

# A guide to Credit Events and auctions

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We provide the CDS investor with a comprehensive guide to Credit Events and auctions, breaking down the legal governing framework into easily digestible pieces. We aim to strike the fine balance between rigour and straightforward, plain-English explanations, illustrating concepts where appropriate with recent market examples.

Designed such that it can be read from start to finish or dipped into as a reference manual, the guide covers the theory, practicalities and topics of recent market focus:

- The legal backdrop: the ISDA documents and the relevance of the Big and Small Bang Protocols
- How the different types of Credit Events are defined
- Why there are different restructuring conventions, what they are, and which CDS contracts trade with which
- Who decides that a Credit Event has occurred, how and when
- How the auction process works, particularly in a Restructuring, including a worked example illustrating how the Restructuring auction maturity buckets are calculated
- The treatment of CDS indices, tranches, swaptions, fixed recovery CDS contracts and recovery locks following a Credit Event
- Lessons to be learned from the Anglo Irish, Thomson, Bradford & Bingley, GM and Fannie Mae & Freddie Mac Credit Events
- Frequently asked questions concerning euro zone sovereigns, currencies, the European Stability Mechanism and Restructuring events

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This guide is split into four sections:

- Section I is the most technical and contains the legal background required to understand Credit Events in the post Big and Small Bang world: what they are, how they are determined, the timetables involved and some of the complexities. Restructuring Credit Events are covered in detail.
- Section II explains the mechanics of the auction process, illustrated throughout with an example taken from the recent Anglo Irish Restructuring Credit Event.
- Section III completes the technical picture with a summary of the treatment of indices, swaptions, tranches, fixed recovery CDS contracts and recovery locks.
- Section IV then highlights the issues raised by some of the more interesting recent Credit Events. It concludes by addressing a few common questions of topical interest, primarily regarding sovereigns.

A glossary of useful terms is in the Appendix for reference: terms we define there are in italics where used in the main text and key ISDA-defined terms are typically capitalized.

N.B. The views expressed here are not based on legal opinion. They cannot and should not replace the full 2003 ISDA Credit Derivatives Definitions and supplements to which the reader is referred for a detailed understanding. This guide is also only intended to cover standard CDS trades as defined by the ISDA Credit Derivatives Physical Settlement Matrix and Confirmation. Readers should be aware that settlement details may differ for non-standard trades and are advised to seek legal advice for further clarification of the documents or for implications regarding their positions.

# Section I: Understanding Credit Events

## The governing documents

A Credit Default Swap (CDS) is a contract between two counterparties and covers the purchaser of CDS protection against the occurrence of a number of different Credit Events.

The transaction's terms and conditions, including its maturity date (the *Scheduled Termination Date*) and which Credit Events are covered, are defined in the trade "Confirmation". Standard *Confirmations* reference the 2003 ISDA Credit Derivatives Definitions (the "Definitions") and supplements: the May 2003 Supplement and the 2009 ISDA Credit Derivatives Determinations Committees, Auction Settlement and Restructuring Supplement. These provide the basic framework for CDS contracts and provide the standard set of definitions and provisions that govern the majority of CDS transactions. The aim of this document is to outline and discuss the most salient points.

### ISDA Credit Derivatives Physical Settlement Matrix and Confirmation

While the governing document for all CDS transactions is the 2003 ISDA Credit Derivatives Definitions and supplements, the majority of CDS contracts traded are standard contracts. These typically reference the ISDA Credit Derivatives Physical Settlement Matrix in their *Confirmation*: the terms in the Matrix apply as if specified directly in the *Confirmation*. Exhibit 20 summarizes the main characteristics of a few of the more frequently traded standard CDS contracts as provided in the Matrix.

## The implications of the Big and Small Bang Protocols

The Auction Settlement and Restructuring Supplements to the 2003 ISDA Credit Derivatives Definitions were published by ISDA in 2009 and incorporated into new<sup>1</sup> and existing CDS contracts through the Big Bang and Small Bang Protocols in April and July 2009, respectively. These supplements were introduced in parallel with a number of CDS convention changes (for further details of these please see our publication, *CDS Market Developments*, 22 June 2009) with the aim to further increase transparency and standardization of the CDS markets. They introduced the following changes:

- Auction settlement was hard-wired for Bankruptcy, Failure to Pay and Restructuring Credit Events
- The Determinations Committees were established
- The protection *Effective Date* was modified to incorporate a rolling look-back period

Taking each change that was introduced in turn:

### Auction settlement

Provided an auction is held, all standard CDS contracts now settle through a defined auction process following a Credit Event. In the event that an auction is not held, contracts settle in accordance with the fallback settlement method specified in the CDS contract. As shown in Exhibit 20, this is typically physical settlement. We explain the auction process in Section II.

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<sup>1</sup> Technically, signing up to the protocols only means that the supplements are incorporated into new trades until the end of January 2011. After this date, they must be incorporated directly into trade Confirmations to hold. As shown in Exhibit 20, they have already been included in the Matrix. They are also in the Standard Terms Supplement for index trades and all trades confirmed in DTCC automatically incorporate the Small Bang Protocol (and hence the Big Bang Protocol).

## Determinations Committees

The Determinations Committees (DC) operate in accordance with the Credit Derivatives Determinations Committees' Rules. There are five regional Determinations Committees (The Americas, Asia Ex-Japan, Australia/New Zealand, EMEA and Japan). Each is comprised of 15 voting members (eight global dealers, two regional dealers and five buy-side members), three non-voting members (two dealers and one buy-side member) and a non-voting secretary from ISDA. Membership of the DCs is reviewed annually.

Acting in accordance with the rules, a DC will deliberate on issues raised by market participants, including whether or not a particular type of Credit Event has occurred, on a given date. If the DC decides that a Credit Event has occurred, the DC will further determine the list of eligible Deliverable Obligations and decide whether or not one or more auctions will be held to settle the event. We provide further details of the timetable this process follows below.

## Rolling look-back period

A CDS contract provides protection from the *Effective Date* as specified in the CDS *Confirmation*. The rolling look-back provision was introduced to ensure fungibility of CDS contracts. All contracts, whenever they are traded, now have the same *Effective Date* and therefore provide protection for the same period. This is

- Current date - 60 calendar days for Credit Events
- Current date - 90 calendar days for Succession Events

This date rolls forward with time: the seller of CDS protection can therefore be liable to cover any losses arising from a Credit Event shown to have occurred in the last 60 days, at any given point in time. There is no business day adjustment to this date.

Prior to this change, the *Effective Date* was the day following the trade date of the contract and so two off-setting CDS contracts traded on different dates did not completely off-set Credit Event risk. For example, if an investor sold protection one week, and then covered his position by buying protection the following week, the investor remained exposed to any Credit Event subsequently found to have occurred in the first week, when the investor just had one (long risk) contract. In addition to ensuring contracts are properly off-setting, this change to the *Effective Date* facilitates market-wide compression of CDS contracts.

Succession Events were also impacted by this change but are beyond the scope of this piece. For further information on the way they work and some of the pitfalls to be aware of, the reader is referred to our publication: [ISDA Succession Events: Highlighting issues raised by current cases, 26 May 2010](#).

## Types of Credit Events

Credit Events include one or more of Bankruptcy, Failure to Pay, Obligation Acceleration, Obligation Default, Repudiation/Moratorium or Restructuring, as defined in the Definitions. Those relevant to a given CDS contract are specified in the *Confirmation*.

For standard North American and European corporates and financials, there are three types of Credit Event:

1. Bankruptcy
2. Failure to Pay
3. Restructuring (this is no longer applicable for US names but is included in some legacy trades)

For sovereigns, Bankruptcy is replaced by Repudiation/Moratorium – for a detailed summary of sovereign CDS, the reader is referred to our [Sovereign CDS Primer](#). Repudiation/Moratorium is also a Credit Event for many emerging market corporate contracts while Obligation Acceleration is a further type of Credit Event frequently included in both corporate and sovereign emerging market CDS. We summarise the relevant events for standard CDS contracts in Exhibit 1. Obligation Default is only used in bespoke CDS.

### Exhibit 1: Credit Events applicable to standard CDS contracts

	Bankruptcy	Failure to Pay	Restructuring	Repudiation/ Moratorium	Obligation Acceleration
NORTH AMERICAN CORPORATE	X	X	X		
EUROPEAN CORPORATE	X	X	X		
SUBORDINATED EUROPEAN INSURANCE CORPORATE	X	X	X		
EMERGING EUROPEAN CORPORATE	X	X	X	X	X
LATIN AMERICA CORPORATE	X	X	X	X	X
AUSTRALIA CORPORATE	X	X	X		
NEW ZEALAND CORPORATE	X	X	X		
JAPAN CORPORATE	X	X	X		
ASIA CORPORATE	X	X	X		
WESTERN EUROPEAN SOVEREIGN		X	X	X	
LATIN AMERICA SOVEREIGN		X	X	X	X
EMERGING EUROPEAN & MIDDLE EASTERN SOVEREIGN		X	X	X	X
AUSTRALIA SOVEREIGN		X	X	X	
NEW ZEALAND SOVEREIGN		X	X	X	
JAPAN SOVEREIGN		X	X	X	
ASIA SOVEREIGN		X	X	X	

Source: Credit Suisse, ISDA

### Hard vs. soft Credit Events

Bankruptcy, Failure to Pay, Repudiation/Moratorium, Obligation Acceleration and Obligation Default are all hard Credit Events: once they have been determined to have occurred, all outstanding CDS contracts on the entity are automatically triggered, with settlement between the protection buyer and seller.

Restructuring differs in that there is no automatic trigger of the CDS contract once a Restructuring occurs. It is up to the protection buyer or protection seller to decide whether or not to trigger (with only one required to trigger for the contract to be triggered). If neither party triggers by a specified deadline (further details on this below), the CDS continues until maturity or a future Credit Event.

### Bankruptcy

There can be quite a fine line between what is and is not classified as a Bankruptcy and readers are advised to check the exact provision in Section 4.2 of the Definitions for more detail because the definition of Bankruptcy is quite involved. It includes not just hard insolvency events determined through a court process, but also various events that may occur prior to or leading up to an insolvency. Broadly speaking a Bankruptcy event occurs if a Reference Entity

- Is dissolved (other than as a result of a merger, consolidation, etc.)
- Becomes insolvent or unable to pay its debts

- Makes a general assignment, arrangement or composition with or for its creditors
- Faces insolvency or bankruptcy proceedings
- Is wound up or liquidated
- Becomes subject to the appointment of an administrator, liquidator, conservator, receiver, trustee, custodian or similar for all/majority of its assets
- Has a secured party take possession of all/substantially all of its assets
- Causes or is subject to an event which is analogous to any of the above under the applicable laws of any jurisdiction

The exact language defining Bankruptcy contains a lot more detail and is beyond the scope of this piece, but the wording matters. The events at Fannie Mae and Freddie Mac triggered a Bankruptcy event because they were placed into conservatorship, and this term has a precise legal definition that classifies it as a Bankruptcy event. Events at Anglo Irish did not obviously fall into any of the above categories and triggered a Restructuring instead.

### **Failure to Pay**

This event is exactly as it says: if a Reference Entity fails to make a payment when and where due on one or more of its Obligations in an amount at least as large as the *Payment Requirement*, then once any applicable grace period has passed, a Failure to Pay event occurs.

### **Repudiation/Moratorium**

This is specific to sovereign (and emerging market corporate) CDS contracts and is not a Credit Event for standard North American and European corporate CDS contracts. Both of the following must occur:

1. For an aggregate amount of at least the *Default Requirement*, an authorized officer of the Reference Entity either (a) disclaims, repudiates, rejects or challenges the validity of one or more Obligations or (b) imposes a moratorium, standstill, roll-over or deferral with respect to one or more Obligations.
2. A Failure to Pay (determined without regard to the *Payment Requirement*) or a Restructuring (determined without regard to the *Default Requirement*) occurs with respect to any such Obligation on or prior to the Repudiation/Moratorium Evaluation Date.

The occurrence of 1. is referred to as a Potential Repudiation/Moratorium and if it occurs on or prior to the *Scheduled Termination Date*, the Repudiation/Moratorium Evaluation Date that determines 2. is effectively the later of:

- The date 60 days following the Potential Repudiation/Moratorium date.
- The first payment date after the Potential Repudiation/Moratorium date of one of the bonds impacted by the Repudiation/Moratorium (if the impacted Obligations include bonds).

If a Potential Repudiation/Moratorium occurs (on or after the *Effective Date* and on or prior to the *Scheduled Termination Date*) but 2. above does not occur prior to the *Scheduled Termination Date*, then the CDS contract can be extended to the Repudiation/Moratorium Evaluation Date by delivery of a Repudiation/Moratorium Extension Notice from one party to the other.

Effectively, what this means is that if a Potential Repudiation/Moratorium occurs in the period covered by the CDS contract, if this subsequently becomes a full Repudiation/Moratorium, it will be covered by the CDS contract even if part 2. above only happened after the *Scheduled Termination Date*.

## Restructuring

To qualify as a Restructuring Credit Event, one of the following must occur in a form that **binds all holders** to one or more Obligations in an amount of at least the *Default Requirement*:

- A reduction, postponement or deferral of Obligation principal or contractually agreed interest payments
- A change in priority ranking causing subordination to another Obligation
- A change in currency or composition of interest or principal payments to any currency which is not a *Permitted Currency*

The event must not have been expressly provided for in the terms of the Obligation in effect as of the later of (a) the *Credit Event Backstop Date* and (b) the issue date of the obligation. It must further:

- Arise directly or indirectly from a deterioration in the creditworthiness or financial condition of the Reference Entity
- Unless specified otherwise, satisfy the *Multiple Holder Obligation*: the Obligation that triggers the Restructuring Credit Event must be held by more than three holders and at least two-thirds of holders must be required to consent to the event. Bonds are deemed to automatically satisfy the two-thirds requirement but must be held by more than three holders.
- Not be due to an accounting or tax adjustment incurred in the normal course of business

The *Default Requirement* is usually \$10M (or relevant currency equivalent) unless specified otherwise in the *CDS Confirmation*.

*Permitted Currencies* are the legal tender of either any G7 country or any country that is a member of the Organisation for Economic Cooperation and Development (OECD) and has a local currency long-term triple A debt rating by S&P, Moody's or Fitch.

It is a key requirement for a Restructuring that one of the above changes occurs in a form that is binding on all holders. This can arise directly as a result of the restructuring process,

- through agreement between the Reference Entity or Government Authority and a sufficient number of holders to bind all holders, or
- as the result of an announcement or decree by a Reference Entity or Government Authority.

### Voluntary debt restructurings may or may not trigger CDS contracts

A voluntary debt restructuring would not count as a Restructuring unless in the process, all holders or one or more Obligations became bound to the restructuring. One way this could occur is if one or more of the restructured bonds contained a Collective Action Clause (CAC). If more than the required threshold of holders voluntarily agreed to the restructuring, it would become binding on all remaining bond holders, triggering CDS contracts.

This occurred in the case of Uruguay's voluntary debt restructuring in 2003. Uruguay's Samurai bond contained a CAC and over 99% of votes cast, representing 80% of bonds, agreed to amend the payment terms. Under the CAC, the remaining holders were bound by the majority decision, which therefore triggered CDS contracts.

Another way that sovereigns, in particular, often modify their debt profile is through a debt exchange. In and of itself, this would not typically trigger CDS contracts, as the terms of the existing Obligation would not usually be changed. Related events, however, may end up triggering CDS contracts. An example is the Anglo Irish tender in 2010, which we discuss below.

## Obligation Acceleration

This event occurs if one or more Obligations in a total amount of at least the *Default Requirement* become due and payable before they should as the result of a default or similar event, other than as the result of a failure to pay (since this would trigger a Failure to Pay event).

## Obligation Default

This event occurs if one or more Obligations in a total amount of at least the *Default Requirement* have become capable of being declared due and payable as the result of a default or similar event, other than as the result of a failure to pay (as this would trigger a Failure to Pay event).

## The importance of Section 4.1

The aim of Section 4.1 of the Definitions is to ensure that legitimate Credit Events are captured. It provides that an event is a Credit Event notwithstanding that it results from a change in the law or that there is a defense to it based on an applicable law. It is intended to capture situations such as that seen in the Russia crisis where legislation introduced by the government was aimed specifically to get around existing contract objectives. A more recent example of its applicability is the Bradford and Bingley Failure to Pay event, which we discuss in Section IV.

## The different Restructuring conventions

Restructuring conventions differ between corporate and sovereign CDS contracts, between North American and European corporates, and between sub and senior European insurance CDS contracts. It is therefore important to know what conventions are applicable and the implications. Restructuring conventions for standard, single-name CDS contracts are outlined in Exhibit 2.

### Exhibit 2: Restructuring conventions for standard, single-name CDS contracts

	No R	Old R	Mod R	Mod Mod R	Multiple Holder Obligation
NORTH AMERICAN CORPORATE	X				Applicable
EUROPEAN CORPORATE				X	Applicable
SUBORDINATED EUROPEAN INSURANCE CORPORATE		X			Applicable
EMERGING EUROPEAN CORPORATE		X			Applicable to loans, not bonds
LATIN AMERICA CORPORATE		X			Not applicable
AUSTRALIA CORPORATE			X		Applicable
NEW ZEALAND CORPORATE			X		Applicable
JAPAN CORPORATE		X			Not applicable
ASIA CORPORATE		X			Applicable
WESTERN EUROPEAN SOVEREIGN		X			Applicable
LATIN AMERICA SOVEREIGN		X			Not applicable
EMERGING EUROPEAN & MIDDLE EASTERN SOVEREIGN		X			Not applicable
AUSTRALIA SOVEREIGN			X		Applicable
NEW ZEALAND SOVEREIGN			X		Applicable
JAPAN SOVEREIGN		X			Not applicable
ASIA SOVEREIGN		X			Applicable

Source: Credit Suisse, ISDA

## Definitions

CDS contracts can trade with the following Restructuring conventions:

- No R:** Restructuring is not a Credit Event
- Old R:** Restructuring is a Credit Event; settlement is as for Bankruptcy and Failure to Pay Credit Events.
- Mod-R:** Restructuring is a Credit Event; the Restructuring Maturity Limitation and Fully Transferable Obligation provision is applicable
- Deliverable Obligations must be *Transferable* (bonds) or able to be assigned or novated (loans) without anyone's consent on the Delivery Date.
  - Deliverable Obligations are subject to a Restructuring Maturity Limitation Date for buyer-triggered contracts; there is no limitation date if the protection seller triggers the contract. We explain in detail below.
- Mod-Mod-R:** Restructuring is a Credit Event; the Modified Restructuring Maturity Limitation and Conditionally Transferable Obligation provision is applicable
- On the Delivery Date, Deliverable Obligations must be *Transferable* (bonds) or able to be assigned or novated (loans) without anyone's consent or where consent is required, provided that the terms of the Obligation are such that the consent may not be unreasonably withheld or delayed.
  - Deliverable Obligations are subject to a Modified Restructuring Maturity Limitation Date for buyer-triggered contracts; there is no limitation date if the protection seller triggers the contract. We explain in detail below.

In a Restructuring because sovereigns trade Old R they have no maturity limitation on Deliverable Obligations (beyond the usual 30 years) and no *Transferable* Obligation limitation.

## The rationale for the different conventions

Originally CDS contracts traded as Old R (also referred to as Full R). While Restructuring was still an optional event, the same Deliverable Obligations could be delivered as for other Credit Events.

The Mod-R and Mod-Mod-R Restructuring provisions were introduced in North America and Europe in 2001 and 2003, respectively, to minimize the value of the delivery option in the event of a buyer-triggered Restructuring Credit Event. Essentially, the Mod-R and Mod-Mod-R specifications limit the maturity of Deliverable Obligations in a Restructuring Credit Event in order to prevent protection buyers from delivering highly discounted long-dated non-Restructured bonds trading significantly below the Restructured bonds the CDS contract is theoretically hedging. This famously happened in the case of Consec, a US insurance company that restructured in 2000, prompting the changes.

Prior to 8 April 2009 North American CDS contracts typically traded Mod-R for investment grade names and No R for indices and high-yield single names. As most restructurings in the US take place under Chapter 11 of the US Bankruptcy Code, the invocation of which automatically triggers a Bankruptcy Credit Event, there is little incremental benefit to the majority of CDS protection buyers from the inclusion of Restructuring as a Credit Event in the US. When SNAC (Standard North American Corporate – see Appendix for further details) contracts were introduced in April 2009, the market therefore moved to trade No R in the US, bringing all single-name CDS and CDX indices into line.

The same does not hold in Europe, where Restructuring remains important for two main reasons:

1. The absence in many European jurisdictions of the equivalent of a Chapter 11 bankruptcy process through which firms can restructure
2. Under Basel rules, if Restructuring Credit Events are not covered, the capital relief available from hedging using CDS is significantly reduced

The Mod-Mod-R Restructuring clause therefore remains in the SEC (Standard European Contract) and contracts trade Mod-Mod-R for both European single names and iTraxx indices.

The exception are subordinated European insurance contracts which trade Old R. Because insurance companies rarely have any subordinated deliverables with fewer than ten years to maturity, the introduction of Mod-Mod-R language into sub insurance contracts would effectively semi-orphan short maturity CDS, as they would have only senior deliverables.

### **Some historical examples of Restructurings**

Credit Events are relatively few and far between, and Restructuring Credit Events more so. By their nature they have tended to be very idiosyncratic in nature and the few we have had in recent years have each been quite different, both in terms of the way they were triggered and the events leading up to the Restructuring. Three such events are:

#### **Anglo Irish (23 November 2010)**

Anglo Irish gave subordinated bondholders the right to voluntarily exchange their 2017 bonds for 20% face value of a one-year government guaranteed floating rate note. Holders of €690M of the total €750M issue (92%) decided to do so, tendering their bonds by the 19 November deadline. This was a voluntary exchange; on its own it would not have triggered CDS contracts. However, by tendering their bonds, bondholders also automatically agreed to vote for a change in the terms and conditions of the 2017 bonds, allowing the issuer to redeem all outstanding notes at €0.01 for every €1,000 face value. The required threshold for this vote to pass was 75% of bondholders, less than the 92% achieved. As this represented a reduction in the principal, arising as a result of a deterioration in the creditworthiness of Anglo Irish, and was binding on all holders, it was ruled to be a Restructuring Credit Event by the European DC on 24 November 2010.

#### **Thomson (22 October 2009)**

In August 2009, it became public that on 15 June 2009, Thomson had deferred payment of a privately placed note with the agreement of a "sufficient number of holders to bind all holders". The press release was phrased specifically to ensure that there was a Restructuring Credit Event in order to allow basis holders to settle their positions through the resultant auction. Because Thomson was in an instance of every single iTraxx index series from S1 to S11, and many CDOs, the outstanding notional on Thomson was huge and the smooth settlement of the event was a big test for the European CDS markets, coming just a few weeks after implementation of the Small Bang Protocol.

#### **Uruguay (2003)**

As outlined above, a voluntary debt restructuring led to the CDS triggering due to a Collective Action Clause in the restructured Samurai bond.

## Determining whether an event has occurred

Following the introduction of the Big Bang Protocol in 2009, the relevant Determinations Committee (DC) decides whether or not a Credit Event has occurred, and if so, the date.

Any *Eligible Market Participant* (any counterparty to a relevant CDS transaction) can raise a request to the DC, asking it to determine whether or not a Credit Event has occurred. This can be done outright, in the name of the institution, or anonymously, as a General Interest Question. When raising a question to the DC, two pieces of supporting publicly available information are required as evidence (only one piece is necessary if the information originates from the Reference Entity or agent).

The date the request is raised and the publicly available information is provided is known as the *Credit Event Resolution Request Date* and the event in question must have occurred in the previous 60 calendar days. This cutoff date is known as the *Credit Event Backstop Date*: any event occurring prior to this date is no longer able to trigger a Credit Event.

Once the DC has accepted the request, it will decide whether or not an event has occurred, seeking external advice where necessary. It may also decide not to accept the request. If a Credit Event is determined to have occurred, the relevant date for the calculation of accrued interest (i.e., the date protection payments stop) is the *Event Determination Date* (EDD). For standard contracts, this is defined as

- the *Credit Event Resolution Request Date* (if there has been a DC Credit Event Announcement), or
- the first date on which both the Credit Event Notice and Notice of Publicly Available Information are delivered from one counterparty to another (if there is no DC ruling)

The reader is referred to Section 1.8 of the Definitions to understand how the EDD is determined for non-standard contracts, as it can differ.

Full details of the request and decisions of the DC are available on the ISDA website.

## A question of Obligations

When investing in a CDS contract on a given Reference Entity, it is essential to have a full understanding of the entity's obligations. Two (overlapping) sets of obligations are important:

- **The Obligations of a Reference Entity** are relevant for determining whether or not a Credit Event has occurred
- **The Deliverable Obligations** drive the CDS recovery

A CDS Credit Event is triggered by a Failure to Pay, Bankruptcy, Repudiation/Moratorium or Restructuring on one or more of the Obligations (if in sufficient size). Understanding what constitute the Obligations of a Reference Entity therefore allows the investor to decide what situations would be likely to trigger the investor's CDS contract.

Once an event has occurred, protection buyers are entitled to deliver any of the specified Deliverable Obligations to settle the contract; it will be the value of these, therefore, that determines the recovery value for the CDS contract through the auction.

Determining the relevant pool of Obligations in each case is not always as straightforward as might be assumed. We outline some of the constraints and issues for each in turn.

## The Obligations of a Reference Entity

The Obligation categories for standard CDS contracts are outlined in Exhibit 3. For the majority of standard contracts, there are no restrictions beyond the fact they must fall under the *Borrowed Money* category. This typically means bonds and loans and broadly speaking, comprises any obligation from the company to repay borrowed money at some point in the future. This tends to include, for example, perpetuals and drawn revolving credit facilities. It does not include fully undrawn revolving credit facilities, preference shares, limited partnership interests or any other type of equity that has no repayment requirement.

An Obligation of a Reference Entity arises as either a direct Obligation or as a result of a Qualifying Guarantee. If All Guarantees is specified as applicable in the CDS *Confirmation*, all Qualifying Guarantees count; if not, only Qualifying Affiliate Guarantees apply. For all standard contracts shown in Exhibit 3 with the exception of North American Corporate, All Guarantees is applicable.

### Exhibit 3: Obligation categories for standard, single-name CDS contracts

	Borrowed Money	Bond or Loan	Bond
NORTH AMERICAN CORPORATE	X		
EUROPEAN CORPORATE	X		
SUBORDINATED EUROPEAN	X		
INSURANCE CORPORATE			
EMERGING EUROPEAN CORPORATE		X	
LATIN AMERICA CORPORATE*		X	X
AUSTRALIA CORPORATE	X		
NEW ZEALAND CORPORATE	X		
JAPAN CORPORATE	X		
ASIA CORPORATE		X	
WESTERN EUROPEAN SOVEREIGN	X		
LATIN AMERICA SOVEREIGN			X
EMERGING EUROPEAN & MIDDLE EASTERN SOVEREIGN			X
AUSTRALIA SOVEREIGN	X		
NEW ZEALAND SOVEREIGN	X		
JAPAN SOVEREIGN	X		
ASIA SOVEREIGN		X	

Source: Credit Suisse, ISDA

\* Specifications with either "Bond" or "Bond or Loan" are possible

### Direct Obligations

The direct Obligations of a Reference Entity should be the easiest to determine, but even here, we believe there are some grey areas that make it difficult to be certain in some cases.

Interest-only and principal-only strips are one example of an obligation that is not clear-cut from the Definitions. We can only go on precedent, which based on the Credit Events of Fannie Mae and Freddie Mac, indicates that principal-only strips are unlikely to be classed as either *Borrowed Money* or bonds, and are therefore unlikely to be Obligations or Deliverable Obligations. In a future event regarding strips it would, however, ultimately be a decision for the Determinations Committee to determine the issue for the specific situation.

Perpetuals are another set of securities that may or may not be *Borrowed Money*, depending on their exact formulation. Again, it would be for the Determinations Committee to decide, but the key is whether there are circumstances in which there would be an obligation of repayment. If there are none, or the holders' right of redemption is theoretical rather than real, it seems unlikely the perpetual would satisfy the *Borrowed Money* requirement.

Another important issue is to know exactly who the Reference Entity is and what are classified as its Obligations. For example, in the case of many sovereigns, Sweden being a case in point, there are two sets of government bonds. The CDS Reference Entity is the Kingdom of Sweden, which has debt outstanding in USD, GBP, JPY, AUD, NZD and EUR. However, there are also a number of outstanding Swedish Government Bonds, issued by the Government of Sweden, and denominated in SEK. The latter are clearly not deliverable, being in a non-*Specified Currency* (see below; the AUD and NZD Kingdom of Sweden bonds would not be deliverable either), but are they Obligations for the purposes of the Kingdom of Sweden CDS contract? Our belief is that they probably are, as both sets of bonds are issued by the Swedish National Debt Office and we believe they would be viewed as originating from the same entity, but the detail is important and ultimately it would be for the Determinations Committee to make a final decision.

### Qualifying Guarantees

A Qualifying Guarantee means a written arrangement pursuant to which a Reference Entity irrevocably agrees (by guarantee of payment or equivalent legal arrangement) to pay all amounts due under an Obligation for which another party is the obligor. It must be *Transferable* and excludes any arrangement:

- Structured as a surety bond, financial guarantee insurance policy, letter of credit or equivalent legal arrangement
- In which the payment Obligations of the Reference Entity can be discharged, reduced, assigned or otherwise altered as a result of the occurrence or non-occurrence of an event or circumstance (other than payment)

The main points are that a Qualifying Guarantee must be written, irrevocable, *Transferable* and non-dischargeable other than by payment. A Qualifying Affiliate Guarantee is then just a Qualifying Guarantee provided to a downstream affiliate of the Reference Entity.

If there is a Qualifying Guarantee between a corporate or sovereign entity, A, and a guaranteed entity, B, then :

1. If A has a Credit Event, B's guaranteed Obligations may be deliverable (subject to the regular deliverability criteria)
2. If B has a Credit Event, and A does not honour the guarantee within the mandated time frame, this would lead to a Credit Event on A and B's guaranteed Obligations may be deliverable

The question is therefore which sovereigns, corporates and financials guarantee the debt of other entities, and which of these guarantees represents a Qualifying Guarantee. Again, it is far from straightforward – either identifying the extent of existing guarantees or ascertaining which would be Qualifying for the purposes of a CDS contract.

Of particular interest recently, sovereign guarantees for example come in a variety of forms and with varying degrees of rigour. We listed a few in our *Sovereign Primer*, and attempted to separate them into those that we believe may be Qualifying and those that are probably not. Ultimately, however, any decision on this front would be made by the Determinations Committee with appropriate legal advice.

A common issue with corporates that issue debt out of a number of distinct entities, many of which have guarantees between them, is determining whether there are circumstances in which the guarantee can fall away. If there are, the guarantee is unlikely to be Qualifying as it can be discharged other than by payment. The problem is, frequently the information regarding the nature of the guarantees is not publicly available, making it hard to determine the universe of Obligations.

## Deliverable Obligation characteristics

### Exhibit 4: Deliverable Obligation characteristics for standard, single-name CDS contracts

	Not Subordinated	Specified Currency	Not Contingent	Assignable Loan	Consent Required Loan	Transferable	Max Maturity 30Y	Not Bearer	Not Domestic Issuance	Not Domestic Law	Not Sovereign Lender
NORTH AMERICAN CORPORATE	X	X	X	X	X	X	X	X			
EUROPEAN CORPORATE	X	X	X	X	X	X	X	X			
SUBORDINATED EUROPEAN	X	X	X	X	X	X	X	X			
INSURANCE CORPORATE											
EMERGING EUROPEAN CORPORATE	X	X	X	X	X	X		X	X	X	
LATIN AMERICA CORPORATE	X	X	X			X		X	X	X	
AUSTRALIA CORPORATE	X	D	X	X	X	X	X	X			
NEW ZEALAND CORPORATE	X	D	X	X	X	X	X	X			
JAPAN CORPORATE	X	X	X	X	X	X	X	X			
ASIA CORPORATE	X	X	X	X		X	X	X	X	X	X
WESTERN EUROPEAN SOVEREIGN		X	X	X	X	X	X	X			
LATIN AMERICA SOVEREIGN	X	X	X			X		X	X	X	
EMERGING EUROPEAN & MIDDLE EASTERN SOVEREIGN	X	X	X			X		X	X	X	
AUSTRALIA SOVEREIGN	X	D	X	X	X	X	X	X			
NEW ZEALAND SOVEREIGN	X	D	X	X	X	X	X	X			
JAPAN SOVEREIGN		X	X	X	X	X	X	X			
ASIA SOVEREIGN	X	X	X	X		X	X	X	X	X	X

Source: Credit Suisse, ISDA

D = Specified Currency: Standard Specified Currencies & Domestic Currency so the domestic currency is deliverable, in addition to the usual specified currencies

Exhibit 4 outlines the Deliverable Obligation characteristics for standard CDS contracts. The first eight characteristics apply to the majority of contracts; the final three just some of the emerging market contracts. Many are self-explanatory; we provide brief explanations of the others below, with more detailed descriptions in the Appendix for reference.

- **Not Subordinated:** The obligation must not be Subordinated to the most senior Reference Obligation in priority of payment, or if none is specified, any unsubordinated *Borrowed Money Obligation*
- **Specified Currency:** any of the lawful currencies of Canada, Japan, Switzerland, the UK and the USA, the euro and any successor currencies to these currencies
- **Not Contingent:** Any obligation whose principal balance as of the Delivery Date may not be reduced by any means other than payment. Convertible, Exchangeable or *Accreting Obligations* usually satisfy this criteria provided that the right to convert/exchange/purchase/redeem the Obligation has not been exercised on or before the Delivery Date
- **Assignable Loan:** A Loan that is capable of being assigned or novated without the consent of the relevant Reference Entity or guarantor
- **Consent Required Loan:** A Loan that is capable of being assigned or novated with the consent of the relevant Reference Entity or guarantor
- **Transferable:** An obligation that is transferable to institutional investors without any contractual, statutory or regulatory restriction
- **Maximum Maturity: 30 years**
- **Not Bearer**
- **Not Domestic Issuance:** Any obligation that is registered or qualified for sale outside the domestic market of the Reference Entity

- **Not Domestic Law:** Any obligation that is not governed by the laws of the Reference Entity (if Sovereign) or those of its jurisdiction (if not a Sovereign)
- **Not Sovereign Lender:** Any obligation not primarily owed to a Sovereign or Supranational Organization (including Paris Club debt)

The most common constraints relevant to standard North American and European CDS contracts are the currency restriction, the fact that all deliverables must have fewer than 30 years left to maturity and the requirement that deliverables are Not Subordinated and *Not Contingent*.

### Some implications and important points to note regarding Obligations

Since the restrictions on Deliverable Obligations are greater than those on what defines an Obligation for the purposes of a Credit Event, it is possible to have an event on an Obligation that is then not deliverable. For example, a Failure to Pay event on a company's Swedish Krona debt could trigger CDS contracts, but because Swedish Krona is not a deliverable currency, this debt would not be deliverable.

There are no seniority restrictions on which Obligations can trigger CDS contracts. This means that all seniorities of CDS contracts are triggered when a Credit Event occurs. For example, a Credit Event could be triggered by a perpetual security, which would not itself be deliverable, triggering both senior and subordinated CDS contracts.

Senior bonds are deliverable into subordinated CDS contracts: All obligations senior to the Reference Obligation are deliverable into a CDS contract. In practice, it should not make economic sense to deliver a more senior Obligation, as it is unlikely to be the cheapest to deliver. We discuss the cheapest to deliver option in more detail below.

For sovereigns it is the Deliverable Obligation characteristics preceding the Restructuring which determine whether an Obligation is deliverable or not, without regard for the characteristics after the Restructuring. This means, for example, that if a sovereign Obligation is redenominated into a non-*Specified Currency*, it could still be deliverable.

For corporates, it is the Deliverable Obligation characteristics on the Delivery Date that are relevant. In a situation where a corporate restructures and swaps 100% of its debt for equity, there is therefore the possibility that there might be no Deliverable Obligations on the Delivery Date. In previous cases where this has been a concern, the DC has tended to facilitate a faster auction to ensure, where possible, that this outcome does not arise. For example, the General Motors auction timetable was sped up, as outlined in Section IV. For CIT, Asset Exchange provisions were included in the auction settlement term to ensure that the settlement delay arising from the auction timetable (as opposed to the time frame under which CDS counterparties would be able to settle their CDS contracts if there were no auction) did not mean that the protection buyer lost the right to deliver its Obligations if they were exchanged into non-deliverable assets.

### The Reference Obligation

The Reference Obligation specified in the CDS *Confirmation* is always deliverable, provided that

- it is not specified as an Excluded Obligation in the CDS *Confirmation*
- if it is a Convertible or Exchangeable Obligation, the right to convert into equity has not already been exercised as at the Delivery Date
- it satisfies any maturity limitation in a Restructuring Credit Event

Notably, it can be contingent and still deliverable.

### Zero-coupon bonds

Zero-coupon bonds are typically *Accreting Obligations*, defined as Obligations whose terms mean that the amount payable on acceleration is equal to the original issue price plus an additional amount that may accrete. A zero-coupon bond is deliverable at its accreted amount. For example, if a five-year bond with an issue price of 50 accretes on a straight-line basis, it would be deliverable at 60 after one year, 70 after two years and so on.

### Inflation-linked bonds

Inflation-linked bonds may or may not be deliverable, depending on whether the principal payable at maturity can be reduced by the inflation linkage. If the principal repayment is inflation-linked, then

- If the principal repayment must be at least par, the bond should be deliverable, all other things being equal
- If the principal repayment can be below par, then the bond is likely to fail the *Not-Contingent* Deliverable Obligation characteristic and would therefore probably not be deliverable

### Revolvers

A revolver is typically a facility allowing the borrower to borrow up to a specified maximum amount during a specified time period. The amount borrowed can be repaid and re-borrowed during the period. In general

- Fully drawn revolvers are deliverable
- Fully undrawn revolvers are not deliverable
- Partially undrawn revolvers can be delivered based on the drawn amount. The protection buyer delivering the revolver to the protection seller is then required to provide an indemnity to the protection seller if there are further drawings on the undrawn portion in the future

In general, the protection buyer must indemnify the protection seller in the event of any future liability arising beyond that defined by the CDS position: undrawn portions of the revolver, exchange rate risk associated with repayment and reborrowings under a multi-currency facility and similar.

## From Credit Event to auction

Once the DC has ruled that a Credit Event has occurred and that one or more auctions will be held, there is a defined timetable of events culminating in the auction. For hard Credit Events, this basically just involves the specification of the Deliverable Obligations and the date of the auction. For Restructuring Credit Events it is a bit more involved since the event is optional and the maturity limitation on deliverables for buyer-triggered contracts requires the specification of auction maturity buckets.

The timetable can be changed by the DC at any time, subject to an 80% vote.

Exhibit 5 illustrates the process for determining the list of Deliverable Obligations for the auction. This is common to all types of Credit Events and allows market participants to both suggest obligations for inclusion and challenge those on the list. The DC determines which obligations make the list by a 50% vote if unchallenged, 80% vote or external review if challenged.

## Exhibit 5: Determining the list of Deliverable Obligations

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- DC announces Credit Event has occurred and one or more auctions will be held  
+ 3 calendar days\*
- 5pm: Initial list of Deliverable Obligations published  
+ 2 calendar days\*
- 5pm: Deadline for proposing additional Deliverable Obligations
- 7pm: Supplemental list published  
+ 3 calendar days\*
- 5pm: Deadline for challenging Obligations on the list  
+ 2 calendar days\*
- Final list is published and maturity buckets are specified (for Restructuring Credit Events)

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Source: Credit Suisse, ISDA

\* The first business day falling on or after this day

If investors wish to physically settle their CDS contract by delivering bonds or loans into the auction, they need to ensure that the bond or loan they wish to deliver is on the list of Deliverable Obligations within the required time frame.

For a non-Restructuring Credit Event, once the final list is published, the auction is held on the third business day immediately preceding the 30<sup>th</sup> calendar day after the *Credit Event Resolution Request Date*, unless the DC resolves otherwise.

Restructuring Credit Events involve some additional steps, which we now outline before explaining in detail how the auction works in the next section.

## The Restructuring Credit Event process

The first difference from other Credit Events is that, as discussed above, Restructuring Credit Events are optional: the protection buyer and seller have the right to decide whether or not to trigger the event and there are deadlines by which they need to do so. They can also elect to partially trigger a contract.

Secondly, due to the maturity limitation on deliverables in a Restructuring under Mod-R and Mod-Mod-R, it is not usually possible to deliver the same set of deliverables into every CDS contract, which complicates the auction process.

Exhibit 6 outlines the additional timeline for a Restructuring Credit Event, following the publication of the Deliverable Obligations and the auction maturity buckets.

## Exhibit 6: Restructuring Credit Event timeline

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- Final list of Deliverable Obligations is published, maturity buckets are specified  
+ 2 business days
  - 4pm: Exercise deadline for seller  
+ 3 business days
  - 4pm: Exercise deadline for buyer  
+ 1 business day
  - DC announces which maturity buckets will have auctions  
+ 3 business days
  - Deadline for exercising the Movement Option  
+ 2 business days
  - Auction
- 

Source: Credit Suisse, ISDA

### The rationale for splitting the auction into maturity buckets

Prior to implementation of the Restructuring Supplement through the Small Bang Protocol, the maturity restrictions on deliverables for buyer-triggered contracts were as follows:

#### Mod-R:

The Restructuring Maturity Limitation Date was the later of

- The CDS maturity date
- The earlier of
  - 2.5 years following the Restructuring Date
  - The latest final maturity date of any Restructured bond or loan

#### Mod-Mod-R:

The Modified Restructuring Maturity Limitation Date was the later of

- The CDS maturity date
- 5 years following the Restructuring Date for any Restructured bond or loan
- 2.5 years following the Restructuring Date for any non-Restructured bond or loan

There was no maturity limitation beyond the usual 30 years on deliverables for seller-triggered contracts.

Since in theory the set of deliverables could be different for every CDS maturity, and there are four CDS maturities per year for ten or more years, a separate auction for every contract maturity is clearly unfeasible. To get around this, the Small Bang Protocol defined a set of auction maturity buckets. Deliverable Obligations and CDS contracts are allocated into these maturity buckets and a manageable number of auctions are then held: up to one auction per maturity bucket, per seniority.

N.B. The auction buckets only apply for contracts that trade Mod-R and Mod-Mod-R. Those that trade Old R would have just one auction, exactly as in the case of a regular Bankruptcy or Failure to Pay event. In the case of a fall-back to physical settlement (outside the auction), the original maturity limitations apply.

### Calculating the auction maturity buckets

There can be up to eight maturity buckets, based around the IMM dates:

- 2.5YR (Mod-Mod-R 5YR)
- 5YR
- 7.5YR
- 10YR
- 12.5YR
- 15YR
- 20YR

In addition, there may be a pre-2.5YR bucket for Mod-R only.

N.B. In a CDS context, IMM dates refer to the 20<sup>th</sup> of March, June, September and December, differing from the true IMM dates which fall on the third Wednesday of these months.

A set of rules defines which Obligations are deliverable into which bucket and which CDS contracts fall into which bucket. While the process may seem rather complicated, once the general idea is understood, it is fairly intuitive. It is helpful to keep in mind that the intention of the bucketing is not to change the economics of a Restructuring. The thought process can be broken into three:

1. Calculate the IMM date-based bucket maturities to allocate the deliverables
2. Allocate the deliverables into the buckets
3. Define the bucket maturity dates for CDS contracts so that no contract falls in a bucket that only contains Obligations with maturity longer than the CDS maturity

Taking each in turn:

**Calculate the IMM date-based maturity buckets:** starting from the Restructuring Date (as determined by the DC), move to the next IMM date (20 March, June, September, December) and then add on X years to get the maturity of auction bucket X. For example, if the Restructuring Date is 23 November 2010, the next IMM date is 20 December 2010 and so the 2.5Y bucket goes from 23 November 2010 to 20 June 2013, the 5Y bucket goes from 21 June 2013 to 20 December 2015, and so on. The first three are shown in Exhibit 7.

#### Exhibit 7: Relevant bucket dates for allocation of deliverables

Restructuring date: 23 Nov 2010

Bucket	Start Date	End Date
2.5Y	23-Nov-10	20-Jun-13
5Y	21-Jun-13	20-Dec-15
7.5Y	21-Dec-15	20-Jun-18

Source: Credit Suisse

**Allocate the deliverables into each maturity bucket:** taking the Final List of Deliverable Obligations published by the DC, an Obligation goes into a maturity bucket if its final maturity falls on or before the bucket maturity date. The exception under Mod-Mod-R are Restructured Obligations that would otherwise fall into the 5Y bucket are in fact deliverable into the 2.5Y bucket.

Consider, by way of example, the list of deliverables in Exhibit 8. These are a subset of the Final List of Deliverable Obligations for the Anglo Irish Restructuring Credit Event triggered on 23 November 2010. They have been chosen so that the final bucket dates are exactly the same as if the entire set of Anglo Irish deliverables was used.

### Exhibit 8: Deliverable allocation by bucket

Restructuring date: 23 Nov 2010

Bucket	Description	ISIN	Maturity Date	Seniority
B1	Deliverable 1	XS0273602622	02-Nov-11	Senior
B1	Deliverable 2	XS0283695228	25-Jan-12	Senior
B1	Deliverable 3	XS0307691559	28-Jun-12	Senior
B1	Deliverable 4	XS0308096709	20-Jun-13	Senior
B2	Deliverable 5	XS0302133607	25-Nov-13	Senior
B2	Deliverable 6	XS0194937503	25-Jun-14	Subord
B2	Deliverable 7	XS0234075314	10-Nov-15	Senior
B3	Deliverable 8	XS0257752013	21-Jun-16	Subord
B3	Deliverable 9	XS0405791509	15-Sep-17	Senior
B3	Deliverable 10	XS0346016073	23-Apr-18	Senior

Source: Credit Suisse

The first four deliverables mature on or before 20 June 2013, the 2.5Y bucket maturity date shown in Exhibit 7. They therefore fall in Bucket 1. The next three deliverables mature on or before 20 December 2015 and therefore fall in Bucket 2; the final three deliverables mature after 20 December 15 but on or before 20 June 2018 and therefore fall in Bucket 3. Since there are no deliverables maturing after 20 June 2018, there are only the three possible buckets.

N.B. All deliverables are deliverable into longer maturity buckets. So Deliverables 1-4 are deliverable into all three maturity buckets, Deliverables 5-7 into buckets 2 and 3, and Deliverables 8 and 9 just into the third bucket.

**Define the bucket maturity dates for CDS:** now that the Deliverables are allocated into the maturity buckets, it just remains to allocate the CDS contracts so that there is always at least one deliverable in the bucket that matures before the CDS contract. Any CDS contract that falls in a bucket with only longer-maturity deliverables rounds down to the next earlier maturity bucket: the Rounding Down Convention. The exceptions are CDS contracts in the front bucket maturing before the shortest Deliverable Obligation as there is nowhere for them to round down to: they stay in the 2.5YR bucket. The deliverables that matter for this are those that fall directly into a maturity bucket, not those that are also deliverable into it by virtue of falling into a shorter bucket.

For Mod-R only, if the longest-maturity Restructured bond or loan matures before the 2.5YR bucket maturity, there is an additional pre-2.5YR maturity bucket containing all CDS maturing on or before this Restructured bond or loan.

N.B. If sub and senior CDS contracts trade on an entity, as was the case for Anglo Irish in the Restructuring event that occurred on 23 November 2010, the buckets for each are calculated separately and may differ, depending on the maturity dates of the subordinated bonds. To recap: both senior and subordinated bonds are deliverable into sub CDS contracts; only senior bonds are deliverable into senior CDS contracts.

Taking the situation in Exhibit 8, the shortest deliverable falling in bucket 2 that is not in bucket 1 is Deliverable 5, which matures on 25 November 2013. All CDS contracts maturing before that date must therefore fall in bucket 1, and so the maturity date of the first bucket for the purposes of allocating CDS contracts is 24 November 2013. This is true for both sub and senior CDS contracts: both have the same front bucket, and in fact there are no subordinated deliverables in the front bucket for sub CDS.

The situation for the second and third buckets differs for sub and senior because the shortest-maturity bond falling in bucket three is subordinated. The maturity of the second bucket is therefore 14 September 2017 for senior (the day before the shortest senior deliverable in bucket three) and 20 June 2016 for sub (the day before the shortest sub deliverable in bucket three), with longer contracts going in bucket 3. The final bucket maturity dates are summarized in Exhibit 9.

### **Exhibit 9: Buyer-triggered auction maturity buckets for deliverables in Exhibit 8**

Restructuring date: 23 Nov 2010

Bucket	Senior		Sub	
	Start Date	End Date	Start Date	End Date
2.5Y	23-Nov-10	24-Nov-13	23-Nov-10	24-Nov-13
5Y	25-Nov-13	14-Sep-17	25-Nov-13	20-Jun-16
7.5Y	15-Sep-17	N/A	21-Jun-16	N/A

Source: Credit Suisse

### **Triggering the CDS contract**

Both protection buyer and protection seller have the right to trigger the CDS contract. If the buyer triggers, the CDS contract goes into the auction bucket based on its maturity date (as shown in Exhibit 9).

If the seller triggers, the CDS contract goes into the longest auction bucket – the 7.5Y bucket in our example. This idea is that if the seller triggers the CDS, the buyer should be able to deliver anything the buyer likes, and all Deliverable Obligations are deliverable into the longest maturity bucket.

If both protection buyer and protection seller trigger the contract, the seller trumps and the contract goes into the longest maturity bucket. Because buyer- and seller-triggered CDS contracts with the same maturities can end up in different buckets, it is possible for a flat position to have recovery risk: if a counterparty has bought and sold protection in equal notional to the same maturity date, but one trade is buyer triggered and one is seller triggered, the two contracts can end up in different auction buckets and therefore with different recoveries. This risk can be meaningful; however, it should usually be possible to manage through careful triggering.

The triggering window is typically the five days following publication of the Final List of Deliverable Obligations, as outlined in Exhibit 6. The protection seller can only trigger during the first two days, the protection buyer the whole five days. Triggering is usually done through DTCC, the Depository Trust and Clearing Corporation.

### **The 300/5 Rule**

Once the triggering window has closed, the DC announces which maturity buckets will have auctions. Any bucket that has at least 300 triggered transactions with at least 5 dealer counterparties should have an auction (the 300/5 rule), although this is not an absolute rule. The DC can also decide to hold auctions for other buckets.

## The Movement Option

If the DC decides not to hold an auction for a given maturity bucket, the Movement Option applies: both protection buyer and protection seller have the right to move the CDS contract to a bucket with an auction if they wish. They have three business days to do so. If the protection buyer opts to move, the CDS contract drops down to the next earliest maturity bucket with an auction. If the protection seller opts to move, the CDS contract moves to the longest bucket with an auction. If both opt to move, the buyer trumps the seller. If neither moves, then the fallback settlement method applies as specified in the CDS *Confirmation*. This is usually physical settlement (outside the auction).

## Section II: The auction

### The role of the auction

As CDS contracts (single name, indices and tranches) have evolved and become increasingly standardized, so have the means for settling them. Traditionally CDS contracts were physically settled following a Credit Event, with the protection buyer delivering a defaulted asset to the protection seller in return for par. As the size and complexity of the CDS market increased, however, this led to some undesirable side effects:

- Not all market participants with CDS protection owned the physical assets. The requirement to deliver them would therefore drive the price up, artificially inflating the recovery. This became a particular issue for issuers with a CDS notional outstanding far in excess of available bonds and loans.
- Not all CDS investors wanted to own the physical assets, making it less attractive to sell protection. This was particularly the case for indices and tranches.
- There was no single market-wide price for all contracts. Depending on the ability to source Deliverable Obligations around the auction, different contracts could effectively recover at very different rates.

The limitations surrounding physical delivery led to the development of an auction process to allow cash settlement of contracts and a single market-wide price. The first auctions were held in 2005 and have evolved since then to the well established process that exists today: as shown in Exhibit 10, there have been 78 auctions since 2005.

Until 2009, each auction required a separate auction protocol to be signed by all counterparties. This was highly administratively intensive, and so with the move to greater standardization and transparency in the CDS markets, the process was hard-wired for all Credit Events through implementation of the Big and Small Bang Protocols in 2009, as discussed above.

We believe that the current situation, with a highly transparent and tested auction process, enables CDS positions to be settled efficiently following a Credit Event, contributing significantly to the functioning of the market.

#### Exhibit 10: Auctions held since 2005

Year	Number of auctions
2005	5
2006	4
2007	1
2008	10
2009	45
2010	13

Source: Credit Suisse, Creditfixings.com

### Auction mechanics

Once the DC has ruled that one or more auctions will be held, it publishes the auction settlement terms. The auctions are then administered by Creditex and Markit. The auction settlement terms outline the rules governing the auction process and are typically standard from one event to another, with event-specific details in Schedule 1 of the terms. Information here includes:

- The relevant Reference Entity
- The relevant dates and times: the *Credit Event Resolution Request Date*, the auction date, the times of the first and second parts of the auction (the initial and subsequent bidding periods), and publication times for auction results
- The auction buckets where relevant
- Deliverable Obligation characteristics
- Various sizes and spreads related to the operation of the auction as outlined below.

The auction process is split into two parts. The first stage establishes the net physical settlement requirements and an indicative market for the Final Price. The second stage is a Dutch auction: limit orders determine the Final Price as that which clears the net physical settlement position established in the first stage. All transactions then take place at the Final Price, and this is the recovery level used in the cash settlement of contracts. We outline both stages of the auction in detail below.

### **Cash and physical settlement are both possible through the auction**

Market participants can choose whether to cash or physically settle their CDS contracts through the auction. The standard is cash settlement and so unless an investor specifies otherwise, their contracts will be cash settled only:

- Protection buyers will receive  $\text{Notional} * (1 - \text{Final Price}) - \text{accrued payment}$
- Protection sellers will pay  $\text{Notional} * (1 - \text{Final Price}) - \text{accrued payment}$

The final accrued payment is due from protection buyer to seller to cover the period from the previous coupon payment to the *Event Determination Date* (EDD), unless a coupon was paid after the EDD, in which case the protection seller will need to reimburse the protection buyer.

If an investor wishes to settle physically, the investor must do so via one of the dealers participating in the auction by delivering to them a Customer Physical Settlement Request Letter by 5pm the business day prior to the auction. This is a firm agreement to buy or sell Deliverable Obligations at the Final Price.

Following the auction, protection buyers settling their contracts physically specify the Obligation they are going to deliver in a Notice of Physical Settlement (NOPS). The NOPS is due by 4pm the business day following the auction (unless the DC votes to change the timeline); it can be amended subject to the terms and conditions in the auction settlement terms.

The mechanics for physical settlement are as follows:

#### **Protection buyer:**

- Sells a Deliverable Obligation for the Final Price
- Receives cash settlement of  $\text{Par} - \text{Final Price}$ 
  - ⇒ Sells Deliverable and receives  $(\text{Final Price} + \text{Par} - \text{Final Price})$
  - ⇒ Sells Deliverable and receives Par

#### **Protection seller:**

- Receives Deliverable Obligation, paying the Final Price for it
- Pays the cash settlement amount of  $\text{Par} - \text{Final Price}$ 
  - ⇒ Receives Deliverable and pays  $(\text{Final Price} + \text{Par} - \text{Final Price})$
  - ⇒ Receives Deliverable and pays Par

For example, if the Final Price is 70, the protection buyer would sell the bond/loan he wishes to deliver for 70 and receive an additional cash settlement amount of  $(100 - 70)$ , for a total cash receipt of 100.

N.B. Investors can only submit physical settlement requests up to the size of their net CDS position in the auction. If they have net bought \$10 million of protection, they can request to sell between 0 and \$10 million of bonds/loans in the auction. If they have net

sold \$10 million of protection, they can request to buy between 0 and \$10 million of bonds/loans in the auction. The idea is that if you have bought CDS protection to hedge your underlying bond/loan position, you can deliver the asset into the auction in return for par.

It is not possible to submit a request that is in the opposite direction to the net CDS position, i.e., protection sellers cannot submit physical settlement requests to sell in the auction; protection buyers cannot submit physical settlement requests to buy in the auction.

## Auction Part 1: The initial bidding period

The first part of the auction is twofold

1. Determine the Inside Market Midpoint (IMM): this is a starting point for the final recovery rate determined in part 2 of the auction
2. Determine the size and direction of the Net Open Interest: this is the netted notional of total physical settlement requests and is filled through limit orders in the second part of the auction

### Calculating the Inside Market Midpoint (IMM)

Participating dealers make a two-way market for the Deliverable Obligations. They are required to do so in a pre-determined quotation size and subject to a maximum bid-offer spread. These are known, respectively, as the *Initial Market Quotation Amount* and the *Maximum Initial Market Bid-Offer Spread*. The size and spread are specified in Schedule 1 of the auction terms and will depend on the depth and liquidity of the market for the defaulted assets. For example, in the senior Anglo Irish auction on 9 December 2010, the quotation amount was €2 million, the max bid-offer was 3.5%.

To calculate the IMM, crossing and touching markets are discarded. The average of the best half of the remaining bids and offers is then the IMM. If the best half is not a whole number, it is rounded up. In Exhibit 11 we show the dealer markets exactly as they were submitted for the 2.5-year bucket of the Anglo Irish auction.

### Exhibit 11: Dealer Inside Markets – as submitted

Anglo Irish Auction 2.5 year bucket, 9 December 2010

Dealer	Bid	Offer	Dealer
Bank of America N.A.	76.5	80	Bank of America N.A.
Barclays Bank PLC	75	78.5	Barclays Bank PLC
BNP Paribas	79	82.5	BNP Paribas
Citigroup Global Markets Ltd.	75.5	79	Citigroup Global Markets Ltd.
Credit Suisse International	74.5	78	Credit Suisse International
Deutsche Bank AG	76.75	80.25	Deutsche Bank AG
Goldman Sachs International	78.5	82	Goldman Sachs International
HSBC Bank PLC	75	78.5	HSBC Bank PLC
JPMorgan Chase Bank N.A.	75.5	79	JPMorgan Chase Bank N.A.
Morgan Stanley & Co. International PLC	78	81.5	Morgan Stanley & Co. International PLC
Nomura International PLC	79	82.5	Nomura International PLC
Société Générale	75.5	79	Société Générale
The Royal Bank of Scotland PLC	78	81.5	The Royal Bank of Scotland PLC
UBS AG	77	80.5	UBS AG

Source: Credit Suisse, Creditex, Markit

To determine the IMM, we sort the bids in descending order, offers in ascending order, discard the crossing/touching markets and take the average of the best half of those remaining as outlined in Exhibit 12. The top two bid-offers cross and the third touches, so all three are discarded for the purposes of calculating the IMM. As there are 11 bid-offers remaining, the best six are used in each case: those that are shaded in grey. Taking the average gives 78.29, which to the nearest 1/8<sup>th</sup> of a percent (the Relevant Pricing Increment defined in the auction terms) is 78.25.

### Exhibit 12: Dealer Inside Markets – ranked, with best half highlighted

Anglo Irish Auction 2.5 year bucket; IMM = 78.25

Dealer	Bid	Offer	Dealer
BNP Paribas	79	78	Credit Suisse International
Nomura International PLC	79	78.5	Barclays Bank PLC
Goldman Sachs International	78.5	78.5	HSBC Bank PLC
Morgan Stanley & Co. International PLC	78	79	Citigroup Global Markets Ltd.
The Royal Bank of Scotland PLC	78	79	JPMorgan Chase Bank N.A.
UBS AG	77	79	Société Générale
Deutsche Bank AG	76.75	80	Bank of America N.A.
Bank of America N.A.	76.5	80.25	Deutsche Bank AG
Citigroup Global Markets Ltd.	75.5	80.5	UBS AG
JPMorgan Chase Bank N.A.	75.5	81.5	Morgan Stanley & Co. International PLC
Société Générale	75.5	81.5	The Royal Bank of Scotland PLC
Barclays Bank PLC	75	82	Goldman Sachs International
HSBC Bank PLC	75	82.5	BNP Paribas
Credit Suisse International	74.5	82.5	Nomura International PLC

Source: Credit Suisse, Creditex, Markit

### Calculating the Net Open Interest

In addition to making two-way markets for the defaulted assets, dealers submit their physical settlement requests. These must be in the direction of their net CDS position in the auction: if they have net bought protection, they can sell in the auction; if they have net sold protection, they can buy in the auction. The maximum size is limited to their total net CDS auction position. In addition, dealers can submit requests on behalf of clients.

### Exhibit 13: Physical settlement requests

Anglo Irish Auction 2.5 year bucket, 9 December 2010

Dealer	Bid/Offer	Size (EUR)
Bank of America N.A.	Offer	6.5
Barclays Bank PLC	Offer	10.2
BNP Paribas	Offer	31.5
Citigroup Global Markets Ltd.	Offer	0
Credit Suisse International	Offer	21.55
Deutsche Bank AG	Offer	9.8
Goldman Sachs International	Offer	12
HSBC Bank PLC	Offer	0
Morgan Stanley & Co. International PLC	Offer	9.7
Nomura International PLC	Offer	0
Société Générale	Offer	18.9
The Royal Bank of Scotland PLC	Offer	0
JPMorgan Chase Bank N.A.	Bid	12
UBS AG	Bid	4.1
<b>Total</b>	<b>Offer</b>	<b>104.05</b>

Source: Credit Suisse, Creditex, Markit

We continue our example from the 2.5-year bucket of the Anglo Irish auction in Exhibit 13. Summing the total requests gives an aggregate interest to sell €104.05 million as shown in Exhibit 14. This is the Net Open Interest that goes through to the second stage of the auction. The €16.1 million that netted trades at the Final Price determined in the second stage of the auction.

#### **Exhibit 14: Net Open Interest position**

Anglo Irish Auction 2.5-year bucket, 9 December 2010	
Sum of Buy Physical Requests	16.1m
Sum of Sell Physical Requests	120.15m
Sum of Physical Request Trades	16.1m
Sum of Limit Order Trades	104.05m

Source: Credit Suisse, Creditex, Markit

#### **Exhibit 15: Adjustment Amounts (€)**

Anglo Irish Auction 2.5 year bucket, 9 December 2010	
Dealer	Penalty
BNP Paribas	15,000
Nomura International PLC	15,000
Goldman Sachs International	5,000

Source: Credit Suisse, Creditex, Markit

### **The Adjustment Amounts**

To ensure that the IMM is an accurate reflection of the market for the defaulted assets, penalties are imposed on dealers who submit off-market bid-offers. If a bid or offer is on the wrong side of the IMM given the direction of the Net Open Interest, and it crosses with another bid/offer then the dealer has to pay the quotation amount times the difference between its bid/offer and the IMM. In our example, the IMM was to sell, so any bids higher than the IMM that cross/touch other offers, get charged an Adjustment Amount of

$$\text{Adjustment Amount} = \text{Quotation amount} \times (\text{Bid} - \text{IMM})$$

From Exhibit 12, we can see that BNP Paribas, Nomura and Goldman Sachs had touching/crossing bids above the IMM. The adjustment amounts they were charged are shown in Exhibit 15.

If the Net Open Interest had been to buy, adjustment amounts would have been charged to dealers submitting touching/crossing offers below the IMM.

## **Auction Part 2: The subsequent bidding period**

The IMM, Net Open Interest and any Adjustment Amounts are published within 30 minutes of the first part of the auction closing. The second part of the auction then typically takes place two to three hours later.

### **Limit orders from the first part of the auction are carried through**

The aim of the second part of the auction is to determine the clearing level for the Net Open Interest. It takes the form of a Dutch auction: market participants submit limit orders, the level at which the Net Open Interest is filled is the Final Price and all transactions occur at the Final Price. Market participants can submit as many limit orders as they wish in the direction of the open interest: if the open interest is to sell, limit orders to buy can be submitted; if the open interest is to buy, limit orders to sell can be submitted.

Additionally, the appropriate side of the limit orders from the first part of the auction are carried through. Any touching/crossing markets are carried through at

- the higher of the initial market submission or the IMM (if the open interest is to buy)
- the lower of the initial market submission or the IMM (if the open interest is to sell)

## Limit orders are subject to a Cap Amount

The Cap Amount is defined in the auction settlement terms and is typically half the bid-offer spread. In the case of the senior Anglo Irish auction, it was 1.75% (half of the max bid-offer of 3.5%). It constrains the Final Price to ensure it cannot set too far away from the IMM in the wrong direction. If the open interest is to sell, then all things being equal, there should be downward pressure on the recovery and so the maximum Final Price is the IMM + the Cap Amount. Similarly, if the open interest is to buy, the minimum Final Price is the IMM - the Cap Amount.

In our Anglo Irish example, the IMM was 78.25, the Net Open Interest was to sell and the cap amount was 1.75%. The maximum final price the auction could set at was therefore 80.

## The Final Price is the clearing level of the Net Open Interest

Once all limit orders have been submitted, they are ranked in order and filled in turn until the Net Open Interest is satisfied. If the open interest is to sell, the limit bids are ranked in descending order; if the open interest is to buy, the limit offers are ranked in ascending order. The final level at which the Net Open Interest clears is the Final Price; this is

- where all positions filled in the second stage of the auction are traded
- the recovery rate for all cash-settled CDS
- where all deliverables physically settled through the auction are traded

### Exhibit 16: Highest limit bids submitted in second stage of the auction

Anglo Irish Auction 2.5 year bucket, 9 December 2010

Dealer	Bid	Size	Cumulative Total
Credit Suisse International	80.0*	5	5
BNP Paribas**	78.25*	2	7
Goldman Sachs International**	78.25*	2	9
Nomura International PLC**	78.25*	2	11
The Royal Bank of Scotland PLC**	78.0*	2	13
Morgan Stanley & Co. International PLC**	78.0*	2	15
The Royal Bank of Scotland PLC	77.0*	5	20
UBS AG**	77.0*	2	22
Deutsche Bank AG**	76.75*	2	24
Bank of America N.A.**	76.5*	2	26
The Royal Bank of Scotland PLC	76.0*	5	31
JPMorgan Chase Bank N.A.	75.5*	5	36
Société Générale**	75.5*	2	38
Citigroup Global Markets Ltd.**	75.5*	2	40
JPMorgan Chase Bank N.A.**	75.5*	2	42
UBS AG	75.0*	30	72
Barclays Bank PLC**	75.0*	2	74
HSBC Bank PLC**	75.0*	2	76
<b>BNP Paribas</b>	<b>74.5^</b>	<b>24</b>	<b>100</b>
<b>JPMorgan Chase Bank N.A.</b>	<b>74.5^</b>	<b>5</b>	<b>105</b>
<b>Credit Suisse International**</b>	<b>74.5^</b>	<b>2</b>	<b>107</b>
Credit Suisse International	74.125	5	112
The Royal Bank of Scotland PLC	74	25	137
Barclays Bank PLC	74	10	147

Source: Credit Suisse, Creditex, Markit

\* Denotes bid was filled

^ Denotes bid was partially filled

\*\* Denotes limit orders brought through from the first part of the auction

In the case of the 2.5-year bucket for Anglo Irish because the open interest is to sell, participants submitted limit bids and these were filled in order starting with the highest until the €104.05 million open interest was filled. The highest limit bids are shown in Exhibit 16 (we do not display the many lower bids in the interest of space). The bids with a double star (\*\*) have been brought through from the first part of the auction. Those with a single star (\*) were filled, those with a hat (^) partially filled. From the cumulative total shown in the final column of Exhibit 16, we see that the clearing price at which €104.05 million is filled is 74.5. This is the Final Price. As there are several bids at this level, the incremental amount required to fill the open interest (in this case,  $104.05 - 76 = 28.05$ ) is pro-rated across all limit bids at this level (a total of 31 million here).

### Special Cases

- If the Net Open Interest is zero, the Final Price is the IMM
- If the Net Open Interest is to sell and there are insufficient limit bids to fill it, the final price is zero
- If the Net Open Interest is to buy and there are insufficient limit offers to fill it, the final price is par

### Currency rates

The relevant exchange rates for delivering Obligations in a different currency to the CDS contract are published the day before the auction and are fixed by reference to the WM/Reuters 4pm London mid-point rate

- the business day before the auction in the Americas
- two business days prior to the auction in other regions

These rates are only valid for the original NOPS, however. If the NOPS is amended, the relevant currency rate is set the business day following the NOPS Effective Date. This is a change from the situation prior to Big Bang, when currency rates were set on the NOPS Effective Date. The rationale for the change is to minimize as far as possible the opportunity for the protection buyer to take advantage of currency fluctuations between the auction and settlement date to amend their NOPS to specify a cheaper deliverable to the detriment of the protection seller.

## The cheapest to deliver option: driving the recovery

We have outlined the workings of the auction process, but it's easy to get lost in the theory and legalese and to forget probably the most important point: we know how the CDS recovery is determined, but what drives it? There are primarily two things, the first of which should be the over-riding factor in normal circumstances:

- The value of the cheapest to deliver
- The size and direction of the Net Open Interest vs. the positions of auction participants

When investing in CDS contracts, it is key to realize that buying or selling CDS inherently involves valuing the cheapest to deliver option. The protection buyer is long the option, the protection seller is short the option. This is true whether the CDS is cash settled or physically settled through the auction – the effect is the same.

Since the protection buyer has the right to deliver any of a specified list of (Deliverable) Obligations, it is in the buyer's interest to deliver the cheapest; this is therefore what the dealers bidding in the first part of the auction and any protection sellers settling their CDS physically risk being delivered. The value of this cheapest to deliver will therefore drive the auction recovery price. It will do so to a greater or lesser extent depending on the size of its (freely available) notional outstanding relative to the size of the Net Open Interest in the auction.

Determining the cheapest to deliver Obligation is thus an important aspect of valuing CDS, and its identity and importance can differ significantly depending on the circumstances leading up to the Credit Event and the type of Credit Event. We are back to the question of Obligations and Qualifying Guarantees discussed earlier.

The issue can be most pertinent in a Restructuring Credit Event. In a Bankruptcy or leading up to a Failure to Pay, all Obligations should trade down to their recovery value, which should be fairly uniform. In a Restructuring, however, depending on which and how many Obligations are Restructured, there exists the real possibility that Restructured and non-Restructured Obligations trade at very different levels, both leading up to the auction and afterwards. A good example would be if there were a very steep yield curve (due to credit and/or interest rate risk): a long bond might be deeply discounted, substantially lowering the effective recovery from that implied by a shorter, Restructured Obligation. For European corporates, this risk is mitigated to a large extent by the fact they trade Mod-Mod-R; however, it is very relevant for sovereigns where Obligations out to 30 years may be delivered into any CDS contract.

When physically settling through the auction, it is purely the value of the cheapest to deliver that matters to the investor: the decision for the protection buyer is what to deliver; for the protection seller, the risk is what the seller is going to receive. The actual level the auction settles at is then irrelevant.

For those cash settling, it is slightly different: the cheapest to deliver will drive the level the IMM sets at in the first part of the auction, but the Final Price can differ from the IMM depending on how the second part of the auction pans out. Of importance here are

- How big the Net Open Interest is – relative to the aggregate deliverable notional outstanding, and in particular relative to the notional outstanding of the cheapest to deliver Obligation(s). All else being equal, the greater the NOI relative to the notional of Deliverable Obligations, the further from the IMM the Final Price is likely to set
- The direction of the Net Open Interest – whether it is to buy or sell. Given the Cap, the direction of the NOI constrains the range the Final Price can set in relative to the IMM. If there is a large NOI to sell and few buyers, the Final Price can set low. If there is a large NOI to buy relative to the available deliverables, the auction price could squeeze high
- The net CDS position of auction participants relative to the size and direction of the Net Open Interest

This third point is the hardest to evaluate but can have a meaningful impact. At its most basic, the key is understanding who the buyers/sellers of the Obligations are and who is exposed to the auction setting high/low. If the Reference Entity was in a lot of indices and/or CDOs, there is likely to be a much larger CDS notional outstanding than otherwise. If lots of CDS contracts are held on basis, then many auction participants are likely to be selling bonds or loans into the auction, leading to a NOI to sell without necessarily any obvious buyers. If correlation desks were active in the name, there may be some auction participants with large net long positions (protection sellers), looking for as high a recovery as possible. The smaller the NOI relative to the size of the CDS notional outstanding, the greater the possibility that one or more auction participants can have an impact on where the Final Price sets relative to the IMM (subject, of course, to the Cap Amount which prevents it setting too far from the IMM in the wrong direction).

The Thomson auction on 22 October 2009 provides a good illustration. In the first stage, the 2.5Y bucket IMM set at 91.25, with a Net Open Interest to sell €80.967 million. The Cap Amount was 5% and so the possible range for the Final Price in the second stage of the auction was 0 to 96.25 for this bucket. Since Thomson had been in lots of iTraxx indices, the notionals outstanding were very large. One market participant clearly had net sold a significant amount of protection because it bid the maximum, 96.25, for the entire NOI, above the value of the Obligations. The loss that market participant made on paying too much for the Obligations was presumably offset by the gain made on its CDS position.

For Restructuring Credit Events with more than one auction bucket the dimensionality of the problem increases further: each auction needs to be considered in its own right and as a function of the whole to work out where the recoveries are likely to set relative to one another.

## Section III: Other standard credit derivatives

The auction process described in the previous section covers the settlement of a standard single-name CDS position following a Credit Event – whether held outright or with an underlying bond or loan. Before discussing some case studies in the next section, we first summarise the treatment of other standard credit derivatives: CDS indices, swaptions, tranches, fixed recovery CDS and recovery locks.

### CDS indices, swaptions and tranches

Standard *Confirmations* for CDS indices, swaptions and tranches are available on the Markit website. In addition to the usual governing documents covering standard single-name CDS transactions (the 2003 ISDA Credit Derivatives Definitions and the 2009 ISDA Credit Derivatives Determinations Committees, Auction Settlement and Restructuring Supplement), each *Confirmation* references a Standard Terms Supplement. Separate supplements exist for untranching indices, tranching indices, and swaptions; they are available for the following families of indices: CDX IG/HY/XO, CDX EM and iTraxx Europe, SovX, Asia ex-Japan, Japan, and Australia.

A full discussion of the individual index specifications is beyond the scope here; however, broadly speaking, the indices parallel the underlying single names with regards to the applicability of guarantees, types of Credit Event covered, Obligation categories and Deliverable Obligation characteristics.

One detail in which the indices differ from their underlying single-name CDS contracts is in the *Effective Date*. While single-name contracts incorporate the rolling look-back feature and have an *Effective Date* that is 60 calendar days prior to the current date, an index *Effective Date* is the index roll date.

We highlight the following points related to Credit Events:

#### CDS indices

If a **hard Credit Event** occurs on one of the underlying Reference Entities in an index, as determined by the relevant DC, it is settled exactly as usual through an auction. If there are  $n$  entities in the index, the settlement is on  $1/n^{\text{th}}$  of the index notional. A new version of the index is then introduced. If the original index was the iTraxx Crossover S14 V1, for example, the new index would be iTraxx Crossover S14 V2. It would differ from version 1 in that the defaulted single name would effectively have been removed:

The new version has a notional factor of  $(n-1)/n$  – this is the remaining index notional as a percentage of original index notional. For example, iTraxx Crossover S11 V2 has a notional factor of 0.9778 because the original index had 45 constituents, leaving  $44/45 = 0.9778$  after Thomson restructured. As a matter of terminology, trading 10 million of the new index would in effect mean trading 9.778 million: the amount is quoted based on 10 million, and the cash exchanging hands is then adjusted based on the notional factor. This can be seen in Exhibit 17: the notional is €10 million with a price of 121.464. The principal payment, ignoring accrued, is then  $(1-1.21464) \times 0.9778 \times 10 \text{ million} = -2.098 \text{ million}$ . In other words, it is scaled down by the notional factor.

If a **Restructuring Credit Event** occurs on one of the underlying Reference Entities in an index, the index is split into two. Continuing with our example above, the iTraxx Crossover S14 V1 would be split into  $(n-1)/n$  of iTraxx Crossover S14 V2 and  $1/n$  of the single name. The protection buyer and seller can then elect to trigger the single-name contract by the exercise date. If they do, it gets settled through the usual auction process for Restructuring Credit Events; if neither does, the single-name trade continues in its own right. The rationale for treating it this way is that there is then only one standard version of the index traded at any given point in time.

**Exhibit 17: Illustrating the notional factor and impact on principal traded**

ITraxx Crossover Series 11 V2

CREDIT DEFAULT SWAP		CPU: 284
Deal	Send Trade	Curves
<b>Deal Information</b>		<b>BB #: SP950JRP</b>
CDS Index: MARKIT ITRX EUR XOVER* 06/14		Curve Date: 1/ 4/11
Counterparty: [REDACTED] Deal#: [REDACTED]		Benchmark: S261 MMid
Ticker: / [REDACTED] Series: [REDACTED]	Privilege: F Firm	EU ISDA Standard Rate Crv
Business Days: 5D	Settlement Code: EUR	6) 5yr Fix Diff: -4.55bp
Business Day Adj: 1 Following	Currency: EUR	Pricing Curve: F Fixing
B BUY Notional: 10.00 MM	Factor: 0.9778	Sprds: C Contributor AAsk
Effective Date: 3/20/09		CDS SP950JRP IMMI
Maturity Date: 6/20/14 Freq: Q 1st Cpn: 6/22/09		CDS Spreads Default
Day Count: ACT/360 Date Gen: B Pen. Cpn: 3/20/14		Flat: Y (bps) Prob
Pay AI: T Crv Rec: T Month End: N Rec. Rate: 0.4000		9/20/11
Deal Spread: 975.000bps		3/20/12
This application is based on the ISDA CDS Standard Model (version 1.0), developed and supported in collaboration with Markit Group Ltd.		3/20/13
<b>Calculator</b>		3/20/14
Mode: 1 Input Sprd		6/20/14 289,333 0.1553
Valuation Date: 1/ 4/11	Model: 1 ISDA Std Upf	3/20/16
Cash Settled On: 1/ 7/11	Cash Calc On: 1/ 7/11	3/20/18
Price: 121.46414029	Sprd DV01: 3,647.13	3/20/21
Principal: -2,098,764	IR DV01: 366.89	Frequency: Q Quarterly
Accrued: -42,371	Days: 16	Day Count: ACT/360
Cash Amt: -2,141,135		Recovery Rate: 0.4000

Source: Credit Suisse, the BLOOMBERG PROFESSIONAL™ service

**Index swaptions**

A CDS index swaption is an option to buy or sell protection on an underlying CDS index. Of relevance here are the details of the underlying index, in particular the *Effective Date* of the index (when protection starts) and the expiration date of the option. Standard index swaptions do not knock out: they continue to exist if there is a Credit Event on the underlying.

If a Credit Event occurs on one of the single names in the underlying index between the *Effective Date* of the index and the swaption expiration date, then if the swaption buyer exercises its option, an *Event Determination Date* is deemed to have occurred, and the underlying index is treated as above.

For a hard Credit Event, this is straightforward – the recovery is determined as usual through the auction process, the protection seller compensates the protection buyer for the loss incurred on the single name and the protection buyer then has a position in the new version of the underlying index. The auction settlement date is the later of the usual auction settlement date and the third business date following the expiration date.

It is a little more complicated for Restructuring Credit Events due to the optional nature of the trigger. If the swaption buyer exercises its option, the underlying index is immediately split into a new version and a single-name trade exactly as above. If either the protection buyer or protection seller wants to trigger the single-name CDS contract, either must do so during the usual triggering window forming part of the auction process. If either does, the single name settles as usual through the auction. For this to be possible the triggering window needs to occur after the option expiration date. If it occurs beforehand, when the swaption is exercised the protection buyer will just receive a position in the new version of the index plus an untriggered, single-name position. Only if there is a further Credit Event will it be possible for the protection buyer or protection seller to trigger the single-name contract.

## Index tranches

Index tranches allow the investor to have exposure to a specified tranche of an index, with any losses on the single names underlying the index impacting the tranches in order of seniority: the first losses impact the equity tranche and once this tranche is exhausted, the junior mezzanine tranche and so on. Tranched index exposure is possible in standard and bespoke form – we refer purely to the former here. In this, tranche attachment and detachment points are well-defined for each index, providing a standardized product for investors to trade the index capital structure.

The treatment of hard Credit Events is straightforward, with cash or physical settlement possible through the auction as usual for the relevant single-name exposure. Following settlement, the notional of the equity tranche (or most junior remaining tranche if the equity tranche has already been exhausted by earlier losses) is reduced by the loss on the single name, leading to a reduced buffer for the more senior tranches.

Again, the situation is more complicated for a Restructuring Credit Event because the event is optional and can have a different recovery depending on whether it is buyer- or seller-triggered. It is therefore possible for a given tranche to take up to three different forms following a Restructuring: if the event is not triggered, there will be no change to the underlying or tranche notionals; if the buyer triggers, the recovery in the maturity bucket relevant to the tranche maturity will drive the resultant tranche notionals and levels of subordination; if the seller triggers, the recovery in the longest auction bucket will drive the tranche notionals and subordination levels.

This is problematic because the index tranche market relies on the product being fully fungible, which is no longer the case. If there are two such events on an index, there could be nine different outcomes. Unfortunately for indices that trade with Restructuring there is no simple solution to the situation that maintains the economic exposure of all parties. Changing the Restructuring convention to No R or Old R would mean the tranche market differed from the index market, making hedging impossible. This latter also would not solve the problem, as there would still be two potential outcomes due to the optionality of the Restructuring event. Stripping out the Restructured single name as for indices would seem a robust solution, but again this is not straightforward as it would require market consensus on the delta of the single name to each tranche. Alternatively, the market could agree that all outstanding tranche trades would trigger in the same way – either no trigger or buyer/seller. While this would change the economics of positions, it would have the benefit of maintaining fungibility of the subsequent product and is straightforward and transparent. Hedging, however, would again be an issue.

## Fixed recovery CDS and recovery locks

A **fixed recovery CDS** is exactly as it suggests: a CDS contract where the recovery rate paid following a Credit Event is fixed at commencement of the trade, eliminating recovery risk. Contracts are cash settled and the protection seller just pays the protection buyer (1-fixed recovery) times notional.

A **recovery lock** is a single trade in which the recovery lock buyer sells the market recovery to receive a fixed recovery. There are no regular premium payments; the only time payments are made is following a Credit Event. A recovery lock can be either physically or cash settled:

- Physical settlement: the buyer of the recovery lock delivers a bond/loan and receives a fixed recovery
- Cash settlement: the buyer of the recovery lock pays the market recovery (determined through the auction) and receives a fixed recovery. In effect, the cash payment will therefore just be the difference between the fixed and actual recovery.

If there are no deliverables, the effective cash recovery rate is 100% and so the recovery lock would require a payment of 100 minus the fixed recovery from the recovery lock buyer to the recovery lock seller<sup>2</sup>.

A **recovery swap** typically refers to a combination of a fixed recovery CDS contract with an offsetting position in a regular CDS contract. Since a recovery swap is fundamentally two trades, while it is very similar to a recovery lock, there are subtle differences because the two trades settle independently. In particular, it is not possible to exactly hedge a recovery lock with positions in a fixed recovery CDS and a vanilla CDS. Consider for example

Trade 1: Buy a recovery lock with fixed recovery  $R_F$ .

Trade 2: Buy fixed recovery CDS protection with fixed recovery  $R_F$ , and sell regular CDS protection.

Following a Credit Event, if the auction recovery is  $R_A$ , then payments are:

Trade 1: Receive  $R_F - R_A$

Trade 2: Receive  $(1 - R_F)$  and pay  $(1 - R_A)$ , to overall pay  $R_F - R_A$

The issue arises if the Credit Event is a Restructuring and the CDS trades Mod-R or Mod-Mod-R. To guarantee that both legs of Trade 2 trigger, it may be necessary to seller-trigger the regular CDS contract in Trade 2, with the risk that it recovers at a different level to the recovery lock that remains in the buyer-triggered bucket. In other words,  $R_A$  may differ between Trade 1 and Trade 2, resulting in a non-perfect hedge.

Because many market participants are not keen to trade recovery locks unless they can be hedged, the ISDA is currently re-examining the provisions for recovery lock transactions.

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<sup>2</sup> To be strictly accurate, the current ISDA terms and conditions for recovery locks do not treat this situation properly. New provisions for recovery locks are planned in the near future that should incorporate an effective recovery of 100% when there are no deliverables.

## Section IV: Case studies & FAQs

Having covered the theory and legal framework surrounding Credit Events in detail, this final section looks at some of the practicalities. We

- illustrate a few of the issues with some pertinent case studies
- provide answers to some current common questions in this area

### Case studies

With the increasing standardisation and transparency of the auction process, the settlement of the majority of Credit Events is now relatively straightforward. In this section, we summarise a few of the US and European events that have been more involved, highlighting some of the practicalities of the legal structure outlined in Sections I and II.

We start by continuing with the example we used to explain the auction in Section II: Anglo Irish. We then look at some of the issues raised by the Thomson, Bradford and Bingley, General Motors, Fannie Mae and Freddie Mac Credit Events.

#### Anglo Irish

As outlined earlier, the first Anglo Irish Restructuring Credit Event was triggered by the change in the terms and conditions of the 2017 subordinated notes on 23 November 2010. Bondholders were given the right to exchange their bonds for 20% face value of a one-year government guaranteed floating rate note, and by doing so, agreed to change the terms and conditions of outstanding notes to give the issuer the right to call all outstanding notes for €0.01 for every €1,000 face value. Because the change represented a reduction in the principal and enough bondholders tendered their bonds to make the change in terms and conditions binding on all holders, this triggered the Restructuring Credit Event.

The first point to note is the distinction between the voluntary debt exchange, which would not trigger a Credit Event, and the binding change in the terms and conditions reducing the principal, which did. Secondly, while the Restructuring was just on one of the subordinated bonds, because the Obligation Category is just *Borrowed Money*, this impacted both senior and subordinated CDS.

The nature of the subordinated Deliverable Obligations raised several issues. Because the remaining 2017 bonds were called within a few days of the exchange, the Obligation that triggered the event no longer existed. The only remaining subordinated bonds were the 2014 and 2016 issues and these were subject to a similar exchange offer on the 20 December. For an auction occurring before this date, both bonds were deliverable; however, the outcome of the auction was suddenly very sensitive to its timing and the outcome of the second exchange offers:

- Auction before the 2014s and 2016s exchanged: both sub bonds deliverable, the former into the 5Y auction bucket, both into the 7.5Y auction bucket. Implication: short maturity sub CDS contracts would recover as senior, long-maturity sub CDS contracts would have a sub recovery just below 20 (the exchange value).
- Auction after the 2014s and 2016s successfully exchanged: no outstanding sub bonds and so all subordinated CDS contracts recover as senior
- Auction after the 2014 and 2016 exchange offer, but one or both exchanges blocked: sub bonds both deliverable as in the first case above, with senior recovery on short maturity sub CDS contracts. However sub recovery is likely to be different since potential recovery outcomes for the sub bonds are less clear.

Related to this were a raft of potential settlement issues: if the auction occurred before 20 December, there was the risk that protection sellers could be delivered sub bonds that might not have settled in time for them to be exchanged on the 20<sup>th</sup>; if it occurred after the 20 December, there would be no sub deliverables, unfairly changing the economics of sub CDS contracts. As a result, the DC decided to accelerate the auction timetable to ensure that it occurred in time for sub bonds delivered in the auction to be tendered for exchange. The event occurred on 23 November, the final list was published on 1 December and the auction took place on 9 December! In addition, the time frame for physical settlement of the sub bonds was tightened substantially. Failure to deliver the sub bonds within the time frame meant that the protection buyer would instead have to deliver senior bonds. Because sub was trading around 18, the senior around 76, this was not an attractive outcome for the protection buyer!

The timeline for the event was:

19 Nov 2010	Deadline for tending 2017 notes for exchange
23 Nov 2010	2017 notes announcement changing the terms and conditions of outstanding notes
23 Nov 2010	DC asked to decide whether or not a Restructuring Credit Event had occurred
24 Nov 2010	DC rules that there has been a Restructuring Credit Event
1 Dec 2010	Final List of Deliverable Obligations is published
9 Dec 2010	5 auctions are held: 2.5Y, 5Y and 7.5Y senior auctions and 5Y and 7.5Y subordinated auctions

In the lead up to the auction, there was also considerable uncertainty surrounding the likely outcome of the second exchange offer (that for the 2014s and 2016s) and the implication for the sub recoveries in the auction. Press reports suggested that several bondholders had grouped together to form blocking stakes in one or both bonds. On top of which, the Irish Government was in the process of putting together resolution and reorganisation legislation to ensure burden sharing, potentially allowing the full write-down of outstanding subordinated debt.

While most of the focus was on the situation with the subordinated bonds, there were some important issues with the senior bonds that also affected the auction. Due to the rounding down convention outlined in the auction section above, a CDS contract rounds down to a shorter bucket if there are no deliverables in the bucket it naturally falls in with a shorter maturity date than the CDS. Consequently, the maturity dates of the deliverable senior bonds can directly impact the final auction maturity buckets for both sub and senior.

The main issue related to the covered bonds. Holders of Anglo's covered bonds ultimately have a claim on the guarantor, and the maturity of the guarantee is 18 months after the bond maturity date. Following an issuer default, proceeds from the issuer are paid to the guarantor, with the bondholder ranking behind various other claims in the payment waterfall. The issuer is discharged from further obligations, and it is the responsibility of the guarantor to pay bondholders remaining amounts due to them. There is consequently an argument that if the bond maturity date is the relevant maturity date, the bond would fail the Non Contingent Deliverable Obligation characteristic since the issuer can repay less than the full amount and discharge its obligation with respect to bondholders. If the maturity date of the guarantee is the relevant maturity date, this is no longer the case. All of Anglo's covered bonds consequently had maturity dates for the auction 18 months later than might initially have been expected.

The issue was further complicated by the fact that it is not clear that the guarantor's contributions should necessarily be considered since it is not the Reference Entity. If the contributions were not considered, the covered bonds would fail the Deliverable Obligation characteristics; if they were, the covered bonds would be deliverable. Commercially it seems sensible that covered bonds should be deliverable, which is the route the DC took, despite the fact that a strict interpretation of the Definitions suggests otherwise. Precedent on this matter was set in the Bradford and Bingley Credit Event. Ultimately, because covered bonds are unlikely to be the cheapest to deliver, it should have limited impact on the auction Final Price, although it can impact the auction maturity buckets.

A couple of bonds also failed the *Not Contingent* Deliverable Obligation characteristic for other reasons. For example, if the FRN maturing 4 July 2013 were to be redeemed early, there are situations where the redemption amount may be less than the outstanding principal balance of the bonds. The terms of the index-linked bond that matured on 28 December 2010 also provided for a potential early redemption amount less than par based on a sum of index returns. Neither bond was therefore deliverable.

The icing on the cake with regards to Anglo Irish, of course, is that having successfully held the auctions arising from the restructuring of the 2017s, the successful exchange of the 2014s and 2016s in December with the associated change in the bonds' terms and conditions has meant that we are now in the process of a second Restructuring Credit Event. The issue this time is whether or not any auctions will be held. Because much of the outstanding CDS was triggered in the first set of auctions, under the 300/5 rule, there is likely to be no requirement for further auctions under the Definitions and it will be up to the DC to decide whether to hold one or more. If auctions are not held for some but not all buckets, the Movement Option will apply. If an auction is not held for a given CDS contract, the fallback settlement method is physical settlement.

## Thomson

The (first) Thomson Credit Event was the first Restructuring Credit Event to have occurred in some time. It also happened very shortly after the Small Bang Protocol was implemented, hard-wiring auction settlement for Restructuring Credit Events. It was therefore the first time that the bucketed auction process was used.

Because Thomson was in every series of iTraxx indices at the time (Main S1 to S7, HiVol S4 to S7, Crossover S8 to S11), including the on-the-run Crossover index (S11) in addition to many CDOs, outstanding exposures were enormous. Both dealers and investors had large positions at a wide range of strikes.

This combination meant the event was extremely involved, particularly from an operational perspective, as there were thousands of trades to track, trigger and settle. Outstanding positions were substantially reduced ahead of the auction through a sophisticated compression cycle, but the fact that the auction ran smoothly was a huge positive for the CDS market, supporting the changes introduced to increase its standardisation and transparency. This was particularly the case as the events driving the Credit Event and the details of the deliverables were rather opaque!

The timeline for the event was:

- |              |  |
|--------------|--|
| 15 June 2009 | Thomson defers payment of a privately placed note with agreement from a "sufficient number of holders to bind all holders" |
| 24 July 2009 | Thomson announces a debt-for-equity restructuring plan   |
| 27 July 2009 | The Small Bang Protocol extends auction settlement to cover Restructuring Credit Events                                    |

10 Aug 2009	The facts around the 15 June payment deferral become public and the question of whether a Restructuring Credit Event has occurred is raised to the DC
12 Aug 2009	The DC rules that there has been a Restructuring Credit Event
18 Sept 2009	The initial list of deliverables is published
6-13 Oct 2009	The triggering window is open
22 Oct 2009	Auctions are held for three maturity buckets

The first thing to note is that over four months evolved between the payment deferral that triggered the Restructuring Credit Event and the auction. This was rather different than the situation with Anglo where the auction occurred just 16 days after the terms were changed on the bonds. The payment deferral in fact also occurred before the Small Bang protocol was implemented, but it was not public information at that time.

Potential deliverables comprised a revolving credit facility (RCF) and an unknown number and size of private notes for which very little information was publicly available. Thomson released minimal information, so it was very hard to know what the auction buckets were going to look like, or what recoveries might be. On top of this, Thomson was in the process of agreeing a debt-for-equity restructuring plan with its bondholders, to which some bondholders had adhered. It took the DC a considerable amount of time to agree on an initial list, with two factors that caused particular difficulty:

- The structure of the RCF: it was a partially drawn multicurrency facility, potentially raising the requirement for the protection buyer to indemnify the protection seller if delivering the RCF. In fact, this requirement was avoided because Thomson entered into a deed poll undertaking to any recipients of the RCF through the auction not to request an advance under the revolver other than a rollover advance in the same currency as the maturing advance. Additionally, it turned out that the revolver had been amended three times so that it was in fact three separate deliverables, falling in two buckets.
- The deliverability of obligations that had adhered to the debt-for-equity restructuring plan were in fact not deliverable into the auction, despite theoretically being Deliverable Obligations.

The latter point had a significant impact on the auction because, while the information was not actually publicly known, it was thought by market participants that the majority of deliverables had actually adhered to the restructuring and were therefore not deliverable. This was particularly important in the 2.5Y bucket, as there were few potential Deliverable Obligations in the 2.5Y.

Recoveries were expected to be relatively high but to vary significantly with maturity given that the payment deferral that triggered the Credit Event was not strictly necessary from a liquidity perspective, the company has sufficient cash in the near term and there was a high probability of the proposed debt-for-equity restructuring going ahead, which would positively affect the company as a going concern. However, muddying the picture was the fact that it was highly probable that Thomson would need to actually implement its debt-for-equity restructuring plan in Sauvegarde (France's equivalent of the US's Chapter 11) which would then trigger a Bankruptcy Credit Event (as indeed happened on 23 December 2009).

The combination of these factors meant that there was little clarity regarding recoveries or market participant positioning in the various buckets going into the auction. There was therefore considerable uncertainty regarding both the level at which the IMM would set and the likely size and direction of the NOI. In the end, positioning and the inverted nature of the recovery curve meant that the front bucket recovered substantially higher than the others, as shown in Exhibit 18.

## Exhibit 18: Auction results for Thomson

22 Oct 2009

Bucket	Inside Market Midpoint	Open Interest	Final Price
2.5 Year	91.25	€80.967 million to sell	96.25
5 Year	80.375	€220.669 million to sell	65.125
7.5 Year	80	€147.568 million to sell	63.25

Source: Credit Suisse, Creditex, Markit

### Bradford and Bingley

The situation at Bradford and Bingley (B&B) arose as a result of the UK Treasury's Bradford and Bingley plc Transfer of Securities and Property etc (Amendment) Order, amending the terms and conditions of dated subordinated notes under the Banking (Special Provisions) Act 2008.

The Amendment Order basically specified that interest and principal payments were only due and payable on dated subordinated notes if B&B notified bondholders that they were due and payable, B&B could make the payments and remain solvent, and B&B had satisfied its liability to the Financial Services Compensation Scheme. In addition, in the event of winding up, dated subordinated bonds would rank similarly to preference shares on which principal and accrued interest were due.

The timeline for the event was:

20 February 2009:	The Bradford and Bingley plc Transfer of Securities and Property etc (Amendment) Order 2009 came into force
26 May 2009:	Bradford and Bingley plc announced its intention not to make the 16 June 2009 coupon payment on its 16 June 2023 notes
16 June 2009:	Bradford and Bingley plc did not make its coupon payment
20 June 2009:	The grace period for the coupon payment expired
9 July 2009:	The DC was asked to determine whether a Failure to Pay Credit Event had occurred
30 July 2009:	An auction was held

The question was: since the law had been changed in February, allowing B&B to defer coupon payments, did the non-payment in June constitute a Failure to Pay Credit Event? Or did the introduction of the Amendment itself constitute a Restructuring Credit Event? As often, the devil was in the detail of the docs and ultimately required the DC to decide. The ruling was that despite the change in law, a Failure to Pay event had indeed occurred as a result of Section 4.1, highlighted earlier. An auction was therefore held a few weeks later.

To recap, Section 4.1 provides that an event is a Credit Event notwithstanding that it results from a change in the law or that there is a defense to it based on an applicable law. Clearly, this was the situation in this case: the only reason that B&B was able not to make its coupon payment without automatically triggering a Failure to Pay was as a result of the introduction of the Amendment Order in February. B&B's defense was therefore based on a law. Slightly trickier to decide is whether a Failure to Pay event would also occur on a CDS trade entered into after the Amendment Order was implemented because at that point the change in law would have been known. However, because the law did not specifically forbid B&B from making the payment, and rather just allowed it not to, it would not have been known prior to the 16 June payment date that the coupon was not going to be paid.

Because the introduction of the Amendment Order did not explicitly reduce, postpone or defer obligation principal or interest payments (it just allowed them to be deferred), it did not clearly trigger a Restructuring Credit Event. It would potentially have been a different matter if the deferral were legally binding.

## General Motors

On 1 June 2009, General Motors filed under Chapter 11 of the United States Bankruptcy Code, triggering a Bankruptcy Credit Event. In light of the speed at which the Obama administration was keen to finalize the situation with General Motors, there was concern that unless the auction was held quickly, there might not be any deliverables remaining both due to the speed at which the process was proceeding and the potential for a widespread debt-for-equity swap.

As a result, the DC expedited the auction timetable. The final list was published on 10 June with the auction on 12 June, well ahead of General Motors exiting Chapter 11 on 10 July.

## Fannie Mae and Freddie Mac

The Federal Housing Finance Agency (FHFA) placed Fannie Mae and Freddie Mac into Conservatorship on 6 September 2008, triggering a Bankruptcy Credit Event. The resultant auctions occurred on 6 October 2008 and were interesting for a number of reasons:

- The nature of the action triggering the Credit Event meant that both sub and senior recoveries were likely to be very high. Since placing the entities into conservatorship provided them with federal backing, all obligations were basically money-good, with little differentiation in credit quality between sub and senior
- If a framework other than conservatorship had been used to provide the government support, it may not have triggered CDS contracts
- There were a huge number of senior obligations outstanding, many of which were non-standard in one way or another (small issues, index linked etc), making it hard to determine the cheapest to deliver
- CDS contracts were extremely widely held across a large range of investors. The auctions were also some of the earliest to occur so many of the people involved were fairly unfamiliar with the process
- There were both senior and subordinated CDS on Fannie and Freddie, and both were triggered
- There were only a few subordinated bonds outstanding at the time, and they tended to have high coupons. While they underperformed ahead of the announcement given the uncertainty surrounding the future of the agencies, as soon as the government support was announced, this underperformance quickly reversed. Given the extremely low-rate environment of the time, the high coupons made the sub bonds particularly attractive

### Exhibit 19: Auction results for Fannie Mae and Freddie Mac

6 October 2008

	Fannie Mae		Freddie Mac	
	Senior	Sub	Senior	Sub
Inside Market Midpoint	92.4	92.65	93.75	93.8
Net Open Interest	\$12 million to buy	\$608 million to buy	\$79 million to buy	\$540 million to buy
<b>Final Price</b>	<b>91.51</b>	<b>99.9</b>	<b>94</b>	<b>98</b>

Source: Credit Suisse, Creditex, Markit

Auction results for each entity are outlined in Exhibit 19 and we see that sub recovered higher than senior in each case. While this may appear counter-intuitive at first, given the situation leading into the auction outlined above and the way an auction works, it is not necessarily so surprising.

The inside market midpoints were fairly flat across sub and senior, as would be expected given the government backing. They were possibly slightly on the low side relative to the levels debt was trading in the market due to the uncertainty surrounding the cheapest to deliver. The higher final sub recovery was then driven by three things

- The high coupons on the sub debt
- The scarcity of the available sub debt
- The large open interest to buy sub debt in the auction

In short, there was a large bid for sub debt once the nature of the government backing was known, driving up its price, and this was evidenced through the auction results.

## Current Frequently Asked Questions

### **What happens if a sovereign abandons the euro in favour of a new currency?**

If a country decides to leave the euro, in and of itself, this would not trigger a Credit Event on the sovereign CDS as none of the conditions necessary for a Failure to Pay, Repudiation/Moratorium or Restructuring would have occurred. However, we do not view this as the right question to be asking. Leaving the euro is not a viable or attractive option for either Europe as a whole or the leaving country in our opinion, as outlined in our publication ['Leaving EMU' is just an expensive way to default](#).

If, however, for the sake of argument, a sovereign were to redenominate its debt, as outlined in Section I, a change in principal or interest payments to a currency that is not a *Permitted Currency* has the potential to trigger a Restructuring Credit Event. *Permitted Currencies* are those of G7 or AAA-rated OECD countries. So if Italy were to redenominate, for example, its new currency would be deliverable while that of Spain would not.

Redenomination of debt, either inside or outside the euro area, however, has additional restrictions as sovereigns only have jurisdiction over domestic debt. They would be unable to change the currency of any non-domestic debt because this would fall under a non-domestic law (frequently English law).

Assuming that a redenomination did occur, triggering a Restructuring Credit Event, there is then a question of what is deliverable. As explained earlier, because the characteristics of the debt prior to the Restructuring are what count for sovereigns, anything that was deliverable prior to the Restructuring Date would be deliverable, even if now denominated in a non-*Specified Currency*.

### **If a sovereign has a voluntary restructuring, does this trigger CDS contracts?**

This depends on what exactly is meant by a voluntary restructuring. A debt exchange does not trigger an event, as we saw for example with Anglo Irish. And neither does anything that is purely voluntary, as it has to occur in a form that binds all holders. The main way this can happen is if the terms of the Restructured Obligation contain a Collective Action Clause (CAC). CACs exist to allow a specified supermajority (usually in the order of two-thirds to 75%) of bondholders to agree to a change in key details of the obligation (maturity date, coupon rate, principal haircut) in such a way as to be binding on all holders. So if more than the threshold vote to extend the maturity date, for example, this change is enforced on all bondholders, which triggers CDS contracts.

## **What are the implications of the ESM (EFSF) seniority structure?**

The European Financial Stability Facility (EFSF) has been [stated on the EFSF website](#) to “rank pari passu to any other sovereign claim on the country” and, unlike the IMF, would not have preferred creditor status. It has, however, always been our opinion, that stated or not, it would rank more senior if there were to be a default. This has been made explicit for the European Stability Mechanism (ESM): the [press release](#) states: “in order to protect taxpayers’ money, and to send a clear signal to private creditors that their claims are subordinated to those of the official sector, an ESM loan will enjoy preferred creditor status, junior only to the IMF loan”. Since this actually says that private creditor claims are subordinated to those of the official sector, there is an argument that says that this could also be read to apply to the EFSF.

Because a Restructuring Credit Event can be triggered by “a change in priority ranking of any Obligation causing Subordination to another Obligation”, this begs the question: can the preferred creditor status of the ESM trigger sovereign CDS?

The IMF has always had preferred creditor status and to date the existence of IMF loans has never triggered CDS contracts. However, from the Definitions, this does not necessarily need to be the case. Section 2.19 (b) (B) of the Definitions says: “the existence of preferred creditors arising by operation of law or of collateral, credit support or other credit enhancement arrangements shall not be taken into account, except that, notwithstanding the foregoing, priorities arising by operation of law shall be taken into account where the Reference Entity is a Sovereign”.

Ultimately, therefore whether the ESM triggered sovereign CDS contracts could depend on the exact circumstances surrounding the issuance of the ESM loans and, in particular, if the preferred creditor status were to be done by operation of law.

## **What happens if a sovereign imposes large withholding taxes to reduce its debt load?**

Rather than directly restructure its debt, a country could impose withholding taxes on coupons and/or principal to recoup a percentage, with the same end result. If this occurred, it is not clear whether or not it would trigger a Restructuring Credit Event. Section 4.7(b)(ii) of the Definitions specifically excludes tax adjustments occurring in the ordinary course of business as a trigger for a Restructuring event. So if the DC decided that the tax had not arisen in the normal course of business, that could possibly lead to a Restructuring event. However, technically speaking, the amount of interest or principal has not actually been reduced – it is still being paid, there is just a tax on it. Clearly a very grey area that would be for the DC to resolve.

Another factor to be aware of here is the presence of tax treaties with other countries that may restrict the ability of a country to increase withholding tax. While it is not clear what the implications of such a withholding tax would be on CDS contracts, many sovereigns may not actually be in the position to impose such taxes. The reader is advised to consult a tax specialist for a better understanding of this area.

# Appendix

## Glossary of useful terms

**N.B. These represent a summary only. For full, exact details, the reader is referred to the 2003 ISDA Credit Derivatives Definitions and supplements.**

**Accreting Obligation:** An obligation, the terms of which expressly provide for an amount payable upon acceleration equal to the original issue price plus an additional amount or amounts that will or may accrete.

**Assignable Loan:** A Loan that is capable of being assigned or novated to, at a minimum, commercial banks or financial institutions (irrespective of their jurisdiction or organization) that are not then a lender or a member of the relevant lending syndicate, without the consent of the relevant Reference Entity or the guarantor, if any, of such Loan or any agent.

**Bond:** Any obligation of a type included in the *Borrowed Money* Obligation Category that is in the form of, or represented by, a bond, note, certificated debt security or other debt security and shall not include any other type of *Borrowed Money*.

**Borrowed Money:** Any obligation (excluding an obligation under a revolving credit arrangement for which there are no outstanding, unpaid drawings in respect of principal) for the payment or repayment of borrowed money (which term shall include, without limitation, deposits and reimbursement obligations arising from drawings pursuant to letters of credit).

**Confirmation:** The document(s) exchanged between parties to a CDS transaction confirming the terms of the transaction.

**Consent Required Loan:** A Loan that is capable of being assigned or novated with the consent of the relevant Reference Entity or of the guarantor, if any, of such Loan or any agent.

**Credit Event Backstop Date:** 60 calendar days before the *Credit Event Resolution Request Date*.

**Credit Event Resolution Request Date:** The date on which a request is raised to the ISDA DC to determine whether or not a Credit Event has occurred, and on which the DC is in receipt of the necessary supporting publicly available information.

**Default Requirement:** Usually USD 10,000,000 (or relevant currency equivalent) unless specified otherwise in the CDS Confirmation.

**Effective Date:** The first day of the Term of the Credit Derivative transaction as specified in the *Confirmation*.

**Eligible Market Participant:** a party to a relevant transaction

**Event Determination Date:** For standard contracts, this is the *Credit Event Resolution Request Date* if there has been a DC Credit Event Announcement or the first date on which both the Credit Event Notice and Notice of Publicly Available Information are delivered from one counterparty to another if there is no DC ruling. The reader is referred to the Definitions for an understanding of the EDD in other cases.

**Initial Market Quotation Amount:** The notional size of the two-way markets dealers are obligated to make in the first part of an auction.

**Loan:** Any obligation of a type included in the *Borrowed Money* Obligation Category that is documented by a term loan agreement, revolving loan agreement or other similar credit agreement and shall not include any other type of *Borrowed Money*.

**Maximum Initial Market Bid-Offer Spread:** The maximum bid-offer spread for the two-way markets dealers make in the first stage of an auction.

**Maximum Maturity:** An obligation that has a remaining maturity from the Physical Settlement Date of not greater than the period specified.

**Multiple Holder Obligation:** An obligation that at the time of a Restructuring Credit Event is held by more than three (non-affiliated) holders and for which at least two-thirds of holders are required to consent to the Restructuring Credit Event.

**Not Bearer:** Any obligation that is not a bearer instrument unless interests with respect to such bearer instrument are cleared via the Euroclear system, Clearstream International or any other internationally recognized clearing system.

**Not Contingent:** Any Obligation with an outstanding principal balance as of the Delivery Date and thereafter, that may not be reduced as the result of the occurrence or nonoccurrence of an event or circumstance other than payment. Convertible, Exchangeable or *Accreting Obligations* usually satisfy this criteria provided that the right to convert/exchange/purchase/redeem the Obligation has not been exercised on or before the Delivery Date.

**Not Domestic Issuance:** Any Obligation that is registered or qualified for sale outside the domestic market of the Reference Entity.

**Not Domestic Law:** Any Obligation that is not governed by the laws of the Reference Entity (if Sovereign) or those of its jurisdiction (if not a Sovereign).

**Not Sovereign Lender:** Any obligation not primarily owed to a Sovereign or Supranational Organization (including Paris Club debt)

**Payment Requirement:** Usually USD 1,000,000 (or relevant currency equivalent) unless specified otherwise in the *CDS Confirmation*.

**Permitted Currency:** The legal tender of either any Group of 7 (G7) country or any country that is a member of the Organization for Economic Cooperation and Development (OECD) and has a local currency long-term Triple A debt rating by S&P, Moody's or Fitch.

**Scheduled Termination Date:** Maturity date of the CDS contract as defined in the *Confirmation*.

**Specified Currency:** The currency specified in the *Confirmation*, or if not specified and *Specified Currency* is specified in the Confirmation, any of the lawful currencies of Canada, Japan, Switzerland, the UK and the USA, the Euro and any successor currencies to these currencies.

**Transferable:** An obligation that is transferable to institutional investors without any contractual, statutory or regulatory restriction.

## ISDA Credit Derivatives Physical Settlement Matrix

### Exhibit 20: Contract details for a few of the most liquid standard CDS contracts

Transaction Type	STANDARD NORTH AMERICAN CORPORATE	STANDARD EUROPEAN CORPORATE	STANDARD SUBORDINATED EUROPEAN INSURANCE CORPORATE	STANDARD WESTERN EUROPEAN SOVEREIGN
Business Days:	"If the Floating Rate Payer Calculation Amount is denominated in USD: London & New York EUR: London, New York & TARGET GBP: London JPY: London & Tokyo CHF: London & Zurich CAD: London, New York & Toronto"	"If the Floating Rate Payer Calculation Amount is denominated in EUR: London & TARGET USD: London & New York GBP: London JPY: London & Tokyo CHF: London & Zurich CAD: London & Toronto"	"If the Floating Rate Payer Calculation Amount is denominated in USD: London & New York EUR: London & TARGET GBP: London JPY: London & Tokyo CHF: London & Zurich CAD: London & Toronto"	"If the Floating Rate Payer Calculation Amount is denominated in USD: London & New York EUR: London & TARGET CAD: London & Toronto GBP: London"
Calculation Agent City:	New York	London	London	London
All Guarantees:	Not Applicable	Applicable	Applicable	Applicable
Conditions to Settlement:	Notice of Publicly Available Information Applicable	Notice of Publicly Available Information Applicable	Notice of Publicly Available Information Applicable	Notice of Publicly Available Information Applicable
Credit Events:	"Bankruptcy Failure to Pay Restructuring, if specified as applicable in the relevant Confirmation Restructuring Maturity Limitation and Fully Transferable Obligation Applicable"	"Bankruptcy Failure to Pay Restructuring Modified Restructuring Maturity Limitation and Conditionally Transferable Obligation Applicable"	"Bankruptcy Failure to Pay Restructuring"	"Failure to Pay Repudiation/Moratorium Restructuring"
Obligation Category:	Borrowed Money	Borrowed Money	Borrowed Money	Borrowed Money
Obligation Characteristics:	None	None	None	None
Settlement Method:	Auction Settlement	Auction Settlement	Auction Settlement	Auction Settlement
Fallback Settlement Method:	Physical Settlement	Physical Settlement	Physical Settlement	Physical Settlement
Physical Settlement Period:	As per Section 8.6 of the Definitions <sup>2</sup> capped at 30 Business Days	30 Business Days	30 Business Days	30 Business Days
Deliverable Obligation Category:	Bond or Loan	Bond or Loan	Bond or Loan	Bond or Loan
Deliverable Obligation Characteristics:	"Not Subordinated Specified Currency Not Contingent Assignable Loan Consent Required Loan Transferable Maximum Maturity: 30 years Not Bearer"	"Not Subordinated Specified Currency Not Contingent Assignable Loan Consent Required Loan Transferable Maximum Maturity: 30 years Not Bearer"	"Not Subordinated Specified Currency Not Contingent Assignable Loan Consent Required Loan Transferable Maximum Maturity: 30 years Not Bearer"	"Specified Currency Not Contingent Assignable Loan Consent Required Loan Transferable Maximum Maturity: 30 years Not Bearer"
Escrow:	Applicable	Applicable	Applicable	Applicable
60 Business Day Cap on Settlement	Not Applicable	Applicable	Applicable	Applicable

**Exhibit 20: Contract details for a few of the most liquid standard CDS contracts**

Transaction Type	STANDARD NORTH AMERICAN CORPORATE	STANDARD EUROPEAN CORPORATE	STANDARD SUBORDINATED EUROPEAN INSURANCE CORPORATE	STANDARD WESTERN EUROPEAN SOVEREIGN
2009 ISDA Credit Derivatives Determinations Committees, Auction Settlement and Restructuring Supplement to the 2003 ISDA Credit Derivatives Definitions (July 14, 2009)	Applicable	Applicable	Applicable	Applicable
Fixed Rate Payer Payment Dates frequency	quarterly	quarterly	quarterly	quarterly

Source: Credit Suisse, ISDA

## Standard CDS contracts

### Standard North American Corporate Contract (SNAC)

On 8 April 2009 the SNAC became the standard CDS contract traded in North America. Its introduction coincided with the implementation of the Big Bang Protocol. Both developments were designed to facilitate the transition to centralized clearing of CDS contracts and to address the concerns of regulators. By creating a fully fungible, standardized CDS contract, the aim was to reduce settlement risk, aid trade compression and improve liquidity.

#### SNAC Details

- Fixed coupons of 100bp or 500bp + exchange of upfront
- 40%/20% fixed recovery rate assumptions for senior/subordinated debt
- Full first coupon payable for all contracts
- Contracts trade without Restructuring (No R)

It should be noted that the move to fixed coupons means that par spreads are no longer quoted. Spreads in dealer runs are now quoted spreads, which represent the translation of the fixed coupon plus upfront payment into a single flat spread, enabling full comparison across dealers<sup>3</sup>.

The convention has become that low-spread names are quoted as spreads, while high-spread names are quoted on price, in line with the situation for more distressed names prior to the introduction of standardised contracts.

### Standard European Contract (SEC)

European contract changes, effective June 22, 2009, paralleled those in North America with some minor differences, primarily related to the ongoing importance of hedging Restructuring risk in Europe. The new convention changes affected corporate, financial and Western European sovereign CDS contracts.

<sup>3</sup> To ensure maximum transparency and clarity, the ISDA CDS Standard Model became the market standard for CDS fee calculations on June 1, 2009. It is now the default in Bloomberg's CDSW screen. Further details are available on [www.cdsmodel.com](http://www.cdsmodel.com), along with the locked interest rate curves used in the model. (Interest rates are set at last night's closing levels.)

### SEC Details

- Standard fixed coupons of 25bp, 100bp, 500bp and 1000bp + exchange of upfront
- 40%/20% fixed recovery rate assumptions for senior/subordinated debt
- 300bp and 750bp fixed coupons also available for recouping of existing trades
- Full first coupon payable for all contracts
- Contracts trade with modified-modified Restructuring (Mod-Mod-R) clause

Liquidity has gravitated to the 100bp and 500bp strikes in line with the US quoting conventions and dealer runs specify quoted spreads for low-spread names and up-fronts for high-spread names. However, all fixed coupons listed above can trade and it is possible that market dynamics will drive demand for different or additional coupons in the future.

### Asia ex-Japan

Standardized terms came into effect in Asia ex-Japan on 21 December 2009.

- Fixed coupons of 100bp or 500bp + exchange of upfront
- 40%/20% fixed recovery rate assumptions for senior/subordinated debt
- *Scheduled Termination Date* alignment – any of 20 Mar, 20 Jun, 20 Sep, 20 Dec
- Payment date alignment – payment roll on 20 Mar, 20 Jun, 20 Sep, 20 Dec
- Full first coupon payable for all contracts

### Japan

Standardized terms came into effect in Japan on 21 December 2009.

- Fixed coupons of 25bp, 100bp or 500bp + exchange of upfront
- 35%/15% fixed recovery rate assumptions for senior/subordinated debt
- *Scheduled Termination Date* alignment – any of 20 Mar, 20 Jun, 20 Sep, 20 Dec
- Payment date alignment – payment roll on 20 Mar, 20 Jun, 20 Sep, 20 Dec
- Full first coupon payable for all contracts

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Ben Booth, Managing Director, Head of European Fundamental Credit Research  
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## Disclosure Appendix

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I, Helen Haworth, certify that (1) the views expressed in this report accurately reflect my personal views about all of the subject companies and securities and (2) no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this report.

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**Sell:** Indicates a recommended sell on our expectation that the issue will deliver a return lower than the risk-free rate.

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<b>Market Perform</b>	31%	(of which 95% are banking clients)
<b>Underperform</b>	27%	(of which 96% are banking clients)
<b>Sell</b>	2%	(of which 95% are banking clients)

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