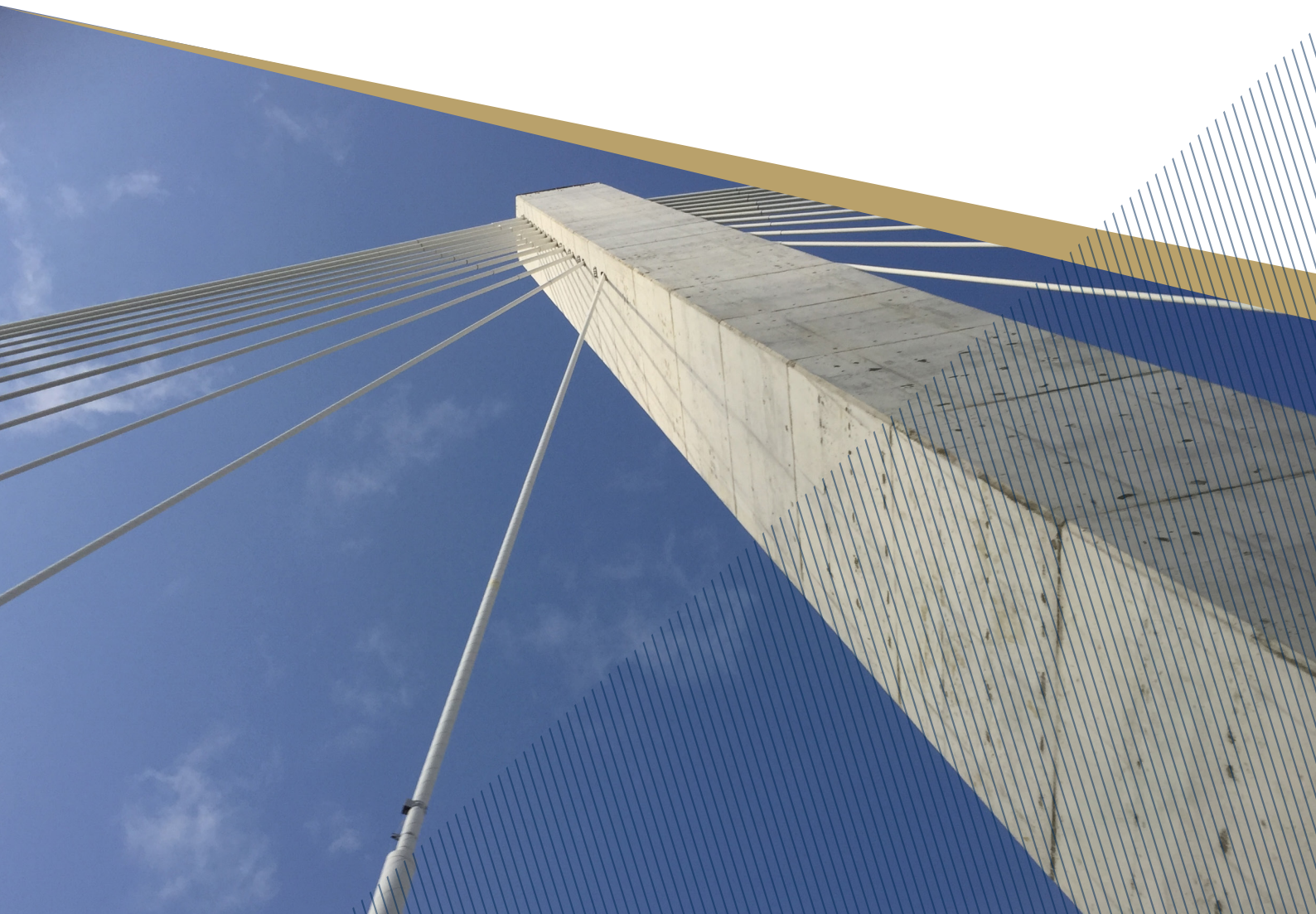


The European Corporate Single Name Credit Default Swap Market

A study into the state and evolution of the European corporate
SN-CDS market

An initiative of the ICMA Secondary Market Practices Committee

| **February 2018**



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Executive Summary

- A highly efficient means of managing credit risk, corporate single name credit default swaps (SN-CDS) are used by a range of market participants, including corporate bond market-makers, investors, hedge funds, loan book traders, and those managing banks' counterparty credit exposures. As well as being an effective hedging instrument, SN-CDS can be used as an alternative means of assuming credit risk, as well as creating trading opportunities with respect to other financial instruments, and so playing a vital role in price discovery in the corporate and sovereign bond markets. Historical data shows that a vibrant SN-CDS market is a critical contributor to deep and liquid corporate bond secondary markets.
- A very clear message from the data and interviews is that liquidity in the corporate SN-CDS market has deteriorated significantly in the period since 2007-2008, which can largely be attributed to a retrenchment of market-makers, including some high-profile actors. Interviewees suggest that there are now only four or five fully committed market-makers for corporate SN-CDS in Europe, and perhaps only two-to-three active within each sector; and while these dealers continue to provide pricing and liquidity, it is too few to support a deep and liquid market.
- The attrition of market-makers is in turn attributed largely to the increased capital costs of running CDS books post Basel III, as well as benign market conditions which have reduced the demand for protection, as low credit spread volatility makes it more difficult to generate profits. A number of interviewees suggest that a more volatile market environment would draw some of the recent defectors back to making markets.
- Many interviewees cited the ECB's Corporate Sector Purchase Programme as a key dampener of volatility, while also creating asymmetric risks towards further spread tightening. Low spread volatility, as well as historically low default rates, also reduce the value placed on buying protection, which limits end user activity.
- The discussions on central clearing for SN-CDS point to some inherent differences of opinion, or perhaps differing approaches, to clearing between sell-side and buy-side firms. While most CDS index trading in Europe is now centrally cleared, with a continuing trend away from bilateral trading, the SN-CDS market remains relatively fragmented. A greater adoption of central clearing is broadly seen as supporting improved liquidity.
- Despite a trend toward greater platform-based trading of CDS indices, SN-CDS remains a primarily OTC market. The improved standardization of SN-CDS contracts, in theory, should make the product more amenable to venue trading, and both sell-side and buy-side firms are generally supportive of moving more SN-CDS trading onto platforms, both from a trade processing efficiency perspective, as well as a transparency and price discovery aspect. However, for a number of practical reasons, traction remains slow.
- The advent of MiFID II/R, for the most part, is seen as a potential positive. The general view is that improved post-trade transparency should help create more market confidence with respect to trade transparency and a sense of true liquidity. At the same time, it is also noted that greater transparency could expose the positions of market-makers and act as a deterrent to provide liquidity.
- Interviewees express general satisfaction with the introduction of the 2014 ISDA Definitions for CDS, which revised the previously relied upon 2003 Definitions. In particular, respondents feel that it has helped support CDS market liquidity while also providing more certainty around default events, in particular for financials. Greater flexibility in the deliverability process is also broadly seen as a marked improvement in the overall efficient functioning of the market.
- In the lead-up to and during the undertaking of this study there had been some high-profile, and largely contentious, press coverage of specific CDS trigger events. A striking message from the interviews is that, for the most part, participants seem unconcerned by the outcomes of these particular events or the final price determination, and that the contracts largely operated as they should. However, it is also widely acknowledged that it is impossible to design contracts for every possible eventuality, and that on occasion there will be unexpected or contentious outcomes. But in general, so long as market participants are prepared to commit to the necessary due diligence, or entrust experienced and knowledgeable traders and risk managers, the SN-CDS market functions relatively efficiently.
- A prominent theme from many of the interviews is that one of the major barriers to new entrants to the CDS market is the required level of expertise, and an attrition of market experts. A more concerted effort by capital market participants and stakeholders to understand, embrace, and promote the corporate SN-CDS product and market would only be to the benefit of the European corporate bond market, which in turn would have positive implications for issuers, investors, and so the European economy.

Introduction

Why this report?

Resilient, well-functioning international debt capital markets are essential in supporting economic growth, jobs, and productivity, something that is at the core of ICMA's work. In recent years ICMA has been particularly focused on the efficiency and liquidity of European corporate bond secondary markets, the robustness of which is important not only for investors and fund managers, but also for the health of the primary market and so corporate issuers. As has been identified in this work,¹ the ability of banks and other institutions to provide liquidity in the corporate bond secondary markets is contingent not only on the availability and cost of capital to support market-making, but also on their ability to access ancillary funding² and hedging markets.

Single name credit default swaps (SN-CDS), which first became prominent in the late 1990s, are the most efficient market-based means of mitigating credit risk to a specific entity. Rather than being a true 'swap', in the sense of an interest-rate swap, a CDS contract looks more like an insurance policy against a specific credit event. More precisely, a CDS pays out upon a pre-defined event of *default* suffered by an entity against which the CDS is written. The pay-out is based on the residual value of the underlying bond it references. Attempts to standardize the features of CDS contracts, as well as improved clarity around what constitutes a default of the reference entity (a 'trigger event'), have made CDS more amenable to market-based trading. The most recent advancements in contract design (the 'ISDA 2014 Definitions') have even made CDS more 'bond like'³ in their features.

As a highly efficient means of managing credit risk, corporate SN-CDS are used by a range of market participants, including corporate bond market-makers, investors, hedge funds, loan book traders, and those managing banks' counterparty credit exposures. As well as being an effective hedging instrument, SN-CDS can be used as an alternative means of assuming credit risk, as well as creating trading opportunities with respect to other financial instruments, and so playing a vital role in price discovery in the corporate and sovereign bond markets. Historical data shows that a vibrant SN-CDS market is a critical contributor to deep and liquid corporate bond secondary markets.

The importance of a well-functioning corporate SN-CDS market is largely recognized as an important component for developing corporate bond markets, as highlighted by recent reports by ICMA,⁴ IOSCO,⁵ and the European Commission Expert Group on European Corporate Bond Markets.⁶ Meanwhile, there is mounting anecdotal and empirical evidence that liquidity is deteriorating in the corporate bond markets,⁷ and while a number of possible causes have been identified, including regulatory impacts on market-makers' capital and extraordinary monetary policy, it would seem that a parallel decline in SN-CDS market liquidity is also a contributing factor.

The decline in SN-CDS liquidity is similarly attributed to regulation and benign market conditions. However, recent press coverage has alluded to the inherent complexity of CDS, as well as potential risks with respect to their reliability, which may also be a factor underlying declining activity.

Given the importance of the SN-CDS market to well-functioning, liquid corporate bond markets, this ICMA study sets out to explore and map the state and evolution of the European SN-CDS market. The study asks who are the users of the SN-CDS market, and the benefits and risks associated with the product. It looks at where and how liquidity is provided, and the costs and challenges related to this. Finally, it asks whether a lack of broad understanding of the product and unfavourable misrepresentation in the press has hindered more widespread participation in the market, with the benefits of improved corporate bond market liquidity this would provide.

1 See, for instance: ICMA (2014), The current state and future evolution of the European investment grade corporate bond secondary market: perspectives from the market (https://www.icmagroup.org/assets/documents/Regulatory/Secondary-markets/The-state-of-the-European-investment-grade-corporate-bond-secondary-market_ICMA-SMPC_Report-251114-Final3.pdf)

2 This was explored in detail in the study: ICMA (2017), The European Credit Repo Market: The cornerstone of corporate bond market liquidity (<https://www.icmagroup.org/assets/documents/Regulatory/Repo/The-European-Credit-Repo-Market-June-2017-190917.pdf>)

3 For example, by standardizing cash flows, see further details in the following chapter (I. Background).

4 ICMA (2016), Remaking the corporate bond market (<https://www.icmagroup.org/assets/documents/Regulatory/Secondary-markets/Remaking-the-Corporate-Bond-Market-250716.pdf>)

5 IOSCO (2017), Examination of Liquidity of the Secondary Corporate Bond Markets (<https://www.iosco.org/library/pubdocs/pdf/IOSCOPD558.pdf>)

6 European Commission (2017), Improving European Corporate Bond Markets (http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail_groupDetailDoc&id=35759&no=1)

7 For example, see: Risk Control (2017), Drivers of Corporate Bond Market Liquidity in the European Union (<http://www.riskcontrollimited.com/insights/drivers-of-liquidity-in-the-eu-corporate-bond-market/>)

Scope and methodology

The study focuses primarily on the market for single name CDS referencing European entities, both corporate and financial.⁸

It applies a 'triangular' research approach, utilizing both quantitative analysis and qualitative interviews with market stakeholders. The data is sourced primarily from DTCC's Trade Information Warehouse (TIW), Bloomberg, ICE Clear Europe as well as from ICE Clear Credit. TIW provides lifecycle event processing services for approximately 98% of all credit derivative transactions in the global marketplace.⁹ Our sample period covers the period from the fourth quarter of 2010 to the third quarter of 2017. The DTCC data captures all trades recorded with the DTCC that constitute market risk activity; trades are recorded only if they result in a transfer of credit risk among market participants. DTCC TIW data includes both corporate and sovereign CDS.

⁸ Data on sovereign SN-CDS have been included in the analysis to illustrate the share corporate SN-CDS account for in the universe of single name credit default swaps.
⁹ <http://www.dtcc.com/derivatives-services/trade-information-warehouse>

I. Background

Single Name Credit Default Swaps (SN-CDS)

A single name credit default swap (SN-CDS) is effectively an agreement between two parties to 'swap' or transfer the risk of default of a specific borrower i.e. a corporate, bank, municipality, or sovereign.¹⁰ It allows market participants to hedge against the default of a legal entity referenced in the CDS agreement ('reference entity'). For the purpose of this study, only corporate (including financial) European SN-CDS will be considered.¹¹

CDS referencing multiple entities are classed as 'multi-name' CDS. The most common are CDS indices which reference a basket of underlying single name CDS. In Europe, the main CDS Indices are the Markit iTraxx indices: 'Main' for IG corporates, and 'Crossover' for sub-IG corporates. The fair value of the index is essentially the aggregate value of the underlying reference CDS.

The seller of a CDS is effectively 'selling protection', with a contractual obligation to pay the buyer of the CDS, who is 'buying protection', an agreed amount in the event of a default, or 'credit event', of the reference entity. Credit events are usually a failure of the reference entity to make payment on its debt (either loans or bonds), but can also include restructuring, bankruptcy, or a downgrade. The definition of a 'credit event' is written into the terms of the contract between the two counterparties. The International Swaps and Derivatives Association (ISDA) sets market conventions in terms of terminology and legal documentation, including definitions of credit events (see below).

SN-CDS pricing and settlement

The 'buyer of protection' makes periodic payments to the seller of the CDS, which is known as the CDS coupon. The CDS market is largely standardized and trades with points upfront, known as premium, and a fixed coupon. The CDS coupon is typically quoted in basis points, which is applied to an agreed notional amount (e.g. 100 basis points or 1% on €150 million).

In theory, this should be comparable to the asset-swapped spread value of similar maturity bonds of the reference entity (e.g. if the 5-year bond of a corporate trades at Libor+80, the 5-year CDS should trade somewhere close to 80 bps). This is the annualized premium that the buyer of the CDS must pay to the seller. The difference between the CDS price and the Libor-spread of the reference entity bonds is called the 'CDS basis'. This basis can be either positive or negative, and is determined by a number of factors, such as relative liquidity, or the bond's repo rate.

Following a credit event, CDS contracts can in principle be settled under three distinct methods: (i) physical settlement, (ii) cash-settlement, and (iii) auction settlement.¹²

- (i) Settling CDS contracts physically used to be the predominant approach historically. Under physical settlement, the buyer of protection delivers eligible debt instruments to the seller of protection who in return pays the par value of the instruments. The expected recovery rate of the referenced debt instrument is not taken into consideration. If the rate fluctuates following settlement, potential losses or gains are at the risk of the protection seller. In addition, buyers of protection who do not own the reference obligation (called a 'naked' position) may find it difficult to source eligible debt instruments, in particular if the nominal value of total outstanding CDS exceeds the total nominal value of the reference instruments. This is also known as a 'short squeeze'.
- (ii) Cash settlement has been the most commonly adopted method of settlement since 2009, replacing physical settlement. According to this method, the seller of the CDS makes a single payment to the buyer of protection. The payment is equivalent to the nominal value of the CDS, less the market value, i.e. the expected recovery rate, of the referenced debt instruments. However, the actual recovery rate is often subject to legal proceedings, which may sometimes take years, and is determined after the credit event occurred. In the case of corporates, the market value is usually that of the senior unsecured bonds of the reference entity.
- (iii) Introduced by ISDA in 2005, the method of auction settlement aims to address shortcomings of physical CDS settlement, notably the above-mentioned short squeeze. Physical settlement is effectively transformed into cash settlement, whereby the price or recovery rate of the underlying debt instruments is established through an auction process. In a two-phase process, a composite or 'initial market midpoint' (IMM) is initially established on the basis of bids and offers submitted by CDS liquidity providers. Subsequently, clients of liquidity providers submit limit orders which together form market-clearing auction prices. Auction settlement is commonly employed for significant credit events.¹³

¹⁰ In addition, a single name CDS can also be based on specific asset-backed securities (ABS) such as commercial or residential mortgage-backed securities, referred to as ABCDS, or syndicated loans of an entity, known as LCDS. ISDA (2016), Single-Name CDS Literature Review, pp.27-33

¹¹ DTCC T1W data includes both corporate and sovereign CDS

¹² ISDA (2016), Single-name Credit Default Swaps: A Review of the Empirical Academic Literature, pp. 27-32.

¹³ Ibid

SN-CDS market conventions

CDS are most commonly traded on the basis of rules and conventions provided by ISDA in the form of master agreements, the credit support annex (CSA), and the Credit Derivatives Definitions, the standard legal documentation. These set out the legal contractual terms governing CDS. Single-name CDS have become more standardized as a result of changes to the maturity dates introduced by ISDA in 2009¹⁴ and 2015.¹⁵

To standardize cash flows, CDS have been traded on the basis of fixed coupons since 2009. CDS coupons are paid every quarter by the 'buyer of protection' on 20 March, 20 June, 20 September and 20 December. Coupon payments are calculated on an Actual/360 basis. In Europe, fixed coupons for corporate CDS are either 25 or 100 [for IG], and 500 or 1000 basis points [for HY], while 100 or 500 basis point coupons are used in North America. One of the benefits is greater operational efficiency, but also the enhanced eligibility for central clearing.¹⁶

Since 20 December 2015,¹⁷ the standard maturity dates for single-name CDS have been aligned with CDS indices, falling on the 20 June and 20 December each year. On each of these dates, the market moves to the next standard maturity date i.e. from 20 June to 20 December, and from 20 December to 20 June the following year. These dates are called 'roll dates'. Similar to bonds, CDS contracts are deemed 'on-the-run' if the standard maturity date is the latest.¹⁸

However, it is necessary to exchange upfront payment if the CDS premium and fixed coupons do not match. Where the annualized CDS premium (e.g. 200 bps) is greater than the fixed coupon (100 bps), the buyer makes an additional upfront payment to the seller (of 100 bps in this case). Conversely, if the CDS premium (e.g. 80 bps) is smaller than the fixed coupon (e.g. 100 bps), the seller makes an upfront payment to the buyer to compensate for 'overpaying' for protection (of 20 bps in this case).

