Primer

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CSA discounting and the impact on IR swaps and CDS

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Move to CSA discounting

Post-financial crisis, it has become far more common to collateralize derivative transactions. There has also been a recognition that the discount rate used for derivative valuation ought to be the collateral funding rate rather than a LIBOR based discount curve, which used to be the norm. A Credit Support Annexe (CSA) sets out the terms of mutual collateral posting between two counterparties. Given a set of possible forms that collateral can be posted in, as per the CSA, the discount rate used would depend on the form that is cheapest to deliver.

Valuation depends on specifics in bilateral CSAs

For transactions that are collateralized with cash, the appropriate discount rate is the overnight rate. In some cases, CSAs may also find certain government and corporates bonds as eligible collateral, in which case the repo rate on these securities would be used to determine the discount curve. Most existing CSAs have a high degree of optionality embedded in them; in particular the option to switch the type of collateral posted in the future. This means having to take into account forward funding differentials and how they may change with market conditions in order to determine the appropriate discount curve for valuation.

Impact on Interest Rate products and CDS valuation

Current market quotes for IR products and CDS are largely already based on OIS discounting, using the overnight rate applicable to the trade currency. The use of an OIS discount curve instead of LIBOR in the same currency results in larger present values due to the positive LIBOR-OIS spreads. The impact will increase the more the trade is in-the-money, or the longer its tenor. When accounting for the possibility of posting collateral in a currency different from the trade currency, the PV impact of the new discounting framework could however end up negative, depending on the cross currency basis. For example, for a 10y USD trade, the JPY collateral currently stands as the cheapest to deliver.

Standard Credit Support Annex and Clearing

To mitigate the complexities arising from the terms of current bilateral CSAs, ISDA is in discussions to introduce a new Standard CSA (SCSA) that eliminates the optionality present in current agreements. To the extent that a number of market participants adopt the SCSA, it will bring bilateral trades closer to cleared ones – clearing houses tend to accept only cash collateral as variation margin and do not allow currency substitutions. Over the course of this year most counterparties are required to clear certain interest rate swaps and CDS index trades, with the first deadline set for March. As the market proceeds towards central clearing, the issues over non-standard CSAs will eventually be confined largely to legacy transactions.

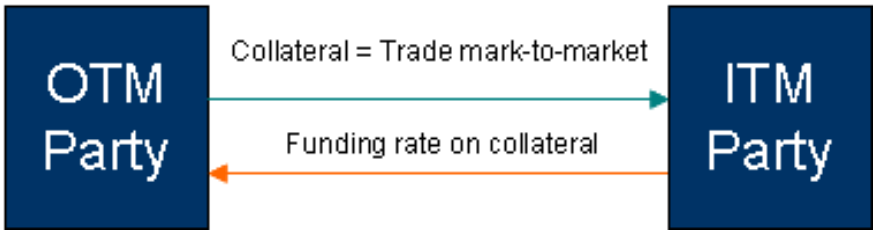
Refer to important disclosures on page 12 to 14. Link to Definitions on page 11.

Derivatives and collateralisation

The value of a derivative is calculated by discounting expected cashflows to their present value. This discounting requires a 'risk-free' interest rate curve. For a long time, most derivative valuations were based on discount factors derived from LIBOR and LIBOR swaps. While not exactly a risk-free rate, LIBOR was considered a close proxy as it represents the average rate at which major AA-rated banks can borrow unsecured money in the inter-bank market. The financial crisis, however, exposed the flaw in treating LIBOR as a risk-free rate, with the difference between interbank rates and AAA government bond rates or overnight rates ballooning due to the deterioration in bank creditworthiness.

In addition, it has become far more common, post-crisis, to collateralise derivative transactions. As a trade between two counterparties is marked-to-market, the party that is out-of-the-money (OTM) is required to post collateral to the in-the-money (ITM) party. Collateralisation is a mean to protect the ITM party from the risk of the OTM party's default. Should a default occur before the trade matures or is unwound, the ITM party can lay claim to the collateral in lieu of payments owed to it. Assuming the trade is fully collateralised, this collateral should therefore mirror the present value of the derivative.

Figure 1: Collateral flows between trade counterparties



Source: BofA Merrill Lynch Global Research

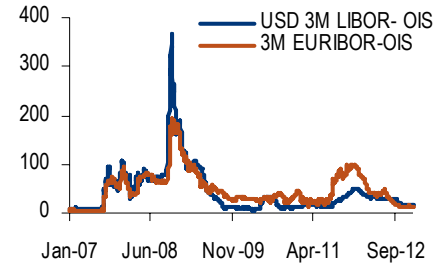
The collateral represents funding for ITM, who in turn pays the OTM party the collateral funding rate. This rate depends on the nature of the collateral and tends to correspond to the overall cost of funding the trade. It has been recognized that this overall cost for funding the trade is the correct discount rate to be used in derivative valuation rather than a LIBOR-based discount curve.

