Definitions, “Excluded Non-Index Transaction”.

¹¹³ ISDA, “Response to FSA Discussion Paper 06/6: Private equity: a discussion of risk and regulatory engagement”, March 6, 2007, *available at* www.isda.org.

The amendments, detailed in Schedule 1 of the Protocol, mainly relate to i) the shift from Physical Settlement to Cash Settlement and ii) the determination of the Final Price through an auction system. The detailed amendments vary, depending on the type of transactions involved, i.e. a) untranching transactions, b) tranching¹¹⁴ transactions based on CDX documentation¹¹⁵, c) tranching transactions not based on CDX documentation, d) Recovery lock transactions¹¹⁶ and e) equity swaptions¹¹⁷. I will not focus on the differences between the various transactions.

3. From Physical Settlement to Cash Settlement

A major amendment to the Covered Transactions is the shift from Physical Settlement to Cash Settlement. First, the parties shall settle their transactions “as if the Settlement Method specified in the Documentation were Cash Settlement” (Schedule 1, (a)(v); see also (c)(v), (d)(5), (f)(5)) notwithstanding anything contrary in the previous documentation. Moreover, the Final Price will be determined as described in the Auction Methodology, with the Final Price Determination Date as the Single Valuation Date. Finally, the Calculation Agent is no more obligated to provide any notice with

¹¹⁴ Concerning tranching, see HARDING, *supra* note 2 at 14.

¹¹⁵ CDX are indexes administered by Markit. Markit provides index history and daily composite pricing spreads to subscribers. Specific documentation is used with regards credit derivatives based on this index.

¹¹⁶ Dura Protocol, at 8: “ ‘Recovery Lock Transaction’ means a Credit Derivative Transaction in respect of which the Reference Price is specified in the relevant Documentation as a price less than 100 per cent and for which either Buyer or Seller can deliver a Notice of Physical Settlement.”

¹¹⁷ Dura Protocol, at 8: “ ‘Portfolio Swaption’ means any unexercised option to enter into a Covered Transaction (other than another Portfolio Swaption) referencing more than one Reference Entity.”

respect to Quotations or the Calculation of the Final Price, as it is originally required by Section 7.4 of the Credit Derivatives Definitions.

The shift from Physical Settlement to Cash Settlement for a massive number of participants and transactions is necessary to solve the problem of bonds squeeze. The complementary tool provided by ISDA is an auction between a few participants, enabling the determination of the Final Price.

4. The Auction Methodology

The other major feature of the Protocol is to set up an auction system in order to establish a Final Price.

Only twelve bidders participated in the Dura auction: Bank of America, Barclays, Bear Stearns, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, JP Morgan, Lehman Brothers, Merrill Lynch, Morgan Stanley and UBS¹¹⁸.

Exhibit 3 to the Dura Protocol describes in great detail the Auction Methodology. The auction procedure is conducted twice, once for all Covered Subordinate Transactions (Subordinate Auction), and once for all Covered Senior Non-Index Transactions (Senior Auction). Each auction leads to the determination of a Final Price, one for subordinate transactions, and one for senior transactions.

I distinguish two sub-auctions in each Auction: the preliminary auction and the main auction. The idea is to discover in a first stage the net amount of bonds that the participants to the auction are willing to sell or buy after the matching of their requests

¹¹⁸ See http://www.creditfixings.com/information/affiliations/fixings/auctions/2006/dura_senior and http://www.creditfixings.com/information/affiliations/fixings/auctions/2006/dura_subordinated.

(“Open Interest”) and to determine a first approximation of the bonds value (“Inside Market Value”). The second stage is the auction for the Open Interest.

a) The “Preliminary” Auction

In the preliminary auction, participants to the auction submit Inside Market Bids and Inside Market Offers, which are firm quotations (in percentage of par value of the bonds) to enter into Credit Derivatives Transactions on terms equivalent to the Representative Auction-Settled Transaction as defined in the Protocol, i.e. a standard single name CDS, physically settled at a pre-determined date¹¹⁹. Inside Market Bids and Inside Market Offers (i) have a fixed size (in Dura: \$10 mio for the Subordinate Auction, \$5 mio for the Senior Auction) - i.e. the participants are not allowed to bid/offer for more than these amounts - and (ii) include binding quotations. The participants to the auction also submit “Physical Settlement Requests”, which are requests to enter into Physical Settlements as buyer/seller but without quotations, which means that the Buyers/Sellers will settle at the Final Price (see below d) for a discussion of the qualification as “Physical Settlement”).

What are the outcomes of the preliminary auction?

First, trades are formed as result of the matching of Inside Market Offers with Inside Market Bids. These trades are defined as “Representative Auction-Settled Transactions”, for which the Settlement Method is said to be “Physical Settlement”. As we will discuss later, the Protocol uses the terminology of “Physical Settlement” for

¹¹⁹ See the definitions of Inside Market Bids and Inside Market Offers in the Exhibit 3 to the Dura Protocol.

transactions which are functionally closer to sales of bonds, and not to Credit Derivatives Transactions.

Second, ISDA calculates the Inside Market Midpoint (see below c)), which is a measure of the market value of the Reference Obligations based on the bids and offers submitted in the preliminary auction. As we will see later, the Inside Market Midpoint plays a major role in the main auction.

Third, ISDA calculates the Open Interest (see below c)), which is the difference between the Physical Settlement Sell Requests and the Physical Settlement Buy Requests. The Open Interest will be the object of the bids/offers in the main Auction.

b) Main Auction

In the “main” auction, the participants make bids and offers for the Open Interest. The Final Price will be determined on the basis of these bids and offers, except in some specific situations. The Final Price will be used in the settlement of trades formed under the Auction and in the cash settlement of all other trades covered by the Protocol.

c) The Values Determined by the Auction

The main values determined in the auction process are (1) the Inside Market Midpoint (2) the Adjustments Amounts (3) the Open Interest and (4) the Final Price.

(1) Inside Market Midpoint

The Inside Market Midpoint (Exhibit 3 to the Dura Protocol, (3)) is a value calculated on the basis of the Inside Market Bids and Inside Market Offers of the participants. The Bids and Offers are matched together (the highest bid with the lowest offer, etc.). The Inside Market Midpoint is a mean based on non-matched bids and offers. The non-

matched bids and offers taken into consideration are those in the closest half of the matched bids/offers, in order to exclude “extreme” values. If a single Inside Market Midpoint cannot be determined, then the process must be repeated.

The Inside Market Midpoint is very important, because it gives an indication of price useful for the participants in the “main” auction, and may also be the Final Price if there is no Open Interest after the “preliminary” auction. It also gives a cap for the determination of the Final Price (see below “Final Price”). The Inside Market Value is a tool to refine the discovery of an “adequate” Final Price, also making it less vulnerable to price manipulation (I will discuss this point later).

(2) *Adjustment Amount*

The Adjustment Amount (Exhibit 3 to the Dura Protocol, (4)) is a value derived from the difference between the Inside Market Midpoint and the prices at which trades are matched in the preliminary Auction (called “Adjustment Prices”) based on the Inside Market Bids and Inside Market Offers. The Adjustments Amounts must be paid to ISDA.

(3) *Open Interest*

The Open Interest (Exhibit 3 to the Protocol, (5)) is the difference between all Physical Settlement Sell Requests and All Physical Buy Requests. In the “main” auction, the participants make bids and offers for the Open Interest.

(4) *Final Price*

The Final Price is determined as follows (Exhibit 3 to the Protocol, (7))¹²⁰:

If there is no Open Interest, i.e. the Physical Settlement Buy Requests equal the Physical Settlement Sell Requests, the Final Price will be the Inside Market Midpoint.

If the Open Interest is a bid to purchase Deliverable Obligations, the Open Interest will be matched against all offers. If the Open Interest is an offer to sell Deliverable Obligations, the Open Interest will be matched against all bids. The Final Price will be the price associated with the highest matched offer or the lowest matched bid, as applicable. However, the Final Price will be capped at 1 percent of par higher of lower than the Inside Market Midpoint. For example, if the lowest matched bid is 22 percent, and the Inside Market Midpoint is 20 percent, then the Final Price will be 21 percent. If the lowest matched bid is 20.5 percent and the Inside Market Midpoint is 20 percent, then the Final Price will be 20.5 percent.

If, once all bids and offer have been matched to the Open Interest, part of the Open Interest remains, the Final Price will be a) 100 percent if the Open Interest is a bid to purchase Deliverable Obligations and b) 0 if the Open Interest is an offer to sell Deliverable Obligations¹²¹.

d) Are the Trades Formed under the Auction “Physically Settled”?

Three types of trades are formed in the auction procedure:

¹²⁰ For a summary of the determination of the Final Price, see the “Plain English Summary of the Auction Methodology in the 2006 Dura CDS Protocol”, at 3, *available at* www.isda.org.

¹²¹ *Id.*

- trades formed as result of the matching of Inside Market Offers with Inside Market Bids;
- trades formed as result of the matching of Physical Settlement Sell Requests and Physical Settlement Buy Requests;
- trades formed as result of the bids/offers made again the Open Interest in the main Auction.

All trades are said to form “Representative Auction-Settled Transactions”, physically settled, and which will be executed at the Final Price against delivery of the Deliverable Obligations. What does this mean?

In a physically settled Credit Derivative Transaction, the Buyer of Protection delivers the bonds and receives in return the “Physical Settlement Amount”. The Physical Settlement Amount is calculated on the basis of two fixed amounts decided at the time of the conclusion of the trade: the Floating Rate Calculation Amount (a quantitative measure of the trade) and the Reference Price (often 100 percent). In contrast, in the Representative Auction-Settled Transactions, the Reference Price is defined as being the Final Price determined in the auction¹²². The result is that the Representative Auction-Settled Transactions, designed as physically settled “Credit Derivative Transactions”¹²³, are from a functional viewpoint sales of bonds, and not

¹²² See Exhibit 3 to 2006 Dura Protocol (Auction Methodology), § 13, definition of “Representative Auction-Settled Transaction”, (f).

¹²³ See *id.*: “‘Representative Auction-Settled Transaction’ means a Credit Derivative Transaction incorporating the definitions and provisions contained in the Credit Derivatives, for which”...(b) “the Settlement Method is Physical Settlement”...(c) “the Deliverable Obligations specified are those defined as Deliverable Obligations is this Protocol” and (f) “the Reference Price is the Final Price determined pursuant to this Exhibit 3”.

credit derivatives. The auction organized by ISDA is therefore not an organized trade of physically settled Credit Derivatives Transactions, but an organized sale of bonds. This might possibly have consequences when considering the auction from a regulatory perspective. The Protocol should therefore be seen as implementing a large-scale Cash Settlement tied with an auction/sale of bonds to determine the Final Price, and not as a mixed system of Cash and Physical Settlement.

5. Is the new Protocol the Panacea?

From an operational point of view, the Protocol implementation and the auction process for Dura were well organized and successful. The new Protocol seems to have solved the “bonds squeeze” issue. As a consequence, ISDA intends to incorporate the auction methodology into the next version of the Credit Derivatives Definitions as a permanent solution. But is it really the panacea?

a) The Shift from Physical Settlement to Cash Settlement

The massive shift from Physical Settlement to Cash Settlement provided by the Protocol is necessary to deal with a credit derivatives market whose notional value is a multiple of the underlying market notional value. The main advantage of Physical Settlement – no price discovery is required – is outweighed by the considerable price distortion brought to the market because of the “bonds squeeze”. The Physical Settlement of credit derivatives is much more difficult than the Physical Settlement of many other derivatives, because it is triggered by a Credit Event, which implies that all transactions will be settled in a short period of time, typically after a bankruptcy filing.

The original cause of the problem, i.e. the enormous size of the credit derivatives with an exponential growth, remains a concern. Nobody knows the real

impact of credit derivatives on systemic risk. As noted by THE ECONOMIST, “nobody will be sure how robust credit derivatives are until they have been tested in a severe or financial downturn”¹²⁴. The massive shift from Physical Settlement to Cash Settlement allows the market to continue its growth, with all the good and possibly the bad that it implies.

b) The Auction System

In my view, the auction system is more problematic than the shift from Physical Settlement to Cash Settlement as such. Facing a technically driven distortion of prices, ISDA decided not only to lead a massive shift from Physical Settlement to Cash Settlement, but also to determine the Final Price through an auction system, and not through the ordinary market.

I understand the reasons which led ISDA to “extract” the price discovery process from the ordinary market and replace it by a centralized and unified procedure setting a single Final Price for a large-scale Cash Settlement of trades. It is true that the auction procedure avoids the difficulties of the Valuation Methods for Cash Settlement, as well as the problem of bonds squeeze. However, now that ISDA intends to incorporate the methodology as a permanent solution, it is necessary to assess whether the auction system is really the ideal solution and should become the standard for price discovery in the Cash Settlement process. Indeed, removing the price discovery process from the ordinary market to replace it by an ad-hoc market, the auction, is not a trivial move.

¹²⁴ THE ECONOMIST, *supra* note 20.

If we exclude the technical distortion of prices, an auction system will probably never be as efficient in the discovery of price as a deep and liquid market. A “club” of participating bidders, twelve in the Dura Auction, does not replace an active market shared by thousands of participants, able to integrate as much information as possible in the price formation process.

The auction system gives a few participating bidders the power to determine a value, the Final Price, which will impact hundreds or thousands of other participants. The limited number of participants in the auction possibly exposes the process to price manipulation¹²⁵, despite the various protection mechanisms put in place by ISDA¹²⁶. Indeed, some participants in the auction might have incentives to manipulate the Final Price in the auction. Let’s take a participating bidder with a large net position as a Buyer of Protection in Credit Derivatives trades. This participant might be tempted to try to lower the Final Price in order to maximize the Cash Settlement Amount that he will receive in the cash-settled trades. To the contrary, if he has a net position as Seller of Protection, he will have an incentive to try to maximize the Final Price in order to reduce the Cash Settlement Amount. The limited number of participants makes a price manipulation possibly easier than in a large and deep market.

¹²⁵ For some suspicions of price manipulation as regards the Delphi auction, see the blog <http://streetwiseprofessor.com> → March 13, 2006 (“Cash Settlement of Credit Derivatives: a Cure or a Nostrum?”).

¹²⁶ This includes a two steps auction with an Inside Market Midpoint, exclusion of lowest/highest unmatched values from the calculation of the Inside Market Midpoint, exclusion of unmatched offers/bids from the calculation of the Final Price etc.)

Besides, even without any attempt to manipulate prices, the mere existence of the auction, may impact the bonds trading and pricing behaviour, impeding the smooth functioning of the bonds markets.

Finally, the whole process is managed by ISDA. Self-regulation in the financial sector is generally effective. Moreover, ISDA is a highly sophisticated, professional and efficient association. However, ISDA is fundamentally an association working for its members, and not an independent body with a public-interest mission. More generally, I suspect that only few people really understand the highly complex auction system. I hope that some of them work for prudential authorities, and keep an eye on the market.

c) Some Troubling Data

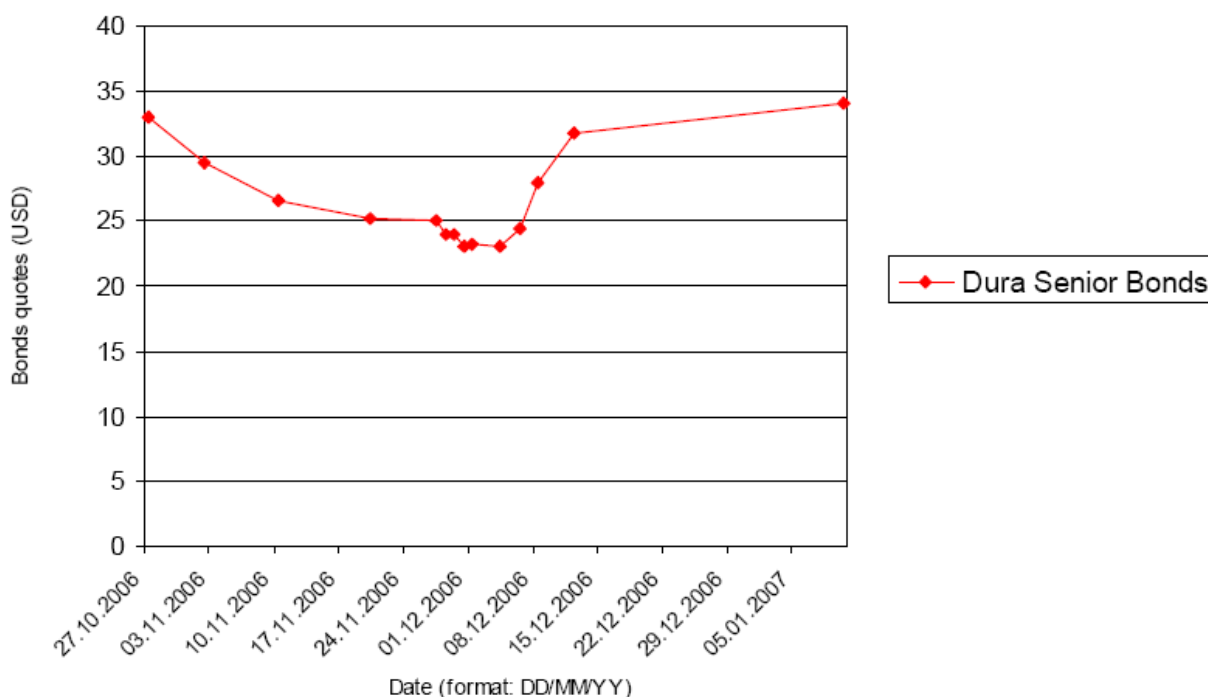
To my knowledge, no study has been published as regards the adequacy of the Final Prices determined through the Dura Auction. How do these Final Prices compare with the market value of the bonds? The auctions results can be found on www.creditfixings.com, a website operated by Creditex and Markit. Moreover, I obtained historical data on bonds prices on www.bondsonline.com. I note that Final Prices are expressed in percent and bonds' prices in USD. However, since the face value of the Reference Obligations is USD 100, the prices can be compared without conversion.

The chronology of events can be summarized as follows. On September 27, 2006, ISDA announced the publication of a Protocol including single-name credit derivatives. Dura filed for bankruptcy October 30, 2006. On November 2, 2006, it was already known that Dura would provide the opportunity to implement the new

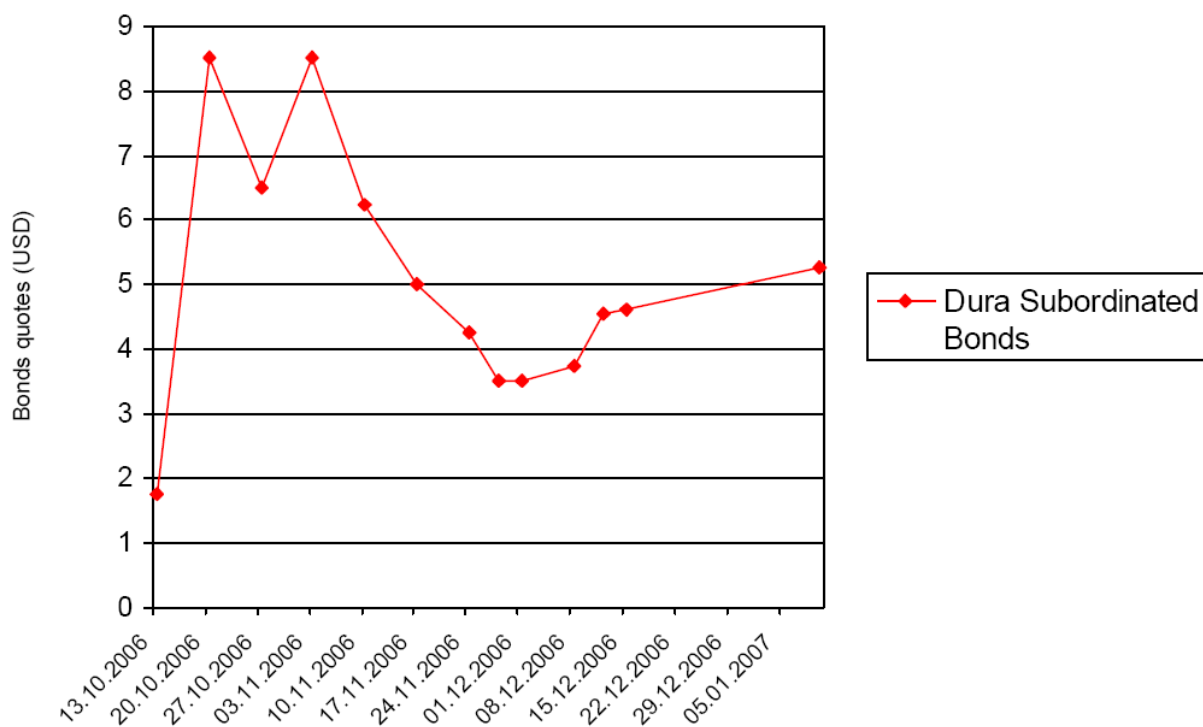
Protocol¹²⁷. The auction took place on November 28, 2006. Trades formed under the Protocol were settled on December 4, 2006. The Cash Settlement of Covered Transactions took place on December 12, 2006.

The figures and tables below represent the evolution of quotes for the Dura senior bonds (CUSIP 26632QAK9) and Dura subordinate bonds (CUSIP 26632QAH6).

¹²⁷ SCHOLTES, *supra* note 83.

Dura Senior Auction / Senior Bonds (CUSIP 26632QAK9)**Final Price: 24.125%**; Inside Market Midpoint: 24.875%; Net Open interest: \$20m (offer side)

Date (format DD/MM/YY)	Quote
19.07.2002	99.750
27.10.2006	33
11.02.2006	29.5
10.11.2006	26.5
20.11.2006	25.25
27.11.2006	25
28.11.2006 (Auction date)	24 (Final Price=24.125)
29.11.2006	24
30.11.2006	23
01.12.2006	23.25
04.12.2006	23
06.12.2006	24.50
08.12.2006	28
11.12.2006	31.5
12.12.2006 (Cash Settlement Date)	31.75 (Final Price=24.125)
10.01.2007	34.00

Subordinated Auction / Subordinated Bonds (CUSIP 26632QAH6)**Final Price: 3.5%**; Inside Market Midpoint: 4.25%; Net Open Interest : \$77m (sell side)

Date	Quote
13.10.2006	1.75
20.10.2006	8.5
27.10.2006	6.5
03.11.2006	8.5
10.11.2006	6.25
17.11.2006	5
24.11.2006	4.25
28.11.2006 (Auction date)	3.5 (Final Price=3.5)
01.12.2006	3.5
8.12.2006	3.75
12.12.2006 (Cash Settlement Date)	4.56 (Final Price=3.5)
15.12.2006	4.625
10.01.2007	5.25

My comments will mainly focus on the senior bonds:

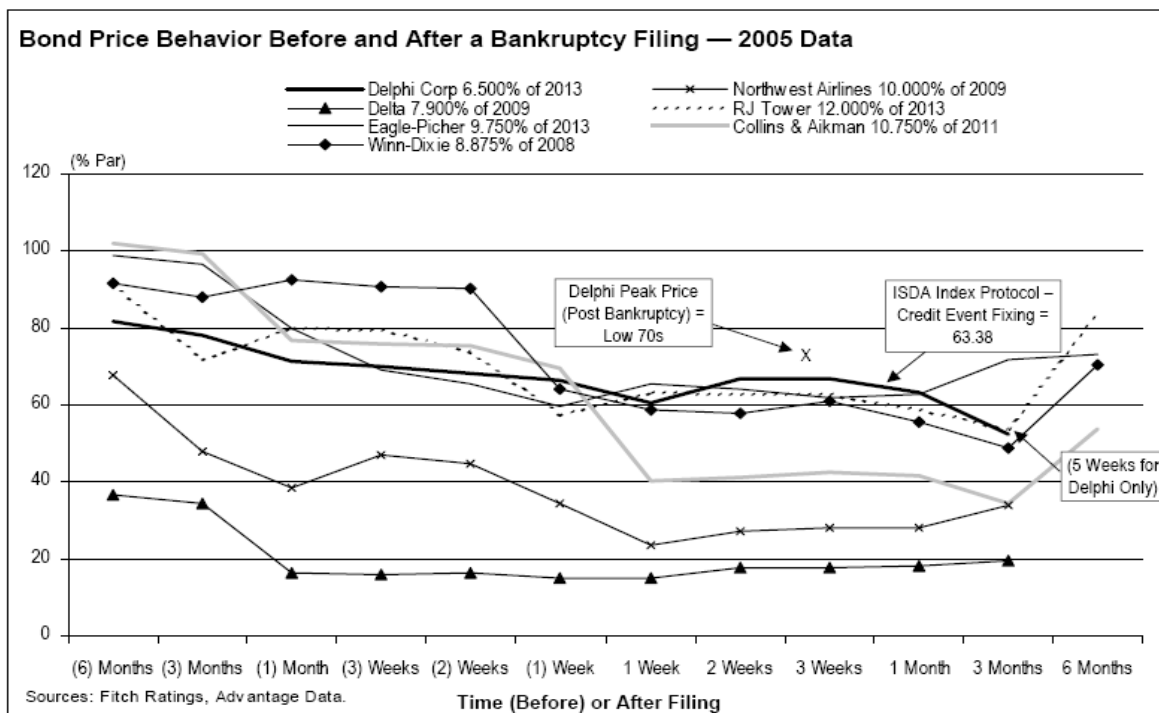
First, the Final Price determined by the auction is identical (for the subordinated bonds) or almost identical (for the senior bonds: Final Price of USD 24.125 to be compared with USD 24) to the bonds prices at the time of the auction.

The bonds prices decreased in the weeks after the bankruptcy filing and before the auction, meaning that no shortage occurred. In particular, there was no rise in price for the senior bonds after the bankruptcy filing, and a very short rise followed by a decrease for the subordinated bonds. In view of these data, it seems that the announcement of the Protocol avoided a bonds squeeze after Dura's bankruptcy filing. The decrease in bonds prices after the bankruptcy filing is a normal phenomenon in absence of a bonds squeeze due to credit derivatives.

The prices fell sensibly the day before and the days after the auction. Then, between December 4, 2006 and December 12, 2006, the prices for senior bonds rose sharply from USD 23 to USD 31.75, the latter amount being 32 percent higher than the Final Price. On January 10, 2007, the price of USD 34 was even slightly higher than the price of USD 33 on October 27, 2006, three days before the bankruptcy filing. How to explain this situation? The Fitch Ratings figure below brings us some preliminary indications about bonds prices behaviour before and after bankruptcy filings.

The data suggests that the Dura auction was not a neutral event for the bonds market. On the contrary, it seems plausible that the auction had a substantial impact on the prices curve. In particular, the sharp rise in prices ten days after the auction is suspect and should be clarified. Is there a causal relationship with the auction? The

Fitch Ratings' figure suggests that rises in prices happen after a bankruptcy filing. However, these rises (i) generally seem to occur more than two months after the bankruptcy filing, and (ii) are not as sharp as for Dura bonds.



Source: Fitch Ratings¹²⁸

It is interesting to note that, at the Cash Settlement Date, December 12, 2006, the senior bonds price was USD 31.75, to be compared with the Final Price of 24 as determined by the auction. Such difference should cause some frustration among the Sellers of Protection, which had to pay the Cash Settlement Amount on the basis of the Final Price.

¹²⁸ This figure originates from FITCH RATINGS, *supra* note 73 at 4.

These data do not prove price manipulation. More sophisticated and comprehensive research about bond pricing in the context of bankruptcy filings should be carried out, and the results should be compared with those of Dura. However, the presented data suggest that something happened, and this “something” should at least be better analyzed and understood.

Conclusion

Credit derivatives markets are both complex and opaque. As a consequence, their monitoring by prudential authorities is difficult. Considerable operational problems developed before being identified. More transparency in the market should be fostered to speed up the identification of operational issues.

The assignment of trades’ issue and the backlog of confirmations have been largely solved, thanks to the strong lead of prudential authorities and the fast reaction of ISDA and the market participants. In the future, the market participants should maintain procedures to monitor these risks. Electronic solutions should also be encouraged.

Because the notional value of the credit derivatives market is now a multiple of the total notional value of the underlying assets, Physical Settlement of credit derivatives is highly problematic. The shift from Physical Settlement to Cash Settlement, as provided by the new Protocol, is necessary for the survival of the Credit Derivatives market.

The auction system was probably a good *temporary* solution to solve the urgent problem of bonds squeeze. However, is it an appropriate *permanent* solution for the price discovery in Cash Settlement? In my view, the risks associated with an auction are

substantial. Alternative solutions using the prices available in the ordinary bond market should be assessed. We can think of a *centralized* way to evaluate the Final Price, based on multiple quotations at multiple dates, *without auction*. Besides, Cash Settlement with a pre-agreed Cash Settlement Amount, which does not require any price discovery, could be fostered. However, I must admit that pre-agreed Cash Settlement Amounts probably do not meet the needs of most financial institutions active in the credit derivatives market.

The issue of Physical Settlement underscored the enormous size of the market and its exponential growth. Nobody seems to know how the credit derivatives market will resist and impact the financial system in case of a major financial downturn. In particular, will “serial” Sellers of Protection be able to meet their obligations in case of multiple defaults? Part of the solution is to ensure that financial institutions adequately manage their risks associated with credit derivatives and do not take excessive leveraged positions. The opacity of hedge funds makes the task difficult for the prudential authorities.

We live in uncertainty as regards the seriousness of the threat posed by the exponentially growing credit derivatives markets. However, it is certain that operational issues inflate systemic risk and should therefore remain a high priority.

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- 2005 Matrix Supplement
- Credit Derivatives Physical Settlement Matrix and Confirmation
- Timeline for the Physical Settlement of a Credit Derivative Transaction

Following a Credit Event

- Net Settlement Agreement
- 2005 Novation Protocol
- ISDA Novation Protocol II
- CDS Index Protocols (Dana, Calpine, Delphi, Delta & Northwest, CKC)
- 2006 Dura CDS Protocol