In addition, a full first coupon payment is made by the buyer of protection to the seller on the first coupon date. The seller, in turn, will make a payment to the buyer for the part of the coupon preceding the value date of the CDS agreement, similar to payments of accrued interest for bonds.

For example, the buyer of protection for value date 19 November will pay the seller the full (quarterly) coupon on 20 December, the standard payment date. The seller, in turn, will make a payment to the buyer for the 'accrued coupon' prior to the value date, i.e. between 20 September and 18 November. Thus, on settlement, CDS trades involve an upfront payment between the buyer and seller that reflects the discounted value of the projected cash flows related to the CDS (similar to a bond, but excluding principal).

ISDA 2014 Credit Derivatives Definitions

Following the sovereign debt crisis and forced 'bail-in' of bondholders, ISDA introduced in 2014 the concept of 'governmental intervention' as a credit event for non-US financial entities under its Credit Derivatives Definitions. Known as '2014 Definitions', these revised definitions provide a framework for market participants in CDS markets and serve as a basis for ISDA's Determinations Committee, a ruling body, to determine whether a credit event occurred, and buyers of protection should receive a payout from sellers of CDS.¹⁹

A 'governmental intervention' credit event occurs if, triggered by government action, payments of interest or principal of referenced instruments are reduced or postponed, debt instruments are further subordinated, changes of beneficial ownership are imposed on creditors (expropriation), holders of debt instruments are forced to cancel, convert or exchange an obligation, inter alia.²⁰

Including this new type of credit event in ISDA's definitions became necessary to address issues arising from the nationalization of SNS Reaal Bank in 2013 by the Dutch Government. Whilst holders of subordinated debt were expropriated as a result of this 'bail-in', the ISDA 2003 Definitions did not cover such a transaction, and the 2014 Definitions were created to address the unique economics of such situations.

¹⁴ Referred to as 'Big Bang' and 'Small Bang' Protocols for global/US SN-CDS and European SN-CDS respectively. (http://www.isda.org/bigbangprot/bbprot_faqs.html#cdi4)

¹⁵ ISDA, Frequently Asked Questions, Amending when Single Name CDS roll to new on-the-run contracts: December 20, Updated 10 December 2015 (<http://www2.isda.org/asset-classes/credit-derivatives/single-name-cds-roll/>)

¹⁶ Markit, CDS Small Bang: Understanding the Global Contract & European Convention Changes, 20 July 2009 (http://www.markit.com/cds/announcements/resource/cds_small_bang_07202009_upd.pdf)

¹⁷ Previously, CDS traded on a quarterly basis aligned with the coupon payment dates.

¹⁸ ISDA, Frequently Asked Questions, Amending when Single Name CDS roll to new on-the-run contracts: December 20, Updated 10 December 2015 (<http://www2.isda.org/asset-classes/credit-derivatives/single-name-cds-roll/>)

¹⁹ ISDA (2016), Single-name Credit Default Swaps: A Review of the Empirical Academic Literature, p. 33.

²⁰ *ibid* 26-27.

A number of other amendments were introduced under the 2014 Definitions and include, for instance, the option for counterparties to refine credit event determinations by seniority of the referenced debt. In practice, this means that a SN-CDS on subordinated debt can be triggered separately from SN-CDS on senior debt. Furthermore, the deliverable instruments for CDS settlement were extended by introducing 'asset package delivery' and an 'asset package credit event'. In the same vein, the concept of a 'standard reference obligation' (SRO) was introduced in 2014 with respect to physical settlement of CDS. SROs designate the minimum number of debt instruments eligible for CDS settlement. For frequently traded SN-CDS, the SRO administrator periodically publishes a list of SROs.²¹

In July 2016, ISDA published the ISDA 2016 Bail-in Article 55 Bank Recovery and Resolution Directive (BRRD) Protocol to enable parties to Protocol Covered Agreements to amend the terms of each such Protocol Covered Agreement to reflect the requirements of Article 55 of the BRRD.²²

Other credit event definitions

Under the ISDA Credit Derivatives Definition, other credit events for corporates typically comprise bankruptcy, failure to pay, and restructuring, amongst others. With respect to sovereign entities, a repudiation or moratorium are classed as trigger events, as are failure to pay and restructuring. It is worth noting that restructuring is specific to CDS agreements in Europe and Emerging Markets, and is not considered a credit event in the standard CDS agreement for North America.

ISDA Determinations Committees

The responsibility to determine whether a credit event has occurred lies with the ISDA Determinations Committees (DC), set up in 2009 under the so-called 'Big Bang Protocol'.²³ Whilst the occurrence of a credit event was previously determined on a bilateral basis between the protection buyer and the seller of CDS, the DCs were established to perform this function on a market-wide basis to ensure consistency across all CDS contracts.²⁴ Each regional DC is made up of up to 10 sell-side and five buy-side voting firms, in addition to potentially three consultative firms and central counterparty observer members.²⁵

The DCs' role is to apply the terms of market-standard credit derivatives contracts to specific cases, and make factual determinations on Credit Events, Successor Reference Entities and other issues, based on information provided to the DCs by CDS market participants. The DCs are also responsible for determining whether a CDS Auction should be held following a Credit Event, in accordance with the Determinations Committee Rules.

In November 2017, ISDA announced that it has reissued an invitation to tender for the secretarial role on the credit derivatives DCs. The new invitation to tender follows an announcement on 6 October 2017 that the DCs and ICE Benchmark Administration (IBA) were unable to reach agreement on IBA assuming the role of DC secretary. IBA had been selected through the original tender process in 2016.

The DC secretary, a role currently held by ISDA, is responsible for administrative duties, such as distributing questions submitted by eligible market participants to the relevant DCs, coordinating the timings of DC meetings, and publishing the results of DC votes. While administering the process, the DC secretary does not vote on whether credit events have occurred, and so does not make the determinations.²⁶

²¹ ISDA, Frequently Asked Questions 2014 Credit Derivatives Definitions & Standard Reference Obligations: October 6, 2014 Go-Live, pp. 7-9 <http://www2.isda.org/asset-classes/credit-derivatives/2014-isda-credit-derivatives-definitions/>

²² ISDA News Release, ISDA Publishes Bail-in Article 55 BRRD Protocol, 14 July 2016 (<https://www.isda.org/a/ipDDE/article-55-press-release-final-002.pdf>).

²³ ISDA (2016), Single-name Credit Default Swaps: A Review of the Empirical Academic Literature, p. 21

²⁴ *ibid* 33.

²⁵ ISDA, Credit Derivatives Determinations Committee (<https://dc.isda.org/>)

²⁶ ISDA Press Release, ISDA Reissues Invitation to Tender for Determinations Committees Secretary Role, 9 November 2017 (<https://www.isda.org/2017/11/09/isda-reissues-invitation-to-tender-for-determinations-committees-secretary-role/>)

Users of the SN-CDS market

Sell-side

Sell-side participants active in SN-CDS markets include corporate bond traders, loan books, CVA traders and credit derivative structurers.

Corporate bond traders

SN-CDS provides the most efficient means for hedging credit risk to a particular reference entity. While corporate bond market-makers systematically hedge the interest rate risk of a corporate bond position, usually by taking an opposite delta weighted i.e. offsetting position in the relevant reference government bond, however this still leaves them with the credit risk component of the position. The premium of a SN-CDS written on the same reference entity as the bond will, theoretically, be the same as the credit component of the bond yield, which provides a means of hedging credit risk. Thus market-makers can use the SN-CDS market to hedge the credit risk element of their corporate bond exposures (buying or selling protection against their long or short positions), allowing them to reduce their overall trading book exposure, and, in theory, run more and larger positions.

Loan books

Similar to holding positions in corporate bonds, loans held on the banking book also create both interest rate risk and credit exposure to the receiver of the loan. While interest rate swaps (IRS) are usually used to hedge interest rate risk, buying SN-CDS referencing the entity receiving the underlying loan can provide protection in the event of the entity defaulting and being unable to service and repay the loan. Hedging is a requirement under a loan book's mandate depending on the credit rating of the underlying loan and idiosyncratic factors. Single name CDS constitute one tool amongst others for hedging, such as Collateralized Loan Obligations (CLOs) or guarantees. In the case of SN-CDS, the use for hedging purposes is to some degree linked to the accounting method of the loan book. The methods of accrual accounting and fair value accounting have different implications for the use of SN-CDS. Under fair value accounting, both the loan and the SN-CDS are marked-to-market. Under these circumstances, banks are likely to be more inclined to choose CDS to hedge. In contrast, accrual accounting of the loan creates a mismatch with the SN-CDS, which as a credit derivative, is accounted for at fair value. If there is a preference to avoid or reduce accounting asymmetry, banks with accrual accounted loans may not want to have a fair value hedge but rather use alternative hedges. Additionally, it is also worth noting that loan buyers may not only try to reduce credit risk, but may also use SN-CDS as a capital management tool in view of optimizing capital usage given regulatory capital relief under certain conditions.²⁷

CVA traders

Credit valuation adjustment (CVA) desks are responsible for monitoring and mitigating banks' correlation risk arising out of derivatives exposures to specific counterparties. SN-CDS can be a useful tool for hedging counterparty exposure. For example, an investment bank may have a large, long term FX-swap in place with a client. As the underlying currency moves, and the mark-to-market on the swap moves deeper into the money from the perspective of the bank, so the ability of the client to pay the differential becomes an increasing concern.²⁸ CVA traders can mitigate this risk by buying protection referencing the client.²⁹

Credit derivative structurers

Desks and traders that structure credit derivatives, such as synthetic collateralized debt obligations (CDOs) or credit linked notes will often use SN-CDS to hedge their exposure to the underlying reference entities.

²⁷ See also BIS (2017), Syndicated loans and CDS positioning, Working Papers No 679: "Under certain conditions, bank capital regulation allows banks to reduce the risk weights attached to some of their credit risk exposures by buying protection from a counterparty that has a better credit rating than the entity to which the bank is originally exposed to. That is, CDS can be used for capital relief purposes (see for instance Shan et al. (2016) or Hasan and Wu (2016)). Under this "capital relief hypothesis", it is to be expected that banks that are in a weaker position in terms of their risk-weighted regulatory capital ratios have a greater incentive than their better capitalized peers to buy CDS protection on their credit risk exposures in order to lower the capital requirement implied by their lending portfolios" [p. 11]. However, the authors of the paper "do not find evidence that banks use CDS for capital relief purposes" [p. 28].

²⁸ The assessment of this risk will also depend on the terms of the Credit Support Annex (CSA) of the ISDA Master Agreement between the bank and the client.

²⁹ In many cases, the probability of default (PD) used in banks' CVA models will be derived from CDS levels.

Buy-side

Asset managers and other investors, both real money and leveraged, use the SN-CDS market in a number of different ways.

Hedging

Portfolio managers may wish to reduce their exposure to a particular bond or credit, either as part of a portfolio rebalancing or as an active strategy, for example in response to a downgrade, an adverse price move, a news event, or the bond dropping out of an index. However, it may be that market liquidity for the bond they are trying to sell could be poor at the time they elect to reduce their exposure, making it difficult to find an acceptable price or to find a market for their full size. In this case they could turn to the SN-CDS market, buying protection in the relevant reference entity, and so neutralizing their credit exposure until liquidity improves in the cash bond market and they can exit both their bond position at more favourable terms.

An alternative to bonds

Selling protection can be viewed as identical to the credit exposure from taking a long bond position. Thus, rather than buying a corporate bond (interest rate hedged), investors could sell a SN-CDS referenced to the same entity as the bond. This is particularly helpful where liquidity in the underlying bond is poor, or where the SN-CDS is implicitly cheaper than the reference entity bonds ('positive basis'). For leveraged investors, selling SN-CDS may also be more efficient, and less risky, than using the repo market.

Arbitrage strategies

Some funds may look at entering arbitrage strategies involving SN-CDS in order to exploit price discrepancies between different products. Basis trades, taking opposite positions in cash bonds and SN-CDS to monetize any temporary price anomalies between the two, is a relatively standard trading strategy. Another often-discussed trade involves exploiting CDS index 'skew'.³⁰ This is where the trading level of a CDS index deviates from its intrinsic value implied by the market levels of the constituent SN-CDS. Depending on the size and direction of the skew, investors will either buy or sell the index contract, and then sell or buy each of the underlying SN-CDS, subsequently unwinding the trade once the index price normalizes.

A further relative value strategy often adopted is 'curve trading', equally known from other asset classes (e.g. cash bonds, bond futures, and interest rate swaps), whereby market participants take opposite positions in a SN-CDS with different terms, e.g. buying a short-dated contract and selling a longer-dated one, to benefit from price inconsistencies between individual contracts referencing the same entity.

These strategies not only provide profitable trading opportunities, but also help support market efficiency, keeping prices in line with fair value.

³⁰ Negative skew is where the index level is lower (tighter) than the intrinsic value derived from the underlying SN-CDS constituents. In this case the arbitrageur would buy the index and sell the individual constituent SN-CDS.

II. SN-CDS and cash bond market liquidity

Market liquidity, in particular in cash bond markets, has been the subject of various studies by market participants, regulators and academics in recent years. While there is no standardized definition, our understanding of market liquidity is *the ability to execute buy or sell orders, when you want, in the size you want, without causing a significant impact on the market price*, as set out in previous ICMA studies.³¹

CDS, and particularly SN-CDS, are one of the essential components for market-making in fixed income, which is the principal source of liquidity in secondary markets.³² As pointed out, SN-CDS are an efficient risk management tool for market-makers in corporate bonds. Also, CDS markets allow for price discovery by providing a reference point for pricing bonds. However, a steady decline of SN-CDS market liquidity has been observed since 2010. Indeed, interviewees in ICMA's study on corporate bond market liquidity in 2016 expressed the view that revitalizing SN-CDS markets would have a positive impact on corporate bond market liquidity.³³

A study conducted by ISDA in 2016, '*A Review of the Empirical Academic Literature*' on SN-CDS, sheds further light on the link between SN-CDS and bond market liquidity. Generally, there have been recurring concerns that the introduction of derivative contracts has exacerbated cash market volatility, which is often reflected by media coverage on 'speculators'. However, evidence seems to suggest that derivatives allow for better risk management, and market arbitrage ensures efficient functioning of markets, thereby reducing volatility in cash markets over time.³⁴

With respect to SN-CDS, it appears that the liquidity of CDS is positively correlated with bond yields. In other words, the more liquid the SN-CDS, the lower the yield of bonds in comparison to bonds with less liquid CDS. In contrast, it has also been observed that the introduction of SN-CDS may in some instances have prompted a shift by traders of large firms away from corporate bond markets to SN-CDS, thereby reducing liquidity temporarily. From an investor's perspective, SN-CDS may reduce market volatility and preserve liquidity in scenarios where bondholders who did not buy protection would be required to sell bonds or raise capital as a result of a falling prices or a rating downgrade. Thus, investors can hold the bond and sell it after markets have stabilized. Yet, weighing the positives against the negatives of SN-CDS suggests the overall net balance is tilted in favour of improved liquidity, measured for a given reference entity.³⁵

³¹ Such as ICMA (2016), *Remaking the corporate bond market*, p. 11

³² ICMA (2016), *Remaking the corporate bond market*, p. 23

³³ *ibid*

³⁴ ISDA (2016), *Single-name Credit Default Swaps: A Review of the Empirical Academic Literature*, pp. 74-77

³⁵ *ibid*

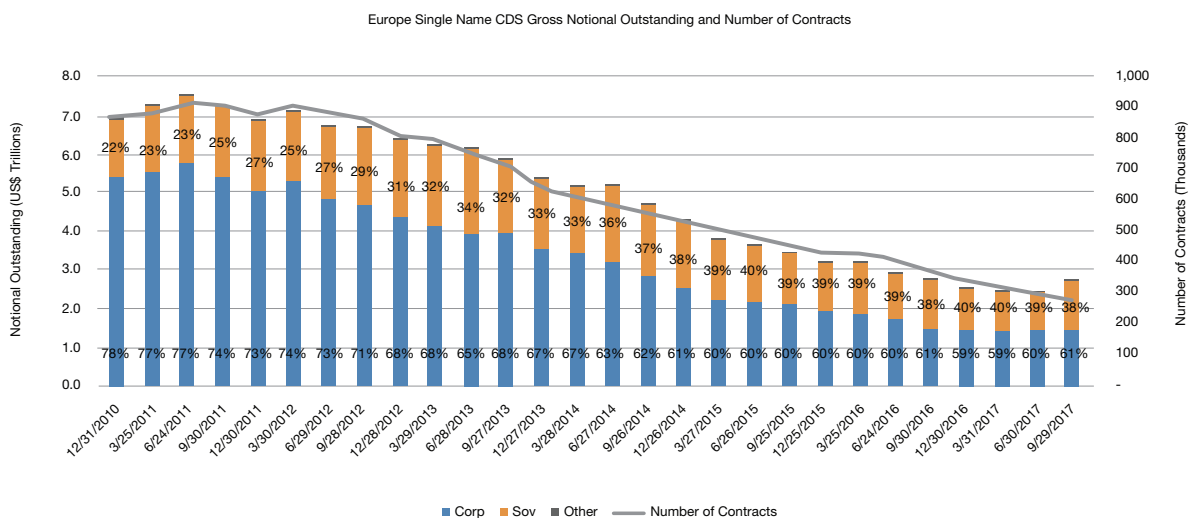
III. Market liquidity, trends, and drivers

Analysis

SN-CDS Notional Outstanding

The outstanding gross notional amount of European SN-CDS declined more than 50% from the fourth quarter of 2010 to the third quarter of 2017.³⁶ At the end of the fourth quarter 2010, outstanding notional totaled \$6.9 trillion compared with \$2.4 trillion at the end of the third quarter of 2017. The number of outstanding contracts declined from about 874,000 to 283,000 over the same period. This is illustrated in Figure 1.³⁷

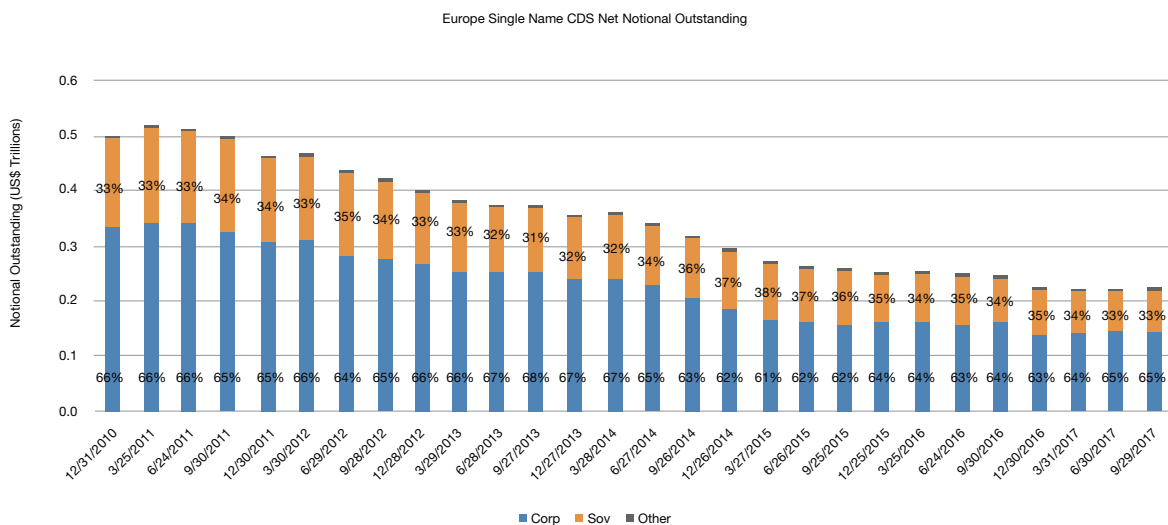
Figure 1: Gross notional outstanding Europe SN-CDS



Source: ISDA analysis based on DTCC TIW data

The net notional amount of European SN-CDS represented about 9.1% of gross notional amount at the end of the third quarter 2017.³⁸ Net notional outstanding declined from \$0.5 trillion as of 31 December 2010 to \$0.2 trillion as of 29 September 2017. This is shown in Figure 2.

Figure 2: Net notional outstanding Europe SN-CDS



Source: ISDA analysis based on DTCC TIW data

³⁶ Gross notional represents the sum of the nominal values for CDS contracts bought (or equivalently sold) for all DTCC Warehouse contracts in aggregate.

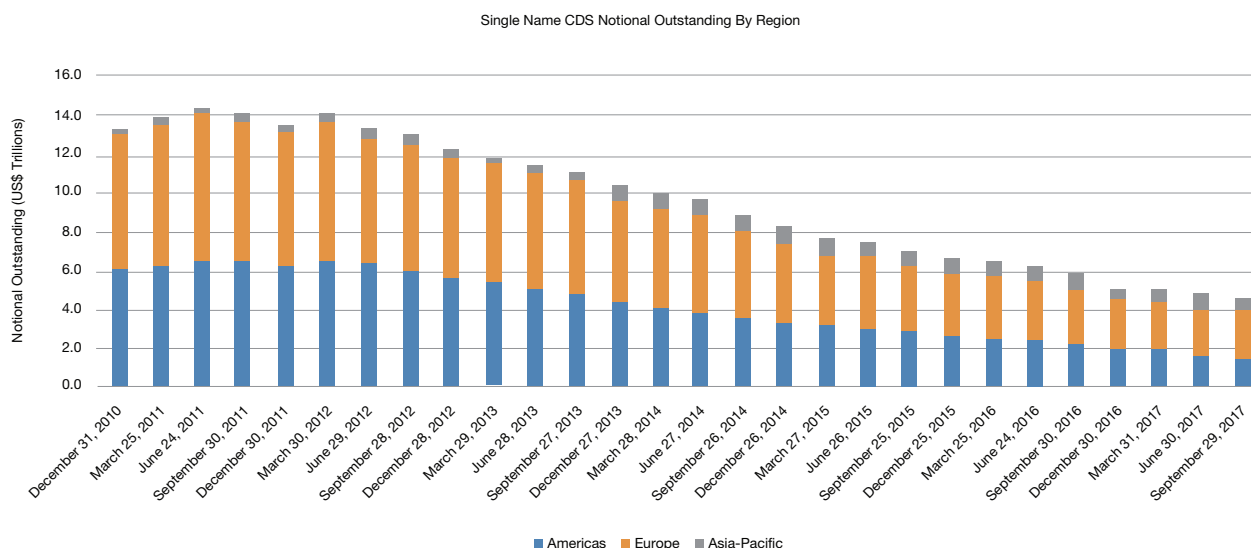
³⁷ DTCC TIW data includes both corporate and sovereign single name CDS.

³⁸ Net notional is the sum of the net protection bought by net buyers (or equivalently net protection sold by net sellers), which represents the aggregate payments that would be made in the event of the default of a reference entity, assuming the market value of defaulting bonds is equal to zero.

SN-CDS Notional Outstanding by Region

Outstanding SN-CDS notional in Europe has remained higher than the outstanding SN-CDS notional in the Americas, while notional declined in both regions. In the Americas, including the U.S. and Latin America, the notional declined from \$6.1 trillion in the fourth quarter of 2010 to \$1.5 trillion in the third quarter of 2017. The outstanding SN-CDS notional in the Asia-Pacific region, including Asia, Japan, Australia, and New Zealand, on contrary, has almost doubled over the same period, but remains only a small fraction of global outstanding notional. Globally, total SN-CDS notional outstanding was \$4.6 trillion as of 29 September 2017, compared with \$13.4 trillion as of 31 December 2010. This is illustrated in Figure 3.

Figure 3: SN-CDS notional outstanding by region



Source: ISDA analysis based on DTCC TIW data

The significant reduction in the CDS notional outstanding in Europe and the Americas can be partially attributed to portfolio compression, which is a widely used mechanism to reduce the number of trades and gross notional, but keep the same economic exposure.³⁹

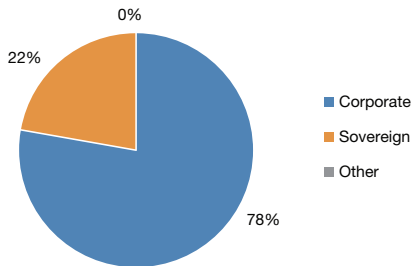
³⁹ According to the Bank for International Settlements (BIS), portfolio compression "is a process that enables early termination of economically redundant derivatives trades without changing the net position of each participant." It does so by terminating existing trades (including on single name reference entities and on indices in the CDS market) and replacing them with a smaller number of new trades with substantially smaller notionals that carry the same risk profile and cashflows as the initial portfolio. In so doing, portfolio compression reduces the overall notional size and number of outstanding contracts in derivatives portfolios, thereby improving derivatives risk management.

SN-CDS Notional Outstanding by Market Type and Sector

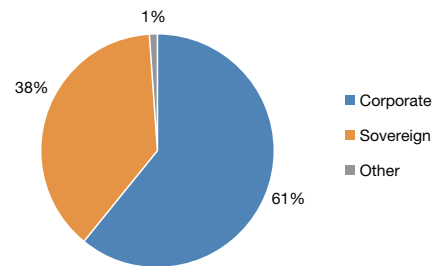
As of 29 September 2017, corporate CDS represented 61% of total CDS notional outstanding, while sovereign CDS accounted for 38%. The portion of corporate CDS has declined significantly compared with Q4 2010, when it represented 78% of notional outstanding. This is illustrated in Figure 4.

Figure 4: Notional SN-CDS outstanding by market type

Notional Outstanding by Market Type Q4 2010



Notional Outstanding by Market Type Q3 2017

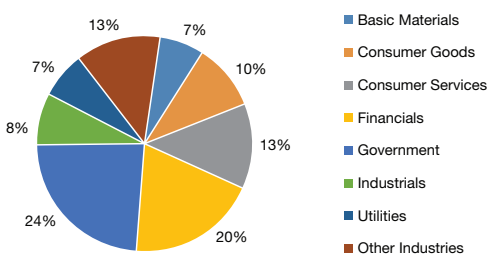


Source: ISDA analysis based on DTCC TIW data

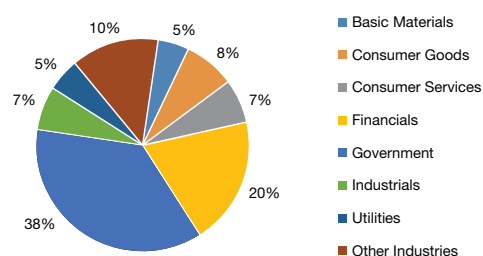
By sector, government CDS were 38% of notional outstanding, followed by financials, which contributed 20% of notional outstanding as of 29 September 2017. While the percentage of government CDS has increased significantly compared with the end of 2010, the portion of financials CDS remained flat and the percentage for the rest of sectors declined. This is shown in Figure 5.

Figure 5: Notional SN-CDS outstanding by market sector

Notional Outstanding by Market Sector Q4 2010



Notional Outstanding by Market Sector Q3 2017

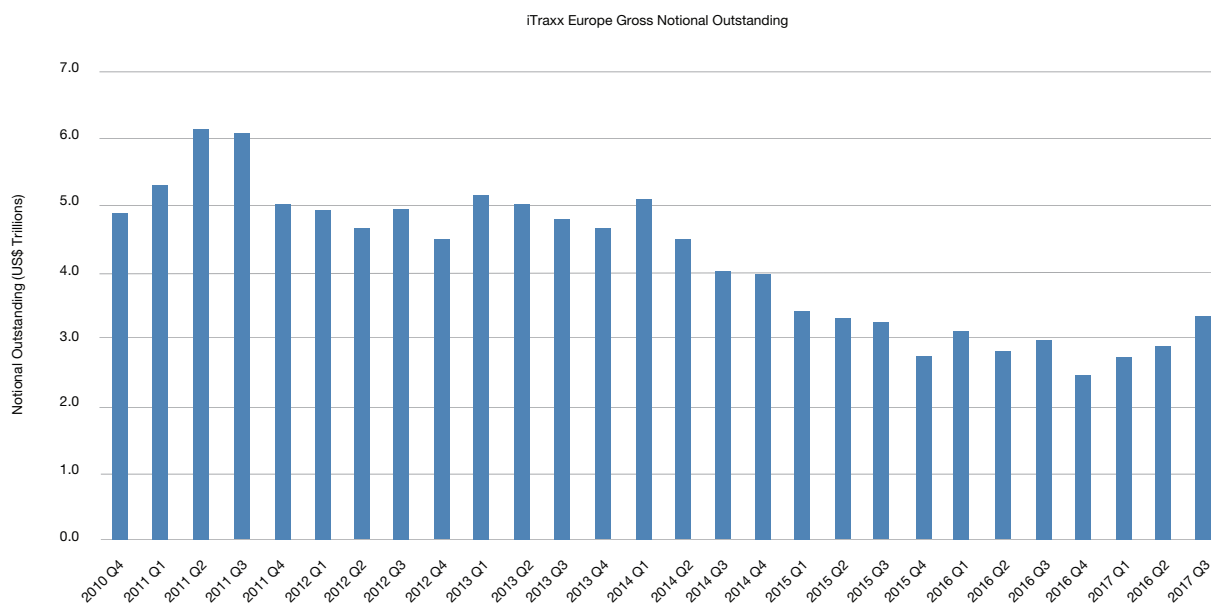


Source: ISDA analysis based on DTCC TIW data

Single Name vs. Index CDS Notional Outstanding

The gross notional outstanding of iTraxx Europe, an index CDS composed of the most liquid 125 CDS referencing European investment grade credits, also declined from \$4.9 trillion as of 31 December 2010 to \$3.3 trillion as of 29 September 2017⁴⁰ (see Figure 6).

Figure 6: iTraxx Europe gross notional outstanding

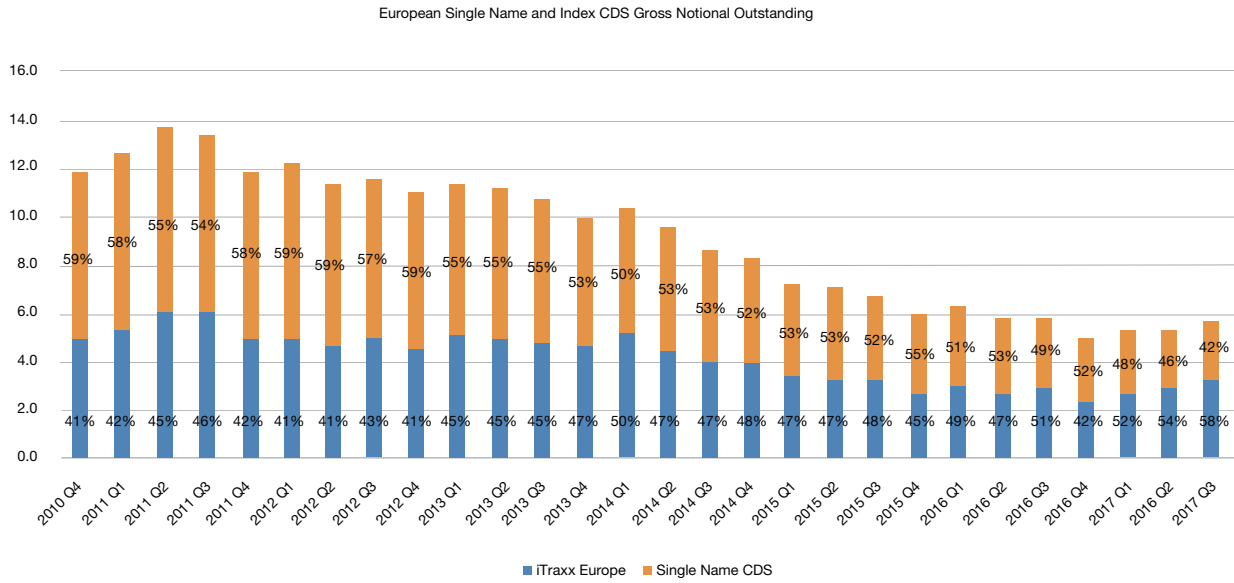


Source: ISDA analysis based on DTCC TIW data

As of 29 September 2017, total European CDS notional outstanding, including SN-CDS and iTraxx Europe, was \$5.8 trillion. SN-CDS accounted for about 42% of the European CDS outstanding gross notional, while various iTraxx Europe CDS indices represented the remainder. The portion of SN-CDS notional outstanding has been gradually declining since 2010, when it represented about 59% of the total CDS outstanding gross notional (see Figure 7).

⁴⁰ Includes iTraxx Europe, iTraxx Europe CEEMEA, iTraxx Europe Crossover, iTraxx Europe Energy, iTraxx Europe HIVOL, iTraxx Europe Industrials, iTraxx Europe Autos, iTraxx Europe Senior Financials, iTraxx Europe Sub Financials, iTraxx Europe TMT, iTraxx Europe LEVX Senior, iTraxx SDI-75 series.

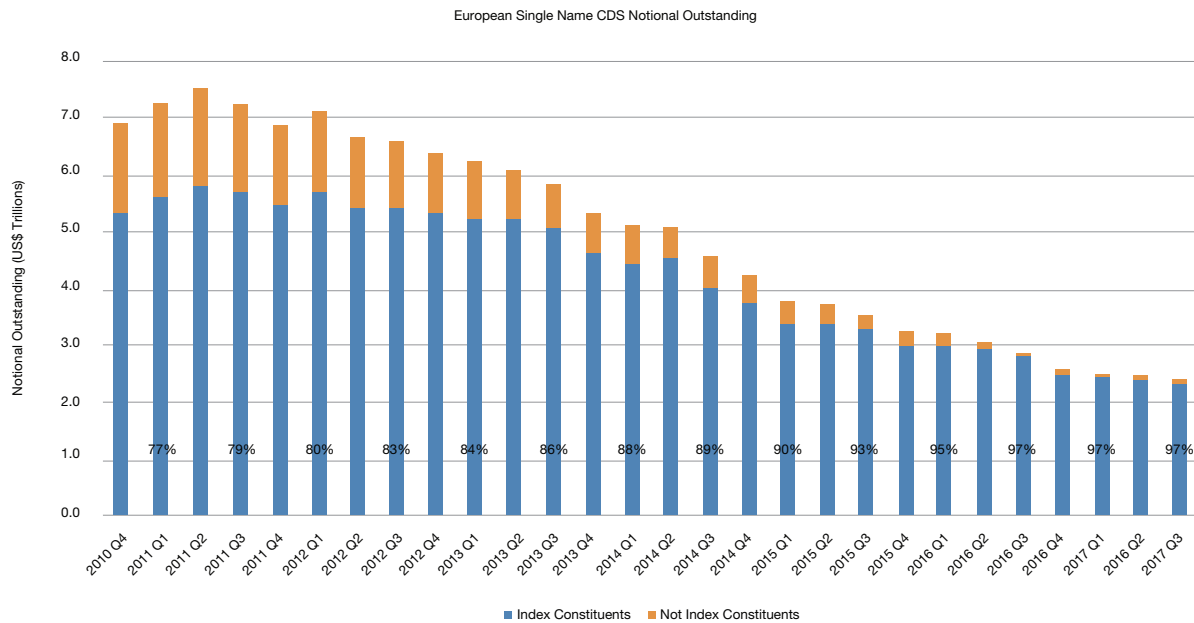
Figure 7: Europe SN and Index CDS gross notional outstanding



Source: ISDA analysis based on DTCC TIW data

Reference entities for most of European SN-CDS are included as constituents in various indices. At the end of the fourth quarter 2010, \$5.3 trillion of SN-CDS reference entities were included as constituents in indices, which accounted for 77% of SN-CDS notional outstanding. At the end of the third quarter 2017, 97% of European SN-CDS reference entities by notional outstanding was index constituents. This is illustrated in Figure 8.

Figure 8: European SN-CDS notional outstanding

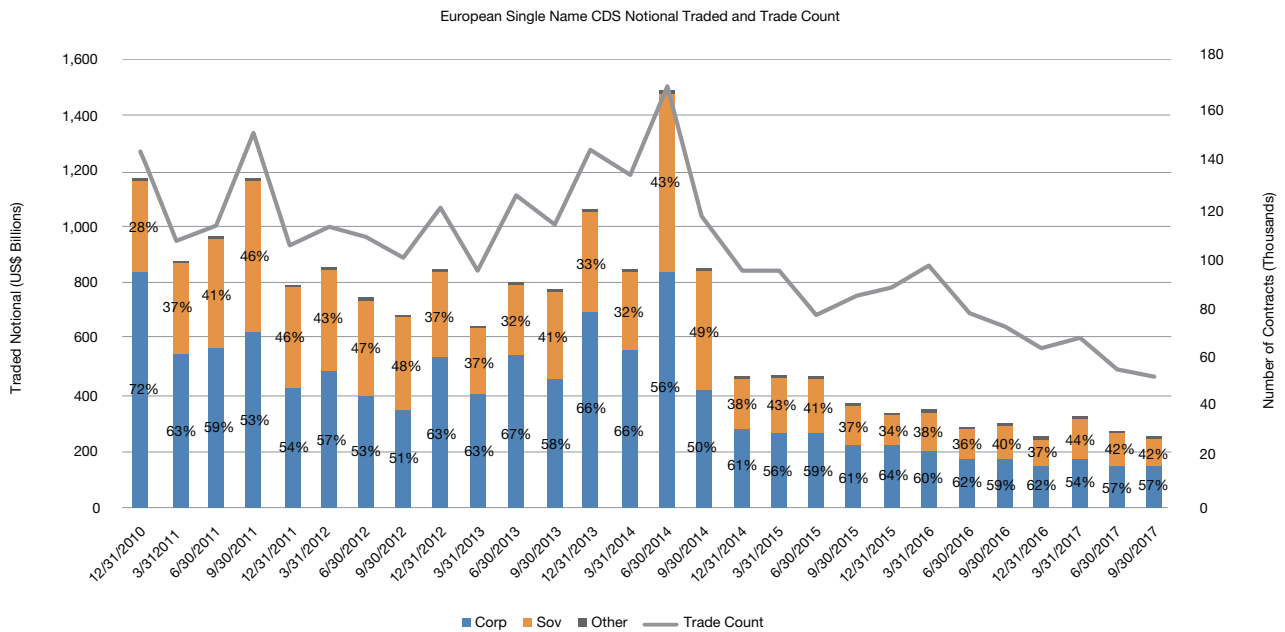


Source: ISDA analysis based on DTCC TIW data

SN-CDS Notional Traded

Trading activity in the market, as opposed to outstanding notional, presents a more accurate picture of CDS market dynamics. We use DTCC data on quarterly notional amounts traded and transaction counts to compare the changes in market activity from 2010 to 2017. In the fourth quarter of 2010, European quarterly traded SN-CDS notional totaled \$1.2 trillion and number of transactions was about 142,000. Quarterly traded notional peaked at \$1.5 trillion in the second quarter of 2014 and has been sharply declining ever since. In the third quarter of 2017, quarterly traded notional totaled only \$252.6 billion. The number of contracts declined from about 171,000 in the second quarter of 2014 to 45,000 in the third quarter of 2017. This is shown in Figure 9.

Figure 9: European SN-CDS notional traded and trade count



Source: ISDA analysis based on DTCC TIW data

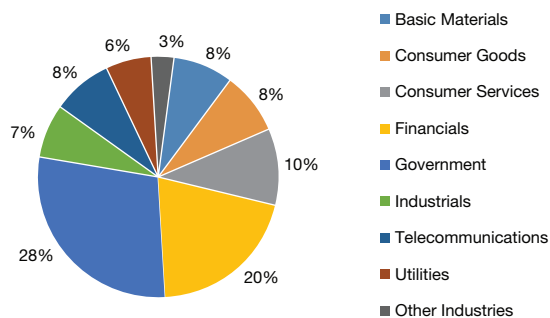
DTCC data comprised approximately 560 European reference entities, including about 60 sovereign reference entities. During the first three quarters of 2017, there was trading activity in about 380 reference entities. CDS on sovereign reference entities had the highest trading volumes, while most corporate entities CDS contributed less than 1% of overall trading volume. Top 10 names, most of which were CDS on sovereign reference entities, represented about 42% of trading volume during the first three quarters of 2017.

SN-CDS Notional Traded by Market Sector

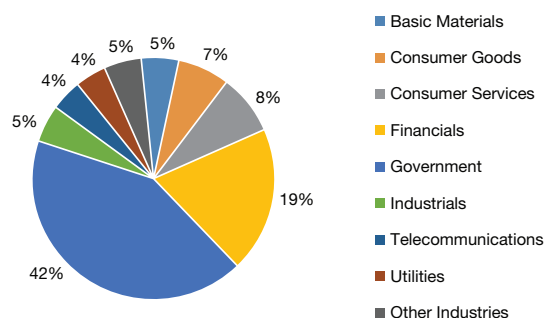
Government SN-CDS, which primarily include sovereign CDS, contributed 42% of traded notional as of Q3 2017 compared with 28% as of Q4 2010. Financials CDS represented 19% of traded notional as of Q3 2017 compared with 20% as of Q4 2010. This is illustrated in Figure 10.

Figure 10: SN-CDS notional traded by sector

Notional Outstanding by Market Sector Q4 2010



Notional Outstanding by Market Sector Q3 2017

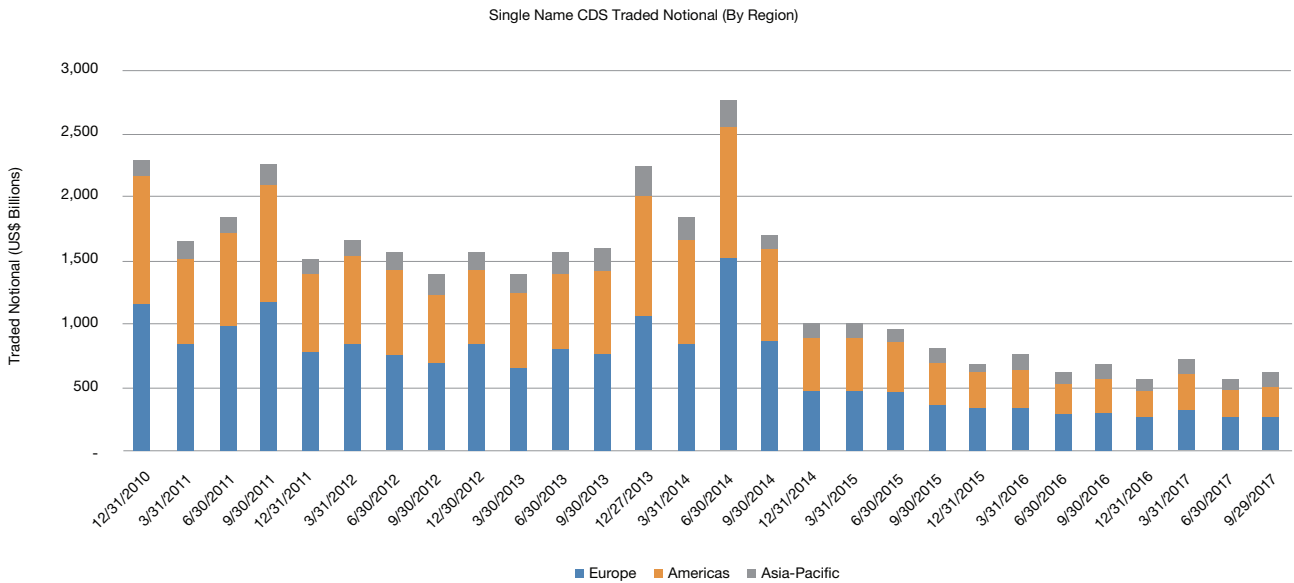


Source: ISDA analysis based on DTCC TIW data

SN-CDS Notional Traded by Region

The decline in quarterly traded notional and trade count of SN-CDS post the second quarter of 2014 could also be observed in the Americas region, while the traded notional and number of contracts remained relatively flat in the Asia-Pacific region. This can be seen in Figure 11.

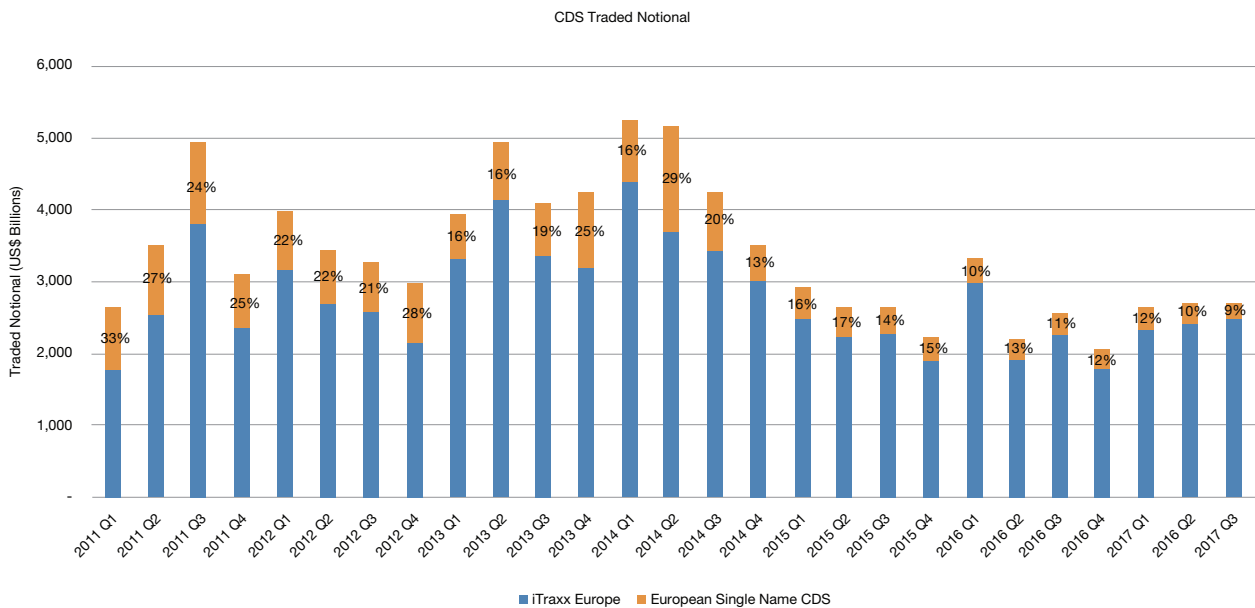
Figure 11: SN-CDS traded notional by region



Source: ISDA analysis based on DTCC TIW data

While SN-CDS accounted for about 42% of the European CDS outstanding gross notional as of September 29, 2017, SN-CDS comprised only 9% of overall CDS market in terms of traded notional as of September 29, 2017. The various iTraxx Europe CDS indices represented the remainder. The portion of SN-CDS traded notional outstanding has been gradually declining since 2011, when it represented about 33% of the total CDS traded gross notional. This is illustrated in Figure 12.

Figure 12: CDS traded notional



Source: ISDA analysis based on TIW data

Interviews

Pre-2008

Many of the respondents comment on the dramatic decline in SN-CDS contracts and trading volumes since the 2007-08 crisis, particularly post-2012 when many of the legacy contracts written prior to the crisis finally rolled-off. Outstandings and activity were largely stimulated by the increase in collateralized debt obligations (CDOs), both cash and synthetic, and associated hedging activity. The resulting deep and relatively liquid market for SN-CDS in turn had positive spill-over effects for the underlying cash bond market. Corporate bond market-makers had a ready hedging tool, allowing them to spread long or short positions against SN-CDS positions (basis trades). SN-CDS effectively became a key component of corporate bond price discovery. Dealers were not only able to make prices in cash bonds based on the SN-CDS market, but, through the use of hedging, were able to run large books, as well as having the ability to warehouse positions for a long time. This tended to work particularly well from the perspective of being long cash bonds, given the persistence of negative basis and positive carry.⁴¹ An ability to source term⁴² liquidity in the repo market for corporate bonds (the 'credit repo' market) was another essential element that helped facilitate accurate pricing and running of positive basis trades (which required shorting the bond). The relative liquidity and efficiency of the SN-CDS market thus helped to reduce dealers' exposures, effectively enabling them to monetize their bid-ask spreads. This growing interdependence of cash bonds and SN-CDS is highlighted by the fact that in some investment banks the same trader would make markets in both corporate bonds and the related SN-CDS names.

Market-makers

In discussions with both sell-side and buy-side participants there is a range of views with respect to the state of liquidity in the market. However, a very clear message is that, at least in relative terms, liquidity has deteriorated significantly in the period since 2007-2008, which can largely be attributed to a retrenchment of market-makers, including some high-profile actors. Interviewees suggest that there are only really four or five fully committed market-makers for corporate SN-CDS in Europe, and perhaps only two-to-three active within each sector; and while these dealers continue to provide pricing and liquidity, it is too few to support a deep and liquid market. One respondent pointed to the fact that liquidity in most corporate bonds is supported by upward of 15 or 20 market-makers. Even sell-side firms expressed concern at the withdrawal of competitor firms, explaining that the market required a critical mass of liquidity providers to function efficiently, and noting that market-makers are also consumers of liquidity as well as providers.

Drivers of attrition

The attrition of market-makers seems to be attributed largely to the increased capital costs of running CDS books post Basel III, as well as benign market conditions which have reduced the demand for protection, as low credit spread volatility makes it more difficult to generate profits. A number of interviewees seemed confident that a more volatile market environment would draw some of the recent defectors back to making markets.

Drivers of liquidity

Generally, it appears that, perhaps unsurprisingly, liquidity is directly related to debt levels. SN-CDS referencing entities within sectors with higher debt levels and a higher risk of default are more liquid than SN-CDS written against less debt-laden entities. The conversations also suggested that liquidity tends to be concentrated in the on-the-run five-year contracts, and to a lesser extent the three-, seven-year and 10-year maturities, for names that are in the current indices. Beyond these parameters, and particularly once a name drops out of the on-the-run index, liquidity tails-off sharply. One buy-side participant noted that liquidity is positively correlated with central clearing and the potential benefits thereof. This was echoed by another sell-side participant who pointed out that the introduction of clearing has the potential to attract new entrants. Another anecdotal observation is that liquidity is episodic, and can be driven by name or sector specific news events. The 2015 emissions scandal, for instance, saw a significant increase in activity in VW CDS, while the 2015 drop in oil prices prompted increased trading volumes in energy sector names (such as Glencore). In these instances, it is very much a demand to buy protection that drives activity, again underlining the relationship between SN-CDS activity and credit spread volatility. (See Chapter IV.)

⁴¹ Meaning that the income earned from holding a long cash bond position, after hedging the interest rate risk and any related repo costs, is greater than the premiums paid on the long SN-CDS position (i.e. the cost of buying protection).

⁴² 'Term repo' is a repo whereby the parties agree a specific end date for the transaction (which can range from a week to several months from 'spot'), locking-in a fixed repo rate for the entire term. For the borrower this hedges against both recall and re-rate risks.

Market users

While the reduced number of market-makers has implications for liquidity, it also becomes clear through the interviews that so does the change in structure of the users of SN-CDS. Perhaps the most notable trend since 2007-08 has been a marked reduction in the number of hedge funds active in the market, particularly in the investment grade space. Again, market conditions seem to be a factor in this, and it is part of a broader trend of reduced hedge fund focus in high grade credit due to a lack of opportunity to generate meaningful returns. Meanwhile, the interviews suggest that there is an increased appetite from real money investors who see SN-CDS as another tool in their liquidity management tool-box, particularly as corporate bond market liquidity becomes ever more precarious (see Chapter IX).

CVA desks

A number of interviewees highlight the growing importance of banks' CVA (credit valuation adjustment) desks in the market. As the monitoring and management of banks' counterparty derivative exposures and correlation risks has become more centralized and sophisticated, CVA desks have become active buyers (or sellers) of protection for counterparty risk mitigation. It would seem that there are a number of names that are frequently targeted by CVA desks, and that activity is often triggered, with some degree of predictability, by sharp moves in, say, equity or FX markets (related to the underlying client trades). In contrast, other interviewees noted that overall activity of CVA desks had diminished in recent years. This resulted notably from changes in credit support annexes (CSA) and evolving collateral management practice.

Loan books

The interviews suggest that loan books remain active users of SN-CDS, albeit on a much smaller scale than pre-crisis. Hedging is a requirement under loan books' mandates and is very much dependent on the credit rating of the loan and liquidity in the loan market. It appears that a shift from fair value accounting to accrual accounting at banks has reduced the use of SN-CDS due to an accounting mismatch between SN-CDS (fair value basis) and the referenced loan (accrual basis).

Structuring desks

The interviews also suggest that activity of credit derivative structuring desks, while nowhere close to pre-2007-08 levels, is picking up, particularly as credit spreads continue to compress and investors look for alternative products to generate returns, such as collateralized debt obligations (CDOs) or credit linked notes (CLNs.) In turn, this generates demand to sell and buy protection.

Skew

Skew trading is also discussed in a number of interviews, whereby investors arbitrage price differentials between an index (e.g. the iTraxx Europe Main) and the intrinsic value of the index based on the underlying constituent names.⁴³ In this instance the investor would buy the index (in the case of negative skew), and sell each of the underlying constituents (125 different names in the case of the iTraxx Europe Main), and then wait for the skew to normalize before unwinding for a profit.⁴⁴ A number of market-makers flag skew opportunities to their clients, and at least one reportedly markets 'credit skew notes' (credit linked notes, or CLNs, that capture skew as a return for the note holder). One buy-side participant explained that skew arbitrageurs were an important dynamic for the market, particularly given the relative illiquidity in some of the underlying single names. Buys or sells in these names, even for relatively small sizes, tended to cause price gaps, which in turn provided opportunities either to buy cheap or sell expensive protection on specific credits.

⁴³ Index skew can be defined as the market index spread less the fair value index spread (i.e. the weighted average spread of the underlying constituent single names).

⁴⁴ Skew is often the result of greater activity and liquidity in indices, rather than in the constituent single names, which causes an index to react more quickly and with greater sensitivity to market related news or data. Conversely, it can also be driven by activity in constituent names (such as sector specific news or an individual credit event) which may not spill over into broader market sentiment as reflected by the index.

Analysis II

Index Skew

The skew to the underlying constituents for the Markit iTraxx Europe, which has been negative since 2014, turned positive in 2017.⁴⁵ As of 15 November 2017, the Markit iTraxx Europe S28 was trading at 53.5 bps and the skew was 2.3 bps. For comparison, the Markit iTraxx Europe S26 was trading at 72.6 bps as of 30 September 2016 and the skew was negative 4.3 bps. This is illustrated in Figure 13.

Figure 13: iTraxx Europe Main 'skew'



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⁴⁵ Negative skew means that the intrinsic level of the index is wider (i.e. cheaper) than the aggregate traded level of the underlying single name constituents.

IV. Market conditions

Interviews

Volatility

Many of the respondents pointed to persistently benign credit market conditions as a major contributing factor to subdued activity and relatively low liquidity, impacting both market-makers and potential users of SN-CDS. Ultimately, as a number of participants explained, CDS is a volatility product. With historically compressed and range bound credit spreads, it becomes more difficult for market-makers to realize profits, not least in light of the high capital charges of holding CDS positions. Many interviewees cited the ECB's Corporate Sector Purchase Programme (CSPP) as a key dampener for volatility, while also creating asymmetric risks towards further spread tightening. Low spread volatility, as well as historically low default rates, also reduces the value placed on buying protection, which limits end user activity.

CSPP

Perhaps the biggest impact of the CSPP can be seen not so much in the absolute levels of CDS premiums, but rather in the basis. As the ECB continues to purchase corporate bonds, the CDS basis for IG corporate names has moved into positive territory, meaning that cash bonds are, in relative terms, more expensive than CDS for the same reference entity. This partly reflects a substitutability issue (the ECB, as well as many asset managers, are restricted to buying cash bonds, and so cannot take advantage of the relatively higher CDS premiums), but also an inherent risk bias to being long. As several interviewees explained, from an arbitrage perspective, negative CDS basis (i.e. where cash bonds are relatively cheap to CDS) is a much easier strategy: dealers, or investors, would buy the bond (interest rate hedged), buy protection, and effectively get paid to hold the position. Positive basis requires shorting the bond (and selling protection), but this creates two risks. Firstly, one needs to borrow the bond being shorted, which can be expensive, and also prone to re-rates and recalls, particularly since there is no longer an effective term repo market for corporate bonds in Europe.⁴⁶ Some interviewees cited instances of repo rates for corporate bonds gapping to excess of 10%, which can destroy the economics of a positive basis short in a matter of days. Secondly, not only is there the risk of getting squeezed out of your position by the repo market, with ongoing ECB buying there is also a greater probability that the basis moves more positive than that it normalizes.

Analysis

Mid-Spread for Investment Grade vs. High Yield CDS

Based on Bloomberg Global CDS (GCDS) data, average mid-spread⁴⁷ for all five-year senior investment grade CDS names was 54.4 bps, while average mid-spread for all five-year high yield CDS names was 373.9 bps as of 30 September 2017.⁴⁸

There is a wide variation of CDS spreads among investment grade and high yield names. As of 30 September 2017, Marks & Spencer was trading at 137.2 bps mid-spread—the widest spread compared to other investment grade names—while Linde AG was trading at 18 bps—the tightest spread in the investment grade category. This variance was even more striking in 2008 when both spreads widened and Marks & Spencer mid-spread jumped above 500 bps. This is shown in Figure 14.

⁴⁶ These observations are discussed in more detail the 2017 ICMA report, *The European Credit Repo Market: The cornerstone of corporate bond market liquidity*

⁴⁷ Mid-spread is the mid-point between the quoted bid and offer

⁴⁸ Including all sectors except for Government; based on CBGL pricing source

Figure 14: IG spread ranges



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For high yield names, the widest and the tightest mid-spreads as of 30 September 2017 were 2,523.1 bps for New Look Senior Issuer PLC and 89.4 bps for Stora Enso OYJ, respectively. This can be seen in Figure 15.

Figure 15: HY spread ranges



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As of 30 September 2017, about 50% of investment grade SN-CDS traded at a mid-spread below 50 bps and 50% of high yield companies were trading at a mid-spread below 200 bps.

Credit Spread Volatility vs. Trading Volumes

As credit spreads have tightened from the 2011 and 2012 levels, trading volumes have been gradually declining. However, trading activity in SN-CDS with more volatile spreads tend to remain higher, both for investment grade and high yield companies. For our analysis, we have chosen five investment grade and five high-yield CDSs with above average mid-spread volatility in the period between the end of the fourth quarter of 2010 and the end of the third quarter of 2017.⁴⁹⁵⁰

Glencore International AG, Telefonica SA, UniCredit SpA, Intesa Sanpaolo SpA and Banco Santander SA were among more volatile investment grade single name CDSs for the period between the end of the fourth quarter of 2010 and the end of the third quarter of 2017. Mid-spread for Glencore, UniCredit and Intesa jumped above 600 bps in 2011 and significantly tightened to 134.4 bps for Glencore and under 100 bps for UniCredit and Intesa by the end of the third quarter 2017. This is illustrated in Figure 16.

Figure 16: IG CDS spread volatility

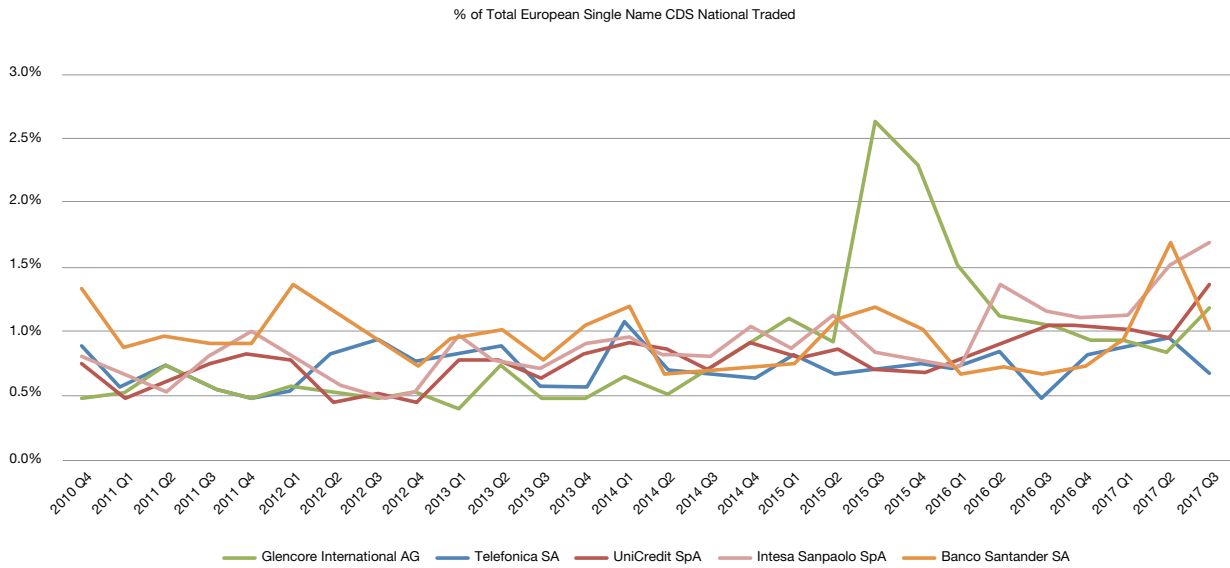


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Trading volume in each of the above names represented above 0.5% of total European SN-CDS notional traded from 2010 to 2017 on a quarterly basis. In the third quarter of 2017, traded notional for Intesa Sanpaolo was \$4.3 billion, while traded notional for UniCredit totaled \$3.5 billion. This is shown in Figure 17.

⁴⁹ We used a standard deviation analysis to identify companies with more volatile mid-spreads
⁵⁰ Data on trading volumes is not available before 2010

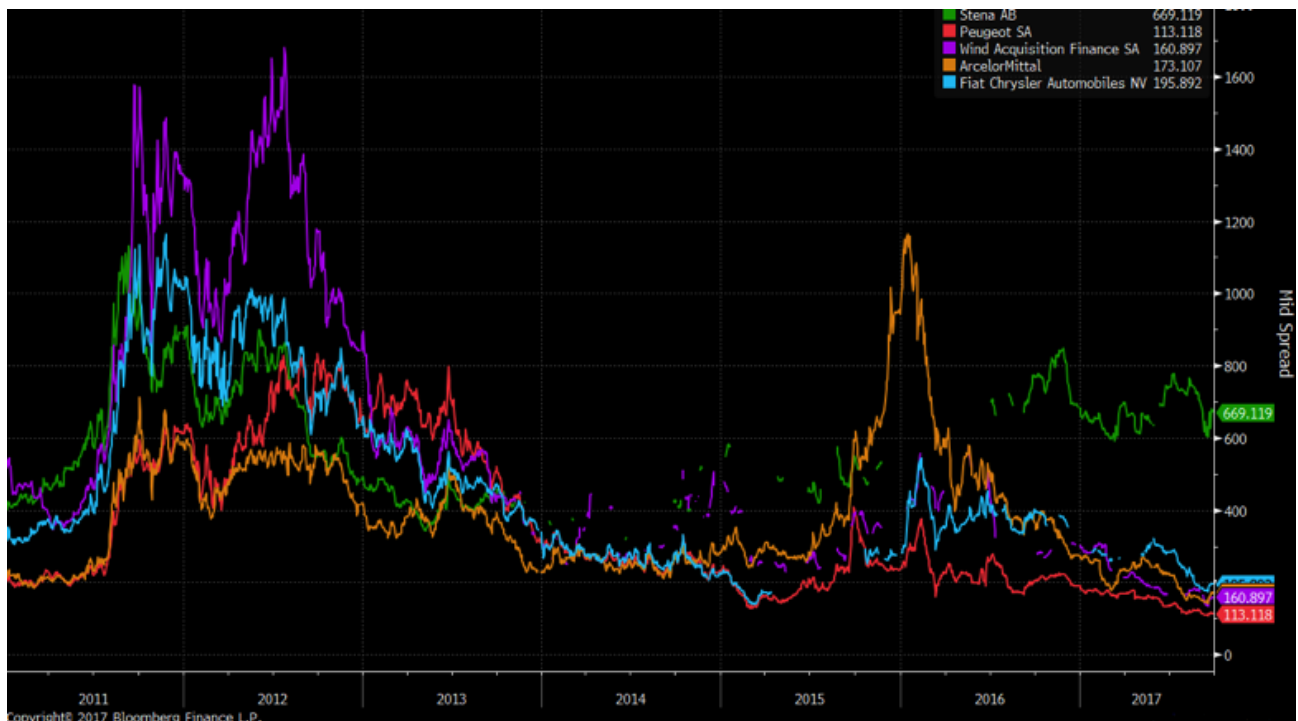
Figure 17: IG CDS volatility and trading volumes



Source: ISDA analysis based on Bloomberg data

We have picked ArcelorMittal, Wind Acquisition Finance SA, Peugeot SA, Stena AB and Fiat Chrysler Automobiles NV as a sample of more volatile high yield names. For example, mid-spread for Wind Acquisition Finance increased to above 1,600 bps in July 2012 and tightened to 160.9 bps by the end of September 2017. This can be seen in Figure 18.

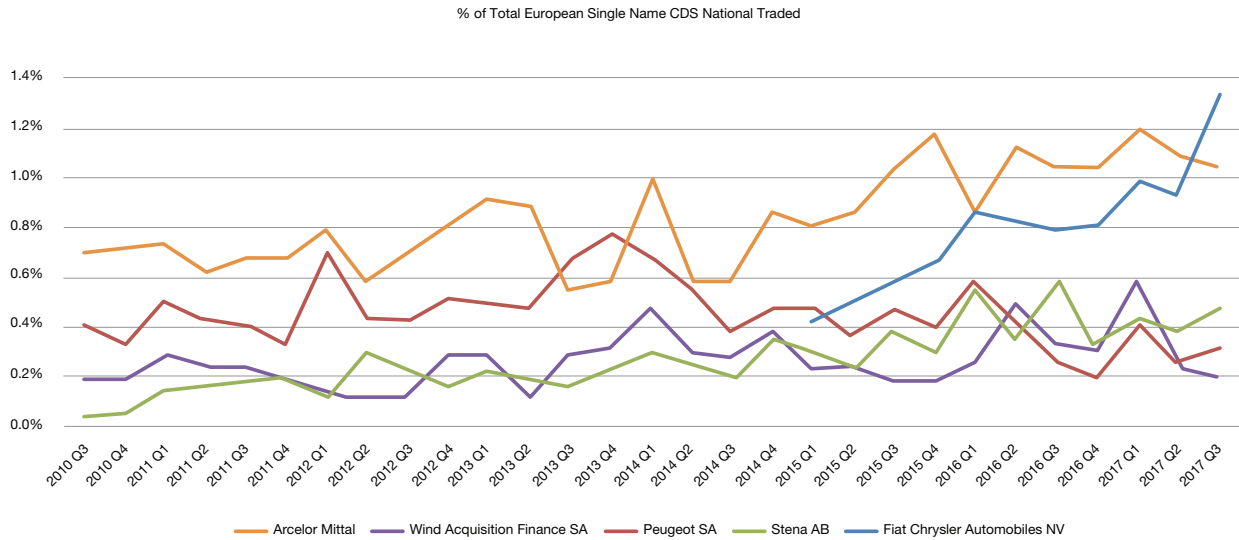
Figure 18: HY CDS spread volatility



Used with permission of Bloomberg Finance LP

Trading volume of Fiat represented 1.3% of total European SN-CDS notional traded during the third quarter of 2017 and totaled \$3.4 billion. ArcelorMittal accounted for more than 0.5% of quarterly European SN-CDS traded notional from 2010 to 2017 and its traded notional totaled \$2.7 billion in the third quarter of 2017. This is shown in Figure 19.

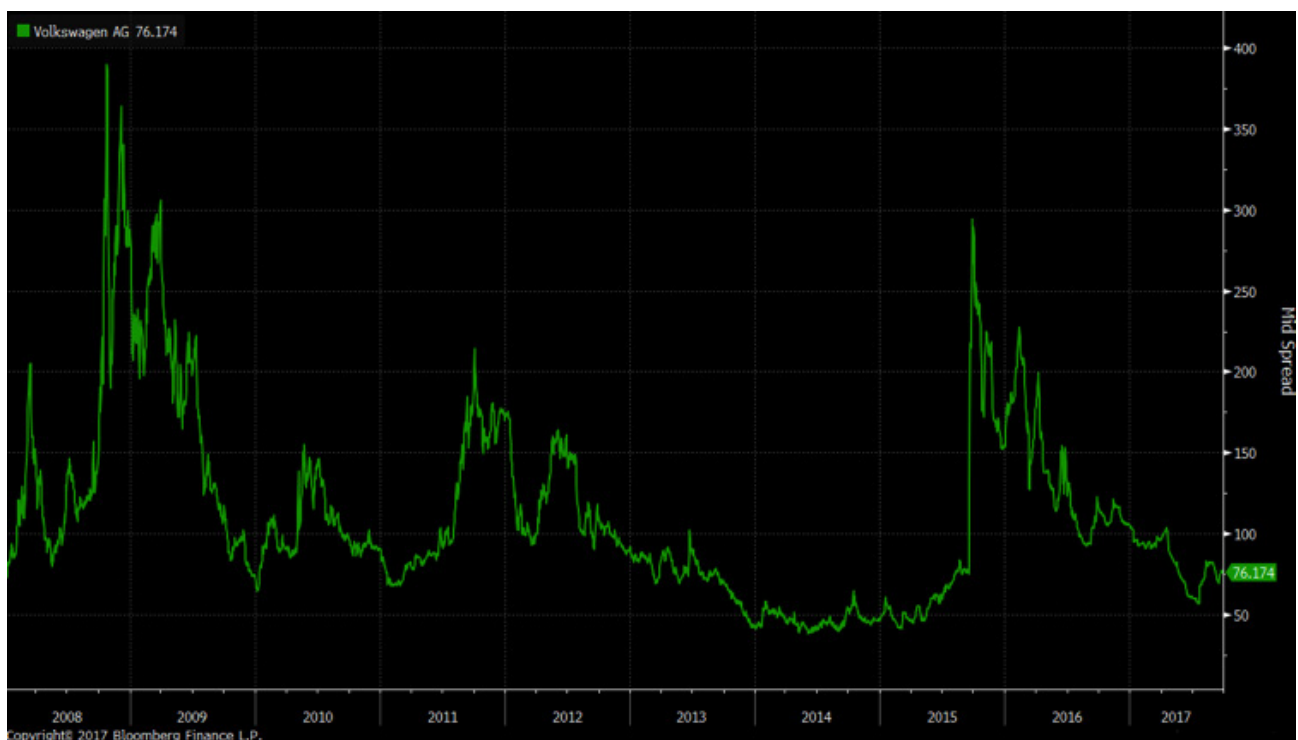
Figure 19: HY CDS volatility and trading volumes



Source: ISDA analysis based on Bloomberg data

Spreads and traded volumes of SN-CDS tend to spike during the specific trading events. For example, when Volkswagen faced emissions crisis in the third quarter of 2015, the cost of insuring its debt against default substantially increased as its mid-spread jumped to above 290 bps, the highest level since 2009. This is illustrated in Figure 20.

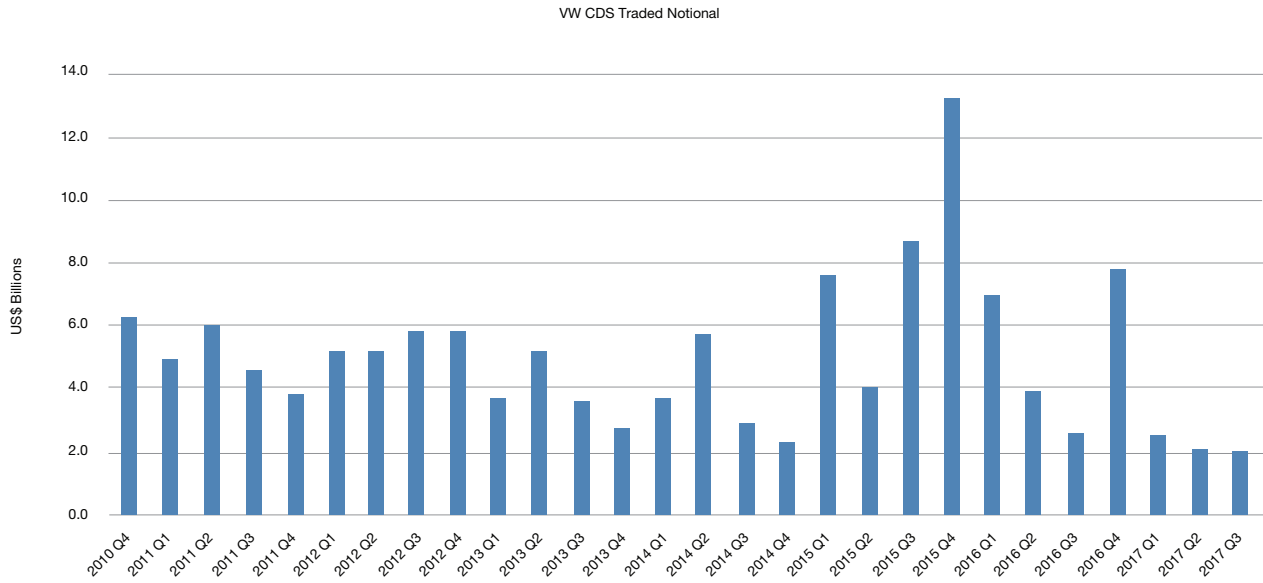
Figure 20: News events and CDS spreads



Used with permission of Bloomberg Finance LP

VW CDS traded notional amounts increased to \$8.7 billion in the third quarter of 2015 and sky rocketed to \$13.3 billion the following quarter. This is illustrated in Figure 21.

Figure 21: News events and CDS trading volumes



Source: ISDA analysis based on Bloomberg data

V. Clearing

Interviews

Clearing vs bilateral

The discussions on central clearing for SN-CDS point to some inherent differences of opinion, or perhaps differing approaches, to clearing between sell-side and buy-side firms. While most CDS index trading in Europe is now centrally cleared, with a continuing trend away from bilateral trading, the SN-CDS market remains relatively fragmented. Market-makers express a strong preference for cleared trades, not least in light of the increased capital costs associated with liquidity provisions, but also operational efficiencies by eliminating the need for novations or unwinding positions. Centrally cleared positions afford greater balance sheet netting opportunities, as well as facilitating easier compression of open positions.⁵¹ On the buy-side, a number of participants commented on the potential advantages of central clearing with respect to overall liquidity provision. One interviewee pointed out that a voluntary commitment to clear SN-CDS had been made by 25 buy-side firms, many of which are based in the US, in December 2015.⁵² However, in Europe, many firms continue to trade on a predominantly bilateral basis in the absence of a mandatory obligation.

Cost

One of the principal reasons for the reluctance to move the SN-CDS market to a predominantly cleared market seems to be cost. Using CCPs is relatively expensive from a margining perspective, compared with many firms' bilateral CSAs; particularly where buy-side firms may be transacting on behalf of multiple underlying funds, each with its own distinct CSA. For hedge funds, it has generally been easier to trade bilaterally through their Prime Brokerage account, leaving their broker to manage settlement and margining. In the case of SN-CDS, however, Prime Brokerage is only utilized by a small universe of hedge funds, and there are only a few providers remaining in the industry due to capital requirements, uncleared margin rules and other regulatory obligations (see Section VII).

While this seems to be a source of frustration for the sell-side, they seem equally responsible. Two sell-side respondents pointed to the fact that the increased capital costs of trading bilaterally should be reflected in dealers' prices, creating a two-tiered market for cleared and non-cleared. However, the reality is that market-makers' prices remain indifferent. Several interviewees commented that a cleared market might induce more banks to participate in the market as liquidity providers. One sell-side participant noted that liquidity pools are deeper for cleared SN-CDS than for uncleared, which is reflected in tighter bid-offer spreads. While the number of cleared transactions has grown steadily, it still accounts for less than 50% of transactions. In the same vein, it was noted that clearing may become a more attractive option in view of the anticipated impact of uncleared margin rules being phased-in for buy-side firms in 2019 and 2020 under EMIR. However, it was also pointed out that the standardization of cleared contracts limits the ability of buy-side firms to tailor contracts to their specific hedging needs.

Analysis

Cleared SN-CDS

While there is no regulatory mandate to clear single-name contracts, ICE Clear Europe, ICE Clear Credit and LCH.Clearnet's CDSClear offer clearing in some single-name CDS in the European markets. ICE Clear Europe clears 192 single name CDS contracts, including 185 corporate single name CDS and 7 sovereign single name CDS. From its launch in July 2009 through 15 December 2017, ICE Clear Europe cleared about \$4.5 trillion of single name CDS notional volume. US-based ICE Clear Credit also offers clearing of European single name CDS contracts. Since 2013, ICE Clear Credit has cleared approximately \$110 billion of European single name CDS (based on transactions in EUR only). CDSClear cleared about \$209 billion of single name CDS notional volume since its launch in 2012 through 22 December 2017.^{53 54} Figure 22 illustrates the volume and number of transactions of cleared SN-CDS by ICE Clear Europe.

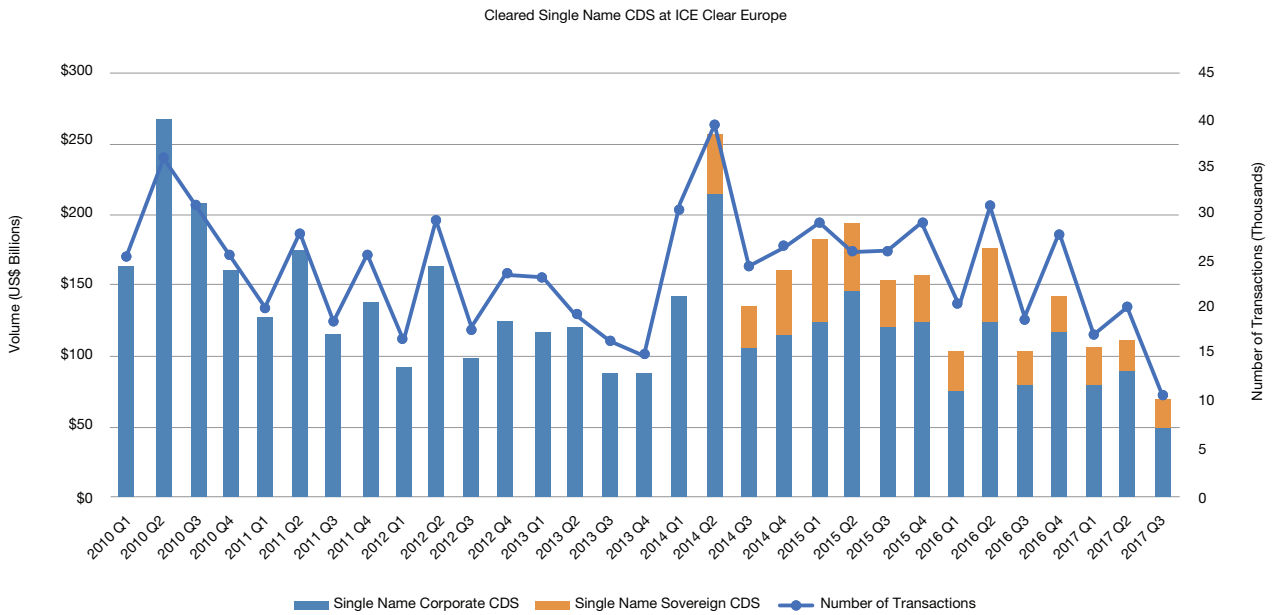
⁵¹ Trade compression is a process by which two counterparties replace a number of existing transactions between them with a single transaction, thereby reducing the overall gross notional exposure but maintaining the same net economic exposure.

⁵² ISDA, 25 Investment Management Firms Commit to Single-Name CDS Clearing, 16 December 2015 (<https://www.isda.org/a/KjDDE/cds-pr-final.pdf>)

⁵³ In December 2017 LCH CDSClear announced plans to allow banks to clear self-referencing CDS which is likely to increase cleared volumes. (See <https://www.risk.net/risk-management/5387286/lch-bids-to-let-banks-clear-self-referencing-cdss>, Risk.net, January 2018).

⁵⁴ Quarterly data for single name CDS notional cleared on CDSClear is not available.

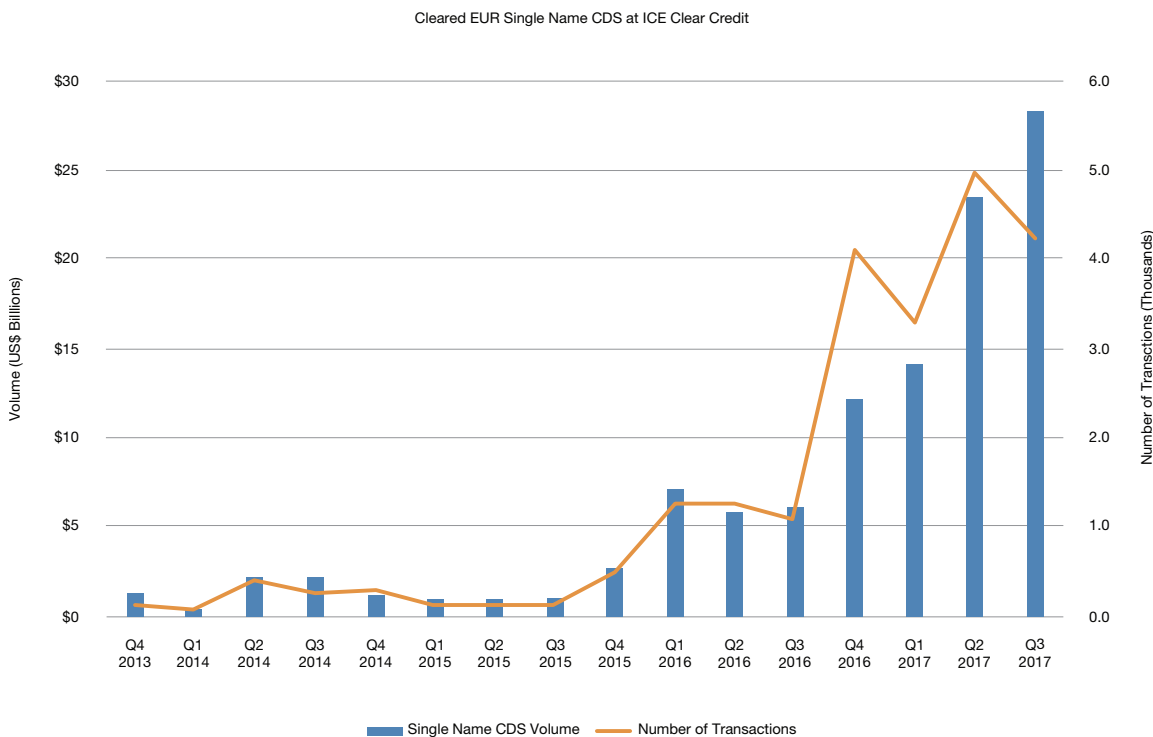
Figure 22: ICE Clear Europe cleared SN-CDS



Source: ISDA analysis based on ICE Clear Europe-CDS data. Based on the US dollar/EUR exchange rate as of September 30, 2017. <http://www.x-rates.com/historical/?from=USD&amount=1&date=2017-09-30>

In the third quarter 2017, ICE Clear Credit cleared around \$28 billion of SN-CDS (based on transactions in EUR only), while the number of cleared CDS contracts was 4,253. This is shown in Figure 23.

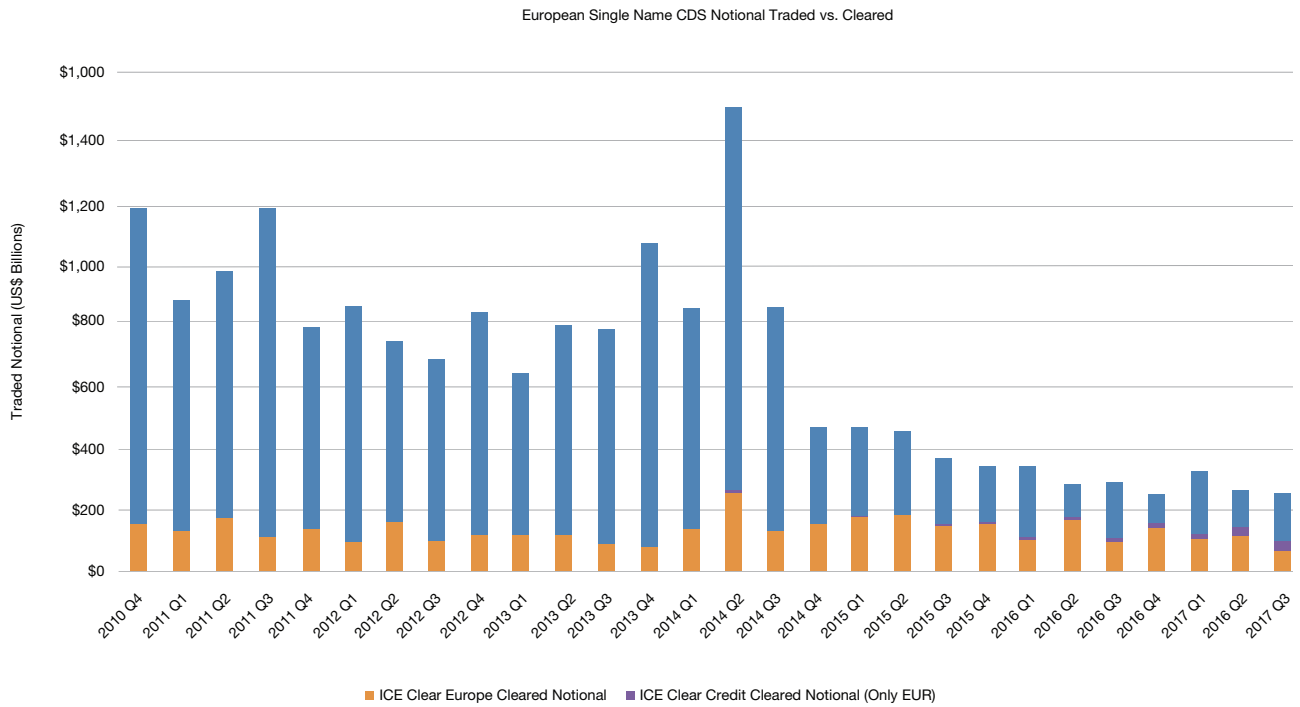
Figure 23: ICE Clear Credit cleared SN-CDS (EUR only)



Source: ISDA analysis based on ICE Clear Credit-CDS data and DTCC TIW data

As of third quarter 2017, single name CDS notional cleared on ICE Clear Europe accounted for 28% of total traded European single name CDS notional and EUR single name CDS notional cleared on ICE Clear Credit was 11% of total traded European single name CDS notional. This can be seen in Figure 24.

Figure 24: ICE Clear Europe and ICE Clear Credit cleared SN-CDS vs notional traded



Source: ISDA analysis based on ICE Clear Europe and ICE Clear Credit-CDS data and DTCC TIW data

VI. Electronic Trading

Interviews

A predominantly OTC market

Despite a trend toward greater platform-based trading of CDS indices, SN-CDS remains a primarily OTC market. The improved standardization of SN-CDS contracts, in theory, should make them more amenable to venue trading, and at least two platforms in Europe currently provide request for quote (RFQ) functionality or price streaming. Both sell-side and buy-side firms are generally supportive of more venue trading, both from a trade processing efficiency perspective, as well as a transparency and price discovery aspect. However, traction seems to be slow. This perhaps also explains why many platform vendors in Europe have been reticent to enter the space.

Liquidity

One motivation for keeping SN-CDS OTC is the relative illiquidity of the product, and the dearth of active market-makers. This makes the market particularly sensitive to information leakage and, in many cases, it is more advantageous for investors to go directly to their market-maker of choice, particularly if they are trying to execute large size. This is not sufficiently offset by the potential benefits of straight-through-processing (STP). Also, while tighter indicative bid-offer spreads on-screen could be viewed as an improvement in liquidity, this is not upheld when it comes to execution (similar to observations in the cash bond market). However, one participant pointed out that if SN-CDS were more exchange-traded, electronic trading would have the potential to 'unlock' liquidity which is currently siloed in bilateral dealer-client relationships.

Bespoke considerations

The interviews reveal other potential obstacles to executing on venue. Despite the standardization of contracts, only the constituents of current or last series CDS indices tend to get quoted on screens. The lack of liquidity in older series requires a more bespoke, bilateral trading structure. Also, the process for both allocations (assigning the trade to underlying sub-funds of the client) as well as novation (transferring the trade to another counterparty),⁵⁵ usually requires counterparty agreement prior to execution.

A matter of time

The general view coming out of the interviews is that, in time, there will be more uptake of electronic trading, at least for the more liquid single-names and index CDS series, particularly in light of post-trade transparency requirements under MiFID II/R, which attempts to drive more products onto 'lit' venues.⁵⁶ A push, regulatory or otherwise, toward central clearing will provide further impetus for electronic trading of SN-CDS.

⁵⁵ This is particularly important where a party is looking to close-out an existing bilateral position, but may not get the best terms from the counterparty with whom they hold the existing trade.

⁵⁶ MiFID II/R introduces a new form of regulated trading venue, Organised Trading Facilities (OTFs)

VII. Regulation

Interviews

Leverage ratio

A number of interviewees pointed to the increased capital costs associated with trading SN-CDS as a major contributing factor to the retrenchment of market-makers in Europe, as well as limiting the capacity of the remaining liquidity providers. The bottom line is that the Leverage Ratio (and Supplementary Leverage Ratio applied to US G-SIBs) makes trading CDS expensive, requiring firms to support their positions with Tier 1 capital.

Firstly, a portion of any notional CDS position itself is included in the Leverage Ratio (LR) calculation. Also, it is not possible to net offsetting positions with different counterparties. This inability to net positions is compounded by the fact that when trading with the same counterparty, only exactly matching positions can be netted. For instance, if a dealer buys five-year protection and sells four-and-a-half year protection in the same reference entity, these will be treated as two separate positions, and so the gross exposure will be applied in the LR calculation. The reality, from a risk management perspective, however, is that the firm holds a net six-month exposure (long protection) in four-and-a-half years' time (since any credit event in the meantime will terminate both contracts, with the same final price).

Nor does holding SN-CDS basis positions help to offset LR. In fact, these are more expensive than running a naked CDS position, since the dealer will not only be liable for the SN-CDS LR charge, but also that of the related bond position as well as the repo.

Finally, the dealer will also be charged LR against any net margin payment, and, in the case of non-cleared trades, against the potential future exposure (PFE) of the contract.

MiFID II/R

The advent of MiFID II/R⁵⁷ was also discussed by participants, and, for the most part was seen as a potential positive. The main impact from a MiFID perspective is greater public transparency of market quotes and actionable indications of interest (pre-trade) and trade reporting (post-trade). The general feeling seems to be that improved post-trade transparency should help create more market confidence with respect to trade transparency and a sense of true liquidity. At the same time, it was noted that greater transparency could expose the positions of market-makers and act as a deterrent to provide liquidity.

However, only instruments that are deemed 'liquid' under the regulation are in scope of pre-trade transparency and, from a post-trade perspective, transactions in instruments not classified as liquid will, in many EU jurisdictions, benefit from deferred publication: potentially for up to four weeks. Based on ESMA's analysis for instrument liquidity classifications, currently only two CDS indices will be classed as liquid (iTraxx Europe Main and iTraxx Crossver),⁵⁸ with no SN-CDS contracts being deemed as liquid.⁵⁹

Being in-scope of deferred post-trade reporting, but avoiding pre-trade and immediate post-trade obligations, is not unanimously perceived to be the right balance between protecting investor and market-maker interests. As one participant noted, in the US the SEC has proposed real-time public reporting for single-name CDS (with exceptions for blocks), similar to the existing reporting regime for index CDS. While deferrals may be appropriate for certain types of trades, their view was that granting a blanket four-week deferral for every single trade impairs market transparency to the detriment of buy-side investors. Generally, increased transparency could help bring more potential users of SN-CDS into the market. Furthermore, MiFID II/R reporting requirements are seen as being a further incentive for trading SN-CDS on platforms (with venues responsible for reporting obligations).

However, market participants have highlighted a number of MiFID II related issues immediately after its launch in January 2018, which will need to be resolved if the regulation is going to promote more and not less activity in the SN-CDS market. In particular, there is some ambiguity as to what contracts should be classified as 'traded on a trading venue' (ToTV), and so in scope of the transparency obligations, as well as confusion over the trade reporting waiver thresholds, and even on how to report a CDS 'price'.

⁵⁷ The second Markets in Financial Instruments Directive (MiFID II), and the accompanying Markets in Financial Instruments Regulation (MiFIR) entered into force in the European Union from 3 January 2018.

⁵⁸ This will apply to the current series and last series for both indices.

⁵⁹ During the interview process for this study, ESMA did initially publish its list of liquid credit derivatives which included a small number of SNs, but then later updated this to just two above mentioned indices.

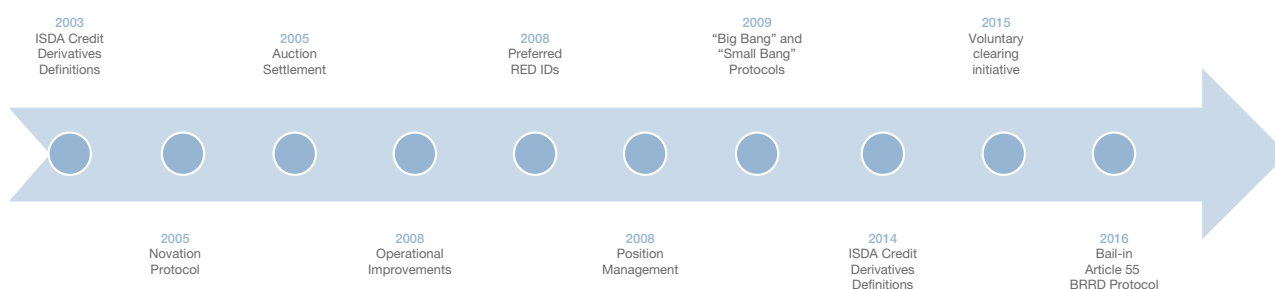
VIII. 2014 Definitions and credit events

Interviews

Improvements

All interviewees expressed general satisfaction with the introduction of the 2014 ISDA Definitions for CDS, which revised the previously relied upon 2003 Definitions. In particular, respondents felt that it helped support CDS market liquidity, with six-monthly contract rolls and more bond-like features, while also providing more certainty around default events, in particular for financials (and sovereigns). Greater flexibility in the deliverability process is also broadly seen as a marked improvement in the overall efficient functioning of the market. One participant commented that their only problem with this overhaul was that it came too late, as by 2014 SN-CDS volumes were plummeting as most pre-crisis open positions had long rolled-off. Another participant noted that the shift from quarterly to semi-annual roll dates had reduced liquidity from his perspective. In addition, the cost of hedging increased since hedges were aligned with the closest IMM dates, which had been reduced from four to two.

Figure 25: CDS market developments



- 2003: Revision of the 1999 credit derivatives definitions which set out six credit event definitions for SN-CDS. Further refinements were introduced in response to market developments.⁶⁰
- 2005 Novation Protocol: Changes to processing novations were introduced with a view to reducing backlogs in confirmations resulting from novated trades.⁶¹
- 2005 Auction settlement: Introduced to address shortcomings of physical CDS settlement whereby the latter is effectively transformed into cash settlement and the price or recovery rate of the underlying debt instruments is established through an auction process.⁶²
- 2008 Operational improvements: A commitment was made by the industry to adopt minimum processing standards for credit derivatives (including SN-CDS), notably for affirmation and confirmation. Meeting these standards can only be achieved by using electronic confirmation services.⁶³
- 2008 "Preferred" RED ID: "Markit Reference Entity Database (RED) is the market standard that confirms the legal relationship between reference entities that trade in the credit default swap market and their associated reference obligations, known as "pairs". Each entity is identified with a unique 6-digit alphanumeric code, and a 9-digit code identifies the pair. RED codes are widely and successfully used by CDS market participants to electronically match and confirm CDS transactions. The RED "preferred reference obligation" is the default reference obligation for CDS trades based on liquidity criteria."⁶⁴
- 2008 Position management: Portfolio compression⁶⁵, also referred to as trade tear-ups, is a tool designed to

60 ISDA (2016), Single-name Credit Default Swaps. A Review of the Empirical Academic Literature, p.7

61 ISDA Novation Protocol, 2005 (<http://www.isdadocs.org/isdanovationprotll/isdanovationprotll.html>)

62 In addition, a single name CDS can also be based on specific asset-backed securities (ABS) such as commercial or residential mortgage-backed securities, referred to as ABCDS, or syndicated loans of an entity, known as LCDS. ISDA (2016), Single-Name CDS Literature Review, pp.27-33

63 ISDA/MFA/SIFMA (2008), Frequently Asked Questions Derivatives Processing Standards for credit derivatives (http://www.isdadocs.org/c_and_a/pdf/CreditDerivProcessFAQs.pdf)

64 Markit, Markit Credit Indices, A Primer. November 2008 (<https://www.markit.com/news/Credit%20Indices%20Primer.pdf>)

65 According to the Bank for International Settlements, portfolio compression "is a process that enables early termination of economically redundant derivatives trades without changing the net position of each participant." It does so by terminating existing trades (including on single name reference entities and on indices in the CDS market) and replacing them with a smaller number of new trades with substantially smaller notionals that carry the same risk profile and cashflows as the initial portfolio. In so doing, portfolio compression reduces the overall notional size and number of outstanding contracts in derivatives portfolios, thereby improving derivatives risk management.

reduce the number of trades and gross notional, but keep the same economic exposure.⁶⁶

- 2009 “Big Bang” Protocol: Applicable to North American contracts, the protocol introduced global changes to contracts (e.g. by formalizing auction mechanisms, establishing Determinations Committees) as well as market convention (e.g. fixed coupons and a full first accrual period).
- 2009 “Small Bang” Protocol: This arrangement introduced further standardization of contracts (e.g. refined modalities for auction settlement in case of restructuring events) and European market convention, similar to US market conventions.⁶⁷
- 2014 Credit Derivatives Definitions: Introducing substantial changes including the new credit event “governmental intervention”, the concept of “standard reference obligation”, the distinction of seniority of reference obligations, and asset package deliveries and credit events.⁶⁸
- 2015 Voluntary clearing initiative: A voluntary commitment to clear SN-CDS was made by 25 buy-side firms, many of which are based in the US, in December 2015.⁶⁹
- 2016 Bail-in Article 55 BRDD Protocol: Published in July 2016, this protocol aims to enable parties to Protocol Covered Agreements to amend the terms of each such Protocol Covered Agreement to reflect the requirements of Article 55 of the BRRD.⁷⁰

Figure 26: Ongoing CDS market developments and discussions



- Credit derivatives Determinations Committees (DC): In November 2017, ISDA announced that it had reissued an invitation to tender for the secretarial role on the credit derivatives DCs after the DCs and ICE Benchmark Administration (IBA) were unable to reach agreement on IBA assuming the role of DC secretary. IBA had been selected through the original tender process in 2016.⁷¹
- 2017-2018: Discussions on how to leverage distributed ledger technology (DLT) in order to increase operational efficiency are ongoing.⁷²

66 Markit (2009), The CDS Big Bang: Understanding the Changes to the Global CDS Contract and North American Conventions, p. 5 (http://www.markit.com/cds/announcements/resource/cds_big_bang.pdf)

67 ISDA, Big Bang Protocol FAQs (https://www.isdadocs.org/bigbangprot/bbprot_faqs.html)

68 ISDA, Frequently Asked Questions 2014 Credit Derivatives Definitions & Standard Reference Obligations: October 6, 2014 Go-Live, pp. 7-9 (<http://www2.isda.org/asset-classes/credit-derivatives/2014-isda-credit-derivatives-definitions/>)

69 ISDA, 25 Investment Management Firms Commit to Single-Name CDS Clearing, 16 December 2015 (<https://www.isda.org/a/KjDDE/cds-pr-final.pdf>)

70 ISDA News Release, ISDA Publishes Bail-in Article 55 BRRD Protocol, 14 July 2016 (<https://www.isda.org/a/jpDDE/article-55-press-release-final-002.pdf>)

71 ISDA Press Release, ISDA Reissues Invitation to Tender for Determinations Committees Secretary Role, 9 November 2017 (<https://www.isda.org/2017/11/09/isda-reissues-invitation-to-tender-for-determinations-committees-secretary-role/>)

72 ISDA/Linklaters Whitepaper (2017), Smart Contracts and Distributed Ledger – A Legal Perspective (<https://www.isda.org/a/6EKDE/smart/>).

Recent credit-events

In the lead-up to and during the interview process for this study there had been some high-profile press coverage of CDS trigger events, in particular those related to Novo Banco, Banco Popular, Matalan, and, toward the end of the research, Noble (see *Case studies* section). A striking message from all the interviews was that, for the most part, participants seemed unconcerned by the outcomes of these particular events and the final price determination. A number of participants pointed to the Banco Popular case as vindication for the 2014 Definitions, explaining that the senior and subordinated CDS did exactly what they were supposed to do (which would not have been the case under the 2003 Definitions – see *Analysis*). Another interviewee noted that credit events had become more and more complex, resulting in idiosyncratic issues which were unavoidable.

Orphaning

Some interviewees expressed frustration at the recent press coverage of the CDS market, stating that a number of articles had been ill-informed and unhelpfully sensationalist. The majority of respondents took time to explain that most traders in the CDS market, both sell- and buy-side, are fully conversant with both the terms of the contracts they are trading, as well as the capital structure of the reference entity on which they are buying or selling protection. The Matalan 'orphaning' case was cited as an example where an understanding of European law with respect to refinancing the debt of holding companies is an essential consideration when trading protection on entities with limited deliverable debt instruments. In addition, the scarcity of deliverable debt instruments was compounded by the absence of an asset package delivery mechanism. The latter appears to be working reasonably well, albeit not perfectly, for financial and sovereign SN-CDs where the recovered value of an instrument is closer to the true economic value. However, in the corporate world, the ability for market participants to try and influence recovery away from the true economic recovery of an instrument may still exist, albeit on rare occasions. It was also pointed out that these risks are usually priced into the CDS itself, and explains occurrences of deep negative basis for certain high yield names.⁷³ As one respondent explained, if protection is selling at a deep discount, there is often a good reason.

Better, not perfect

Many participants noted, however, that even with the improved 2014 Definitions, it was impossible to cover every eventuality and possible default scenario, and that there was always the risk that a CDS position or credit event may not turn out the way one anticipated. Another observation was that the definitions should be further improved to strengthen trust in the SN-CDS product, and avoid situations where buyers of protection fail to receive a payout due to technicalities.

But on the whole, it is important to bear in mind that a degree of complexity is inherent to CDS. A SN-CDS synthesizes the credit risk embedded in individual credit instruments (bonds and loans) into a single credit asset, enhancing liquidity as compared with trading the risk in individual bonds. As a result, SN-CDS have to account for many different possible scenarios, and balance interests of both buyers and sellers of protection. This results in a detailed set of rules governing payouts under the CDS contract. In addition, it was noted that legal analysis drives delays in auction settlement, for example in the case of Banco Popular Español SA, where it needed to be considered whether legal claims constituted a deliverable asset, or Novo Banco, which raised issues around the valuation of the deposit facility (see case studies below). Furthermore, in the case of financial restructuring events, the fact that only the reference obligation can be delivered under asset package delivery can lead to uncertain outcomes in the context of exchanges or tenders with collective action clause, as some losses may be forced on some of the bonds without necessarily impacting the reference obligation. The case of Hovnanian incident in the US may also point to potential weaknesses in SN-CDS design.

However, the general feedback remains that the new definitions work well, and so long as users are prepared to commit to the necessary due diligence, or entrust experienced and knowledgeable traders and risk managers, the SN-CDS market functions relatively efficiently.

⁷³ Meaning that the cost of buying protection is significantly cheaper than the fair value implied by the credit spread of the bond(s) of the reference entity.

Analysis

CDS on senior and subordinated debt

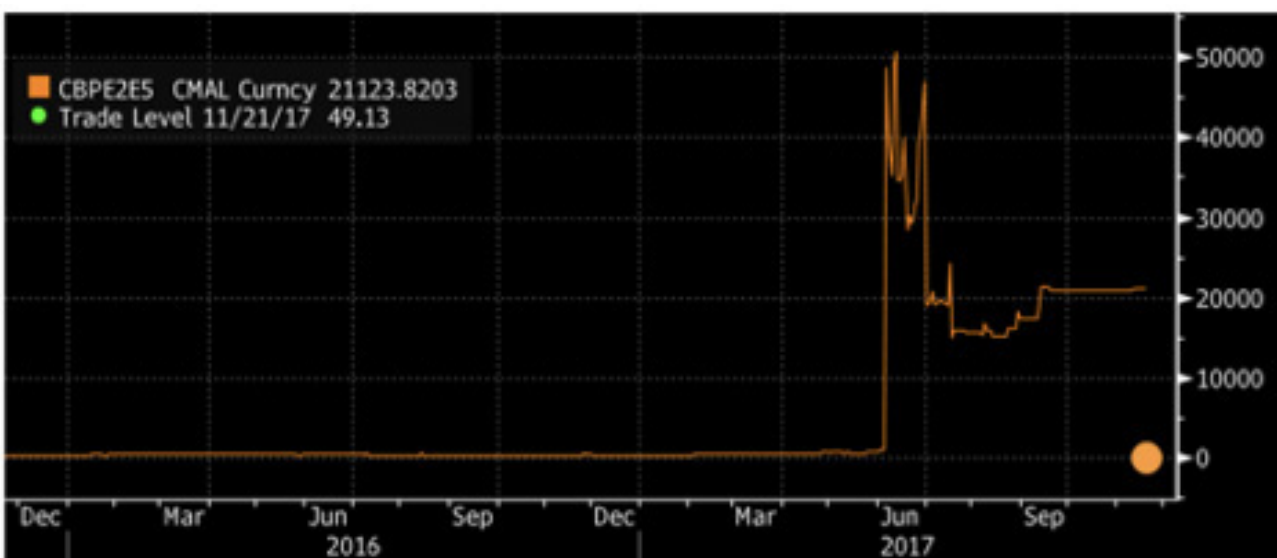
Recent restructuring of Spain's bank Banco Popular Español SA demonstrated the divergence between CDS on senior and subordinated debt in a credit event. Subordinated creditors were fully written down when the EU's Single Resolution Board and the Spanish National Resolution Authority (FROB) restructured the bank under Bank Recovery and Resolution Directive in June 2017. While spreads on senior unsecured bonds CDS widened to 500 bps, the magnitude of the jump in the spreads of subordinated CDS was far more significant. Despite the resolution of the bank's debt, for the senior CDS no credit event occurred (see Figure 27). However, for the subordinated CDS - traded with reference to the 2014 ISDA Credit Derivatives Definitions - the resolution triggered the first governmental intervention credit event (see Figure 28).

Figure 27: Banco Popular Senior Debt CDS



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Figure 28: Banco Popular Subordinated Debt CDS



Used with permission of Bloomberg Finance LP

Case studies

Recent press coverage, notably in the Financial Times and other media outlets, highlights some of the complexities revolving around SN-CDS under specific circumstances in Europe, Asia and North America.

Europe

The risk of 'orphaned CDS' – The case of Matalan

A Financial Times article published on 10 July 2017 drew attention to the risks of CDS referencing debt issued by Matalan, a UK retail chain. Carrying a triple-C rating, the issuer was considered a fairly high risk. To hedge the credit risk of holding bonds issued by Matalan, worth £477 million, investors had purchased protection in the form of CDS contracts from hedge funds.⁷⁴

Allegedly, a group of hedge funds who previously sold protection offered to support a new bond issuance by Matalan, provided the bond would be issued out of a new legal entity. As a result, outstanding CDS contracts on the existing debt issued by the old entity would become worthless. This process is known as 'orphaning' CDS, whereby the CDS contracts reference debt that no longer exists.

It would be expected that existing Matalan bondholders would have been repaid and, as a result, would no longer have a long position to protect. This may not necessarily have been anticipated by less informed investors. However, investors running naked CDS position (i.e. buying protection without owning the reference Matalan bond), which can be considered speculative in this scenario, would have suffered a loss from the 'orphaning' process.

While this concern did not materialize to date, the immediate effect was that the value of 5-year CDS contracts on Matalan bonds fell sharply from approximately 23% of nominal value to around 6% (expressed as an 'upfront' cost).⁷⁵

In Europe, debt is generally not issued by the operating company, but either by a single or multiple holding companies. An understanding of the issuer's capital structure and European law with respect to refinancing the debt of holding companies is an essential consideration when trading protection on entities with limited deliverable debt instruments. The risk of 'orphaning' is therefore known and inherent to high-yield CDS.

Another important factor that was explained by one of the interview participants is that whilst financial assistance laws in Europe allow companies to seek funding to purchase its own debt (or shares) or of its holding companies, capital has to be raised through different legal entities. They explained that this is not permissible under financial assistance rules in the US, thereby removing the incentive to issue debt through different entities.

'Bailed-in' bonds and legal claims – The case of Banco Popular

Under the EU framework for bank recovery and resolution, Banco Popular, an ailing Spanish lender, was sold (for €1) to Banco Santander on 7 June 2017. As foreseen in the Bank and Recovery Resolution Directive (BRRD), bondholders of subordinated debt i.e. additional tier one (AT1) securities, worth €1.25bn, and lower tier 2 bonds, and shareholders suffered a total loss of their investment through the 'bail-in' mechanism.⁷⁶

While tier 2 bonds are subordinated, they are senior to AT1 bonds, also known as contingent convertibles, or 'CoCos', that are converted to equity if a bank's capital ratio falls below a defined threshold. Since tier 2 bonds yield substantially less than AT1 bonds, it may have come as a surprise to bondholders to be wiped out at the same time as AT1 bondholders even though the risk profile of tier 2 bonds should in theory have been lower.⁷⁷

CDS contracts written against Banco Popular's junior or subordinated debt were triggered shortly after the bail-in occurred. ISDA's Determinations Committee for credit derivatives⁷⁸ ruled on 9 June 2017 that the Banco Popular bail-in fulfilled the conditions of 'governmental intervention', a trigger event introduced under the 2014 Definitions, and 'restructuring' credit event under the 2003 framework.

⁷⁴ Financial Times, Hedge funds offer to support Matalan in exchange for CDS win, 10 July 2017 (<https://www.ft.com/content/c90f76ce-625f-11e7-8814-0ac7eb84e5f1>)

⁷⁵ *ibid*

⁷⁶ European Commission approves resolution of Banco Popular Español, S.A., 7 June 2017 (http://europa.eu/rapid/press-release_IP-17-1556_en.htm)

⁷⁷ Financial News, Not so popular: The implications of Banco Popular's bail-in, 14 June 2017 (<https://www.inlondon.com/articles/not-so-popular-banco-popular-bail-in-may-have-unwelcome-consequences-20170614>)

⁷⁸ ISDA EMEA Credit Derivatives Determinations Committee: Banco Popular Español SA Governmental Intervention and Restructuring Credit Events, 9 June 2017 (<http://www2.isda.org/news/isda-emea-credit-derivatives-determinations-committee-banco-popular-espanol-sa-governmental-intervention-and-restructuring-credit-events>)

This decision, in principle, was expected to pave the way for the payout linked to CDS contracts. Since junior bondholders lost 100% of their investments, it was assumed that the buyers of protection would receive maximum compensation from CDS sellers. However, a controversy arose around bondholders' right to take legal action against the European Resolution Authority.⁷⁹ A source of contention stems from a clause in the EU's resolution framework stating, "that no creditor shall incur greater losses than would have been incurred if the relevant entity had been wound up under normal insolvency proceedings".⁸⁰

Since CDS contracts reference different credit trigger events under 2003 and 2014 Definitions they may naturally have potentially different outcomes. Following a series of meetings, ISDA's Determinations Committee reached consensus on the final auctions terms of bondholders' claims under the 2003 Definitions, while contracts under the 2014 Definitions were still on hold.⁸¹

Deposits for CDS settlement – The case of Novo Banco

Novo Banco is a Portuguese bank that was set up in August 2014 by Portuguese resolution authorities as a successor to Banco Espírito Santo, a so-called 'bad bank'. Accordingly, healthy assets and liabilities from the latter were transferred to Novo Banco. In 2016, reportedly as a result of the ECB's stress test, Portuguese resolution authorities transferred five senior bonds worth €1.9bn including the bond referenced in CDS contracts⁸² from Banco Novo back to Banco Espírito Santo.⁸³

The question arising from this event was whether this transfer would be classed as a governmental intervention credit event, triggering CDS payouts. A majority of members of the ISDA Determinations Committee believed that this was not the case. Since the DC fell short of the required majority of 12 out of 15 votes, the decision was deferred to an independent panel of experts. The panel supported the majority's view and, accordingly, the transfer of bonds was not deemed a credit event.

After a failed attempt in September 2015, Novo Banco was privatized by Portuguese resolution authorities in October 2017, a requirement under EU approved resolution measures.⁸⁴ As a precondition for the sale, Novo Banco was required to conduct a bond buyback, also known as 'liability management exercise', of \$4.7bn of its debt, concluded on 4 October 2017. ISDA's Determinations Committee ruled that under 2003 and 2014 Definitions this process met the conditions of a restructuring credit event.⁸⁵

In the bond buyback, or reverse auction, bondholders were not only offered cash proceeds equivalent to 82% of the notional amount, but also a fixed-term deposit option (3-years at 6.84%) to cover losses. In an unprecedented decision, the ISDA Determinations Committee ruled that the option to deposit proceeds would be included in the asset package for CDS settlement.⁸⁶

79 Bloomberg, Wiped-Out Creditors Await Delayed Payout in Debt Swaps Snag, 16 August 2017 (<https://www.bloomberg.com/news/articles/2017-08-16/banco-popular-swaps-payout-delay-shows-snag-in-market-overhaul>)

80 <https://dc.isda.org/documents/2017/08/banco-popular-espanol-sa-emea-dc-statement-25082017.pdf>

81 *ibid*

82 ISDA, EMEA DC STATEMENT 23 October 2017 (https://dc.isda.org/documents/2017/10/icm-28503794-v4-isda_novo_banco_-_emea_dc_statement_23_october_2017.pdf)

83 ISDA, Novo Banco: An Exceptional Story, 19 February 2016 (<https://isda.mediacomment.org/2016/02/19/novo-banco-an-exceptional-story/>)

84 Financial Times, Lone Star seals deal for stake in rescued Novo Banco after three-year process, 18 October 2017 (<https://www.ft.com/content/55eb0869-3f89-387b-9e06-9cbd78ffa99a>)

85 ISDA, Determinations Committee Decision, 5 October 2017 (<https://dc.isda.org/documents/2017/10/novo-banco-decision-10052017.pdf>)

86 IFR, October 21 2917, Issue 2206, p. 13.

Asia

A debt restructuring? - The case of Noble Group

CDS contracts on debt issued by Noble Group, a Singapore-listed commodity trading firm in financial troubles, sparked controversy around the definition of credit events in August 2017.

Usually, ISDA's Determinations Committee (DC) establishes when a firm is in default, thereby triggering the payout to buyers of protection. In the case of Noble, however, buyers of protection claimed that extending the loan repayment terms of Noble Group on 16 June 2017 constituted a form of debt restructuring. Consequently, sellers of CDS were requested to make the agreed payment.⁸⁷

At the request of market participants, ISDA's Determinations Committee examined the case of Noble Group. However, after reconvening repeatedly the committee declared on 19 September 2017 with 14 to 1 votes that it will not rule on the Noble Group case.⁸⁸

Members declined to take a decision owing to the lack of sufficient information to determine whether a restructuring event had effectively occurred, which is an unprecedented situation. This, in turn, increased uncertainty and led to bilateral disputes between market participants. According to the Financial Times and Bloomberg, this situation resulted from a 'standoff' between sell-sides who had taken opposite positions in CDS on Noble Group's debt and who are represented in the Determinations Committee.⁸⁹

North America

A 'voluntary default'? The case of Hovnanian

In the US, controversy arose around SN-CDS linked to US homebuilder Hovnanian and GSO Capital Partners, a hedge fund owned by Blackstone.⁹⁰

According to media reports, Hovnanian sought to refinance parts of its debt maturing in 2019, whilst GSO Capital Partners held CDS worth \$330 million written against debt instruments issued by Hovnanian.⁹¹ Allegedly, GSO Capital Partners offered Hovnanian favourable terms to refinance up to \$320 million of its debt on condition that Hovnanian deliberately fail to make an upcoming interest payment on its debt. In turn, this would trigger a technical default, resulting in a payout to GSO Capital Partners from the SN-CDS written against Hovnanian's debt instruments.⁹²

This sparked an outcry of sellers of SN-CDS referencing Hovnanian who stood on the other side of the trade, including Solus Alternative Asset Management and Citadel, two hedge funds, as well as Goldman Sachs, amongst others. It was commented that Hovnanian was not distressed and had received other, albeit less favourable refinancing options. For the offer by GSO Capital Partners to be accepted, Hovnanian's investors were purportedly given a deadline to approve the offer. A request for injunction, put forward by Solus Alternative Asset Management in a federal court to prevent Hovnanian and GSO Capital from striking such a deal, was dismissed on 29 January 2018.⁹³

It was not confirmed at the time of publication of this study whether the deal between GSO Capital Partner and Hovnanian had been concluded and whether a CDS credit event under ISDA's credit derivatives definition had been triggered.

87 Financial Times, World's biggest banks square off over Noble credit default swaps, 27 August 2017 (<https://www.ft.com/content/1e20366e-89b9-11e7-8bb1-5ba57d47eff7>)

88 ISDA, Determinations Committee Decision, 19 September 2017 (<https://dc.isda.org/documents/2017/09/noble-dc-decision-09192017.pdf>)

89 Bloomberg, Noble Default-Swap Verdict in Play as Test of ISDA System, 5 September 2017 (<https://www.bloomberg.com/news/articles/2017-09-05/noble-group-default-swap-verdict-in-play-as-test-of-isda-system>)

90 Financial Times, Blackstone-led debt deal sparks outcry, 11 January 2018 (<https://www.ft.com/content/69194bda-f5af-11e7-88f7-5465a6ce1a00>)

91 Barron's, The Hedge Fund Skirmish That Could Kill the CDS Market, 26 January 2018 (<https://www.barrons.com/articles/the-hedge-fund-battle-that-could-kill-the-cds-market-1517013136?mg=prod/accounts-barrons>)

92 Financial Times, Blackstone-led debt deal sparks outcry, 11 January 2018 (<https://www.ft.com/content/69194bda-f5af-11e7-88f7-5465a6ce1a00>)

93 Barron's, Judge Denies Injunction Request for Fancy CDS Transaction, 29 January 2018 (<https://www.barrons.com/articles/congratulations-hovnanian-gso-judge-denies-injunction-request-fancy-cds-transaction-1517256266>)

IX. SN-CDS: another tool in the box

Through the buy-side conversations it became clear that SN-CDS was viewed as one of many alternative instruments that can be used to hedge or manage credit risk. CDS indices were more widely used as a means to take more generic credit exposure, and a number of interviewees suggested that CDS index options (or 'swaptions') were gaining traction. Some mentioned that they were seeing more use of Total Return Swaps (TRS).⁹⁴ However, most TRS are based on corporate bond indices, such as the iBoxx series, rather than individual bonds or bespoke baskets.

Another innovation in the credit index space is a Eurex Corporate Bond Index Futures, based on the Euro Stoxx 50 Corporate Bond Index, which is structured similar to government bond futures contracts (only cash settled). This was only being launched toward the end of the interview process and so was not yet an established tool in the credit derivative box.

But it was also pointed out that both TRS and the futures contract are based on total return indices, which captures both interest rate risk and credit risk. To isolate the credit element (similar to CDS) requires also using offsetting interest rate swap or government bond future positions.

Ultimately, SN-CDS remains the optimal derivative instrument for hedging credit exposure to a single reference entity.

X. Demystifying CDS

A prominent theme from many of the interviews is that one of the major barriers to new entrants to the CDS market is the required level of expertise. Despite attempts to simplify CDS, and make the instrument more bond-like in its features (with coupons and upfront payments), it necessarily remains relatively more complex than cash bonds or IRS.⁹⁵ In particular, a detailed understanding of the contractual terms relating to credit events and the relationship with underlying reference entities is essential, and the product can provide pitfalls for the unversed, as the Banco Popular and Matalan case studies highlight. But in terms of hedging specific entity credit risk it remains the optimal instrument. The general view of many interviewees with respect to enhancing liquidity in the SN-CDS market was that it would be beneficial to raise broader buy-side awareness and understanding of the product.⁹⁶

⁹⁴ A total return swap involves swapping an obligation to pay interest based on a specified fixed or floating interest rate in return for an obligation representing the total return on a specified reference asset or index.

⁹⁵ Chapter I of this paper attempts to highlight and explain some of the inherently complex characteristics of the instrument.

⁹⁶ ISDA produces numerous resources on CDS and has held a number of CDS focused conferences. Meanwhile, ICMA in conjunction with Henley Business School runs an Executive Education course on CDS: [https://www.icmagroup.org/assets/documents/Education/Brochures2013/CDS-Pricing-apps-feat-Brochure-April-2013\(2\).pdf](https://www.icmagroup.org/assets/documents/Education/Brochures2013/CDS-Pricing-apps-feat-Brochure-April-2013(2).pdf)

Conclusion

Single name credit default swaps, which pay out upon a pre-defined event of default suffered by an entity against which the CDS is written,⁹⁷ provide an effective and efficient, market-based means of managing credit risk. The SN-CDS market allows asset managers and other investors to hedge and control the credit risk in their portfolios, and for banks and other investment firms to protect against the risk of counterparties or loans defaulting or to gain exposure to various credit risks without holding underlying instruments. Furthermore, they are an important component of healthy corporate bond secondary markets: enabling market-makers to manage their trading books and facilitating price discovery for dealers, investors, and issuers.

The European SN-CDS market has seen a marked and steady decline in volumes and activity since 2008 through to the present day. This can be attributed to a number of factors. A decrease in banks' loan books and a trend away from fair value accounting to accrual accounting has reduced the demand of loan traders, while the adoption of standardized CSAs has meant that CVA desks do not have to hedge counterparty exposure as actively as previously. The widespread use of portfolio compression has resulted in a reduction of the number of trades and gross notional whilst keeping the same economic exposure. The decline in SN-CDS activity and liquidity has also taken place in tandem with deteriorating liquidity conditions in corporate bond markets, and the two are very much interlinked. To an extent, this can be attributed to the increased capital and liquidity costs of running CDS books, in particular the calibration of the Leverage Ratio, and this would seem to be the main driver for the recent attrition of important market-makers. However, benign market conditions also seem to play a part. CDS is a volatility instrument, and with compressed spreads and muted market volatility, as well as low default rates, the demand for SN-CDS, particularly in the investment grade space, has become subdued.

Changes to CDS contracts under the 'ISDA 2014 Definitions' and increased standardization through market practice have helped to improve the instrument, with reduced roll-dates and more bond-like features. In theory this should make SN-CDS more amenable both to electronic trading and central clearing, which in turn could help improve underlying liquidity. The slow uptake of platform trading of SN-CDS seems to be due to the limited number of liquidity providers and relative lack of market depth, which makes information leakage a concern. There is some optimism that the reporting and post-trade transparency obligations of MiFID II/R will drive more trading onto venues. Meanwhile, many buy-side users have been reluctant to move to central clearing due to the additional costs. A number of market participants have commented that a cleared market might induce more banks to participate in the market as liquidity providers.

The 2014 Definitions were also key in providing more options with respect to defaults and trigger events, in particular with respect to financials. However, recent media coverage has suggested risks associated with CDS, both in terms of what determines a credit event, as well as potential ambiguity as to the different reference entities, which may be perceived wrongly as a single entity by less informed investors. The respondents to this study, however, largely refute these accusations, pointing to the fact that while there may be some high-profile exceptions, in most cases CDS work well, with the 2014 Definitions performing exactly as intended. They further argue that where there are risks, these are largely understood (and priced in) by those who actively trade or use the instruments.

It is perhaps the negative perception of CDS by some commentators, and even policy makers and regulators, that creates one of the biggest challenges to revitalizing a healthy European SN-CDS market, and the benefits this brings in terms of risk mitigation and in supporting vibrant corporate bond markets. CDS are inherently complex instruments, and trading and utilizing them efficiently requires a degree of expertise and experience, which is at risk of being lost in today's post-reform markets. A more concerted effort by capital market participants and stakeholders to understand, embrace, and promote the corporate SN-CDS product and market would only be to the benefit of the European corporate bond market, which in turn would have positive implications for issuers, investors, and so the European economy.

⁹⁷ The exact pay-out is based on the residual value of the underlying bond it references.

List of acronyms

ABCDS	Asset Backed Credit Default Swap
AT1	Additional Tier 1 capital
BRRD	Bank Recovery and Resolution Directive
CCP	Central Counterparty Clearing House
CDO	Collateralized Debt Obligation
CDS	Credit Default Swap
CEEMEA	Central and Eastern Europe Middle East and Africa
CLN	Credit Linked Note
CSA	Credit Support Annex
CSPP	Corporate Sector Purchase Programme
CVA	Credit Valuation Adjustment
DC	Determinations Committee
DTCC	Depository Trust and Clearing Corporation
ECB	European Central Bank
EMIR	European Market Infrastructure Regulation
ESMA	European Securities and Markets Authority
GCDS	Global CDS (Bloomberg data source)
G-SIB	Global Systemically Important Bank
HY	High Yield
IBA	ICE Benchmark Administration
ICMA	International Capital Market Association
IG	Investment Grade
IMM	Initial Market Midpoint
IMM	International Money Market (date convention)
IRS	Interest Rate Swap
ISDA	International Swaps and Derivatives Association
LCDS	Loan Credit Default Swap
LR	Leverage Ratio
MiFID II/R	Second Markets in Financial Instruments Directive/Regulation
OTC	Over The Counter
PD	Probability of Default
PFE	Potential Future Exposure
RED	Reference Entity Database
SN-CDS	Single Name Credit Default Swap
SRO	Standard Reference Obligation
STP	Straight Through Processing
ToTV	Traded on a Trading Venue
TRS	Total Return Swap
TIW	Trade Information Warehouse

About ICMA

The International Capital Market Association is a membership association, committed to serving the needs of its wide range of members representing both the buy side and sell side of the industry. Its membership includes issuers, intermediaries, investors and capital market infrastructure providers. ICMA currently has more than 530 members located in over 60 countries worldwide. Working actively with its members in all segments of the wholesale market, ICMA focuses on a comprehensive range of regulatory, market and other relevant issues, which impact market practices and the functioning of the international debt capital markets. In addition, ICMA responds to the needs of its members on the buy side, both asset managers and investors, by focusing on relevant regulatory, market and other issues throughout the full spectrum of their activities.

The mission of ICMA is to promote resilient and well functioning international debt capital markets, which are necessary for economic growth.

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About the ICMA SMPC

ICMA's Secondary Market Practices Committee (SMPC) is an open forum for sell-side and buy-side member firms active in the international cross-border fixed income secondary market, in particular the European investment grade corporate bond market. Through open dialogue and engagement, as well as through its subsidiary working groups and work-streams, the SMPC seeks to be the representative body of the European corporate bond secondary market by: (i) addressing practical issues directly relevant to market practitioners; (ii) standardising market best practice; (iii) disseminating relevant market information; and (iv) promoting the best interests of an efficient and liquid market.

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