Credit Support Annex

A Credit Support Annex (CSA) sets out the terms of mutual collateral posting between two counterparties. It stipulates for example the type (cash, securities) and currency of collateral that is acceptable, minimum thresholds for posting collateral, etc. The funding rate paid/received hence depends on the posted collateral. If the collateral is in cash, the rate is typically the overnight rate for the relevant currency i.e. Fed Funds for USD, EONIA for EUR, etc. If the collateral is in the form of securities like government bonds, ITM would pass on bond coupons to OTM, who would in turn pass it on to his/her repo counterparty and eventually earn the repo rate.

In our discussion below we focus largely on the case where cash is the only acceptable form of collateral and hence the discount rate is the Overnight Index Swap (OIS) rate.

Chart 1: LIBOR-OIS spread (bp)



Source: BofA Merrill Lynch Global Research

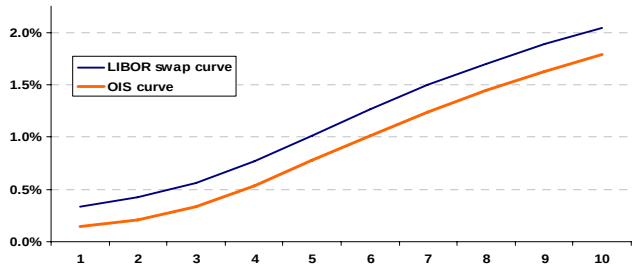
LIBOR vs. OIS discounting

An Overnight Index Swap (OIS) allows an investor to swap a fixed rate for the floating rate which corresponds to the average overnight rate over the period of the swap e.g. the Fed Funds rate. A 3M OIS, since it reflects the three month average for the overnight borrowing/lending rate, does not price in as much credit and term risk as the 3M Libor rate (cost of a 3M unsecured interbank loan).

Until late 2007, the difference between LIBOR and OIS rates was rather small (c.5bp for 3M, EUR – see Chart 1) and using one or the other as discount rate would have made only a small difference in valuation. However, as the crisis wore on and credit conditions deteriorated, the spread between the two rates became much wider, peaking at over 350bp for 3M USD in September 2008. While the spread has declined to more 'normal' levels now, in periods of systemic stress it tends to gap wider as seen during the European crisis in 2011. In light of these events, most market participants started collateralizing the trades, entering CSAs, and modified their valuation systems to incorporate discounting using OIS rates.

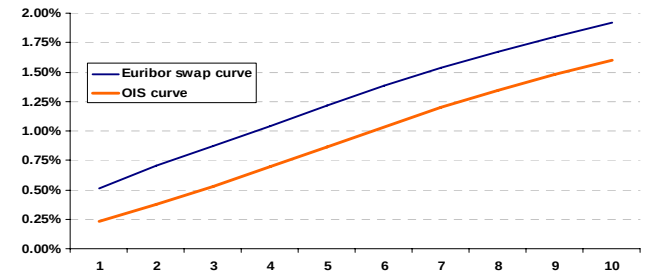
As the OIS discount curve is lower than the LIBOR based one (Chart 2 and Chart 3), the present value of cashflows discounted using OIS should be higher in magnitude than when using LIBOR. E.g. If the ITM party has a trade PV of $5mn using USD LIBOR discounting (and hence the PV for OTM will be negative $5mn), then, under USD OIS discounting, ITM's PV will be greater than $5mn and consequently OTM's PV will become more negative.

Chart 2: USD libor and OIS curves – Higher credit premia in Libor



Source: BofA Merrill Lynch Global Research

Chart 3: Euribor and EUR OIS curves

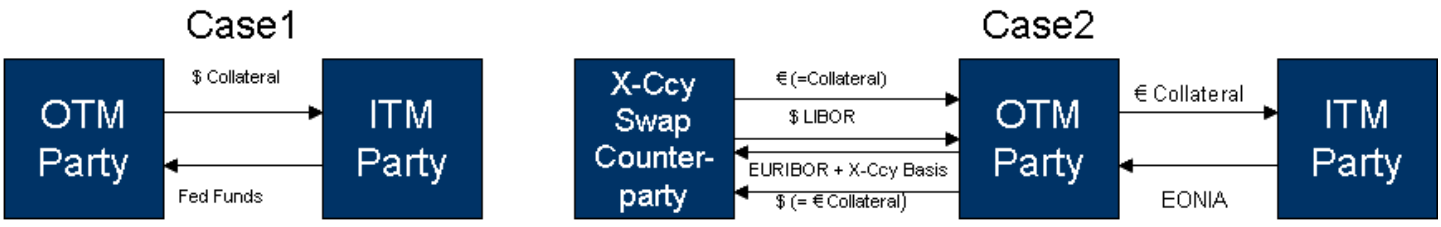


Source: BofA Merrill Lynch Global Research

The multi-currency issue

As discussed earlier, CSAs between two counterparties could stipulate that collateral is deliverable in a currency which may be different from the trade currency. For example, parties ITM and OTM may have a CSA that allows collateral to be posted only in cash, but in either EUR or USD. In this situation, what should be the discount curve for a USD trade that is governed by this CSA?

Figure 2: Cashflows when posting USD (Case 1) and EUR (Case 2) collateral



Source: BofA Merrill Lynch Global Research

In Case1, shown in Figure 2, OTM posts USD cash and receives Fed Funds. In Case2, OTM instead decides to post collateral in EUR, with a value equivalent to

the USD amount in Case1, based on the foreign exchange rate. OTM will receive EONIA on this EUR collateral. In order to obtain the cash amount in EUR, OTM enters into a cross-currency basis swap, exchanging USD notional for EUR notional. The counterparty in this swap pays OTM $LIBOR for the USD received, while OTM pays EURIBOR – EURUSD X-Ccy Basis. In Case2, over the period of the Xccy basis swap trade, the funding rate received by OTM will be equivalent to

(1): $LIBOR – X-Ccy Basis – (EURIBOR – Eonia OIS)

With the EURUSD cross-currency basis currently negative, it may well be that the funding rate in Case2 ends up being higher than USD OIS, making it more beneficial for OTM to post collateral in EUR. Assuming that OTM takes advantage of this, the above expression would be the correct discount rate to use. In general, we can make the assumption that OTM would post the cheapest-to-deliver (CTD) collateral (ie providing the highest funding rate) from the range of available options as per the CSA.

We refer to a standard CSA as one where collateral is always posted in the trade currency and one with multiple currency stipulations as a non-standard CSA. The discount rate for a standard CSA will be based on the OIS curve of the trade currency. For a non-standard CSA that allows collateral to be posted in one of i = 1 to n currencies, the discount rate for the period of the Xccy trade would be,

(2): $\text{Max}\ (LIBOR_k - X\text{-}CcyBasis_{i,k} - (LIBOR_i - OIS_i))$, over i = 1 to n,

where k denotes trade currency, $LIBOR_i$ and OIS_i are the LIBOR and OIS rates for the i^{th} currency and $X\text{-}CcyBasis_{i,k}$ is the cross-currency basis between the i^{th} currency and the trade currency k. If the trade currency is the cheapest to deliver, then the discount rate for the non-standard CSA will be the same as the standard CSA e.g. EUR trades executed under a standard CSA and a non-standard one allowing collateral in USD, EUR and GBP would both use the EUR OIS curve for discounting if EUR is the cheapest currency to deliver at prevailing market levels.

The switch option: CTD currency may change over the life of the trade

The above valuation determines the cheapest-to-deliver at the current point in time for the period of Xccy basis swap. But if the CSA includes the right to substitute collateral, a computation of forward funding rates in different currencies would also be necessary to determine whether a switch in the collateral currency may be beneficial at some point in the future. This would lead to the use of a hybrid discount curve, with discount forward rates based on the cheapest currency at each forward point "t" and therefore equal to:

(3): $\text{Max}\ (FRA_k(t) - \text{fwd}\ X\text{-}CcyBasis_{i,k}(t) - (FRA_i(t) - \text{fwd}\ OIS_i(t)))$, over i=1to n

Another layer of complexity could arise in theory if one was to also account for the fact that current forward rates (and therefore the above hybrid curve) provide only a static view of the best-of funding rates. As market conditions change, forward funding rate differentials across currencies could paint a different picture for switching points. While there are theoretical ways to take this into account, the complexity in hedging the corresponding risks has led the general consensus to ignore this additional layer and concentrate at most on the scenarios implied by the current forward curves.

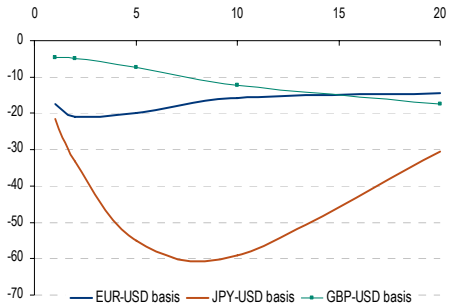
In the sections below, we analyse the impact of the move to OIS discounting for interest rate swaps and CDS trades.

Table 1: ATM swap rate, impact from a switch to OIS discounting

	USD3M	USDOIS	bp difference (*)
1y	0.338%	0.338%	-0.01
2y	0.424%	0.424%	0.00
5y	1.012%	1.014%	0.20
10y	2.046%	2.054%	0.80
15y	2.580%	2.592%	1.19
30y	2.987%	3.002%	1.47

Source: BofA Merrill Lynch Global Research (*) Basis point difference, equals to the ATM rate derived based on the USD OIS discounting minus the ATM par rate based on the old USD Libor discounting

Chart 5: EUR, JPY and GBP cross currency basis swap curves – Xccy basis most negative for JPY



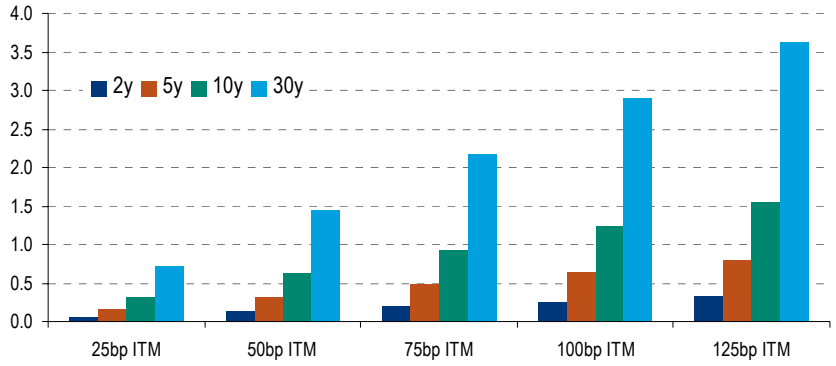
Source: Bloomberg, BofA Merrill Lynch Global Research

Effect of OIS discounting on IR products

General impact on interest rate swaps, under a standard CSA

When two parties enter into a vanilla interest rate swap transaction, the fixed rate is determined such that the PV of all fixed cash flows equal that of the floating cash flows. The discount factors used to determine the PV of each leg should therefore impact the initial pricing of the swap (See Table 1 for the basis point impact when moving from 3M USD into USD OIS discounting for different swap tenors). Still, this is a very minor impact compared to when the swap position moves away from ATM. In fact, the furthest away it is from ATM, the largest the impact of OIS discounting compared to Libor discounting (see Chart 4).

Chart 4: PV impact in basis point running, from discounting with OIS instead of 3M Libor – the further the swap is from ATM or the longer the tenor, the larger the PV impact



Source: BofA Merrill Lynch Global Research

Effect of multi-currency CSA on spot and forward swaps

For a USD swap, the impact on PV when switching from USD 3M Libor into USD OIS discounting is mostly positive (ie higher PV), due to the positive spread differential between 3M Libor and OIS (both spot and forwards). However, if non-USD collateral were to be posted, the adjusted discount factors may result in a negative PV impact. This the case in particular for JPY or EUR collateral (see Table 2), as the large negative levels of Xccy basis swaps in both currencies (see Chart 5) more than offset the positive Libor-OIS spread, in formula (1) page 4.

Table 2: PV impact in basis point running for a 100bp ITM USD swap, from using discount factors adjusted for the collateral currency, instead of using 3M USD Libor discounting

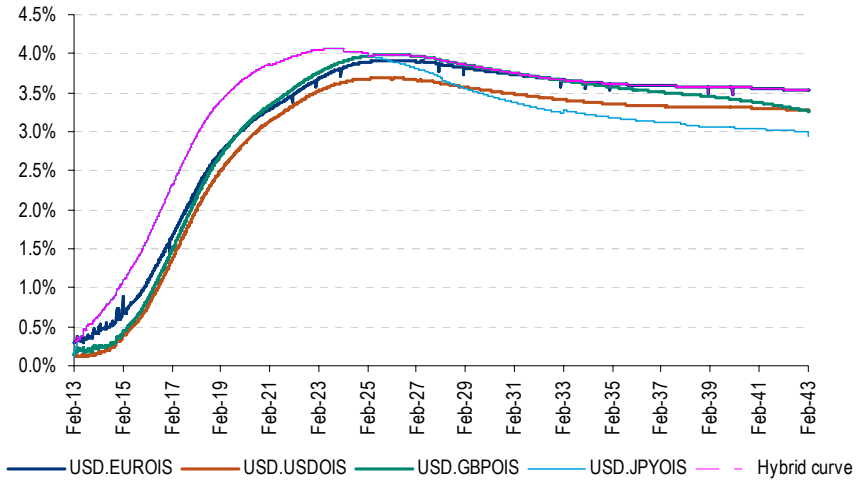
	USDOIS	EUROIS	GBPOIS	JPYOIS	Hybrid*
2y	0.3	0.0	0.2	-0.2	-0.3
5y	0.7	-0.1	0.4	-1.0	-1.0
10y	1.2	-0.1	0.7	-2.4	-2.4
30y	2.9	-0.2	0.5	-3.2	-4.4

Source: BofA Merrill Lynch Global Research, *Discounting assuming that collateral substitution allowed.

The PV impact table reflects the fact that JPY is currently the cheapest currency to deliver as collateral, followed by EUR. This can also be directly observed in Chart 6 next page, where USD forward O/N funding rates are plotted depending on the currency of the collateral.

It is interesting to note however that in the period from 2025 to 2032, discount rates based on GBP collateral are the highest. This implies that, if the CSA on a 30y swap for instance allows for substitution of collateral, it will be optimal to replace the JPY collateral with GBP in 2025 (and by EUR after 2032).

Chart 6: forward funding rates to be used for valuation of a USD trade, depending on the currency of the collateral being posted



Source: BofA Merrill Lynch Global Research

If collateral substitution is allowed, the relevant discount factor for a payment in 2030 for instance will therefore have to assume JPY collateral is posted until 2025, at which point it is replaced by GBP collateral. This implies that the discount factors will be derived from the hybrid funding curve in Chart 6. The resulting PV impact of using the hybrid discount curve instead of the USD Libor one will therefore be more negative than the others in Table 2 (previous page).

Repo rates differentials

In the cases where the CSA allows it, and the collateral corresponds to a government bond, the overnight rate that OTM eventually receives will be the overnight repo rate for the specific security (from the repo counterparty, instead of ITM).

While repo rates for USTs, Gilts and German bonds tend to remain close to the Fed Fund rate, SONIA and EONIA resp., changes in the demand for (safe) government bonds can drive repo rates lower. Currently, German General Collateral (GC) O/N rate trades at 1bp, ie 6bp below EONIA, while US GC trades at c. 2bp below Fed Funds. Relative changes in these spreads may therefore have to be accounted for when deriving the cheapest-to-delivery government bond as collateral.

Effect of OIS discounting on CDS valuation

CDS PV and Upfront

The par spread of a CDS can be determined by equating the fixed or premium leg of the swap and the floating or default leg. Assuming that default occurs only on a series of discrete dates and ignoring accrued, with CDS maturity T divided into i=1 to n discrete periods, $p_i(t)$ as the probability of default to time *i* at time t, $DF_i(t)$ as the discount factor to time *i* at time t, $\Delta_i(t)$ the day-count factor and R as the recovery on default, the par spread at t can be evaluated as in Exhibit 1.

Exhibit 1: CDS Par Spread

$$ParSpread(t,T)\sum_{i=1}^{n}(1-p_i(t))\cdot\Delta_i(t)\cdot DF_i(t)=(1-R)\sum_{i=1}^{n}(p_i(t)-p_{i-1}(t))\cdot\Delta_i(t)\cdot DF_i(t)$$

Source: BofA Merrill Lynch Global Research

Standard CDS contracts have a fixed running coupon, typically one of 25bp, 100bp, 300bp, 500bp, 750bp, 1000bp. The CDS PV (for the protection seller) at time t can be written as a function of the fixed coupon and the par spread at time t, as shown in Exhibit 2.

Exhibit 2: CDS PV for protection seller

$$PV_S(t,T)=(Coupon-ParSpread(t,T))\sum_{i=1}^{n}(1-p_i(t))\Delta_i(t)DF(t)_i$$

Source: BofA Merrill Lynch Global Research

At trade inception, t_0, the protection seller receives an upfront payment, UF = -$PV_S(t_0,T)$. Hence, if the contract coupon is less than the par CDS spread for that tenor, then the protection seller receives an upfront payment at trade inception and the seller's PV is negative. If the coupon is greater than the par spread, the protection seller has a negative upfront i.e. the seller pays the buyer the upfront amount and the seller's PV is positive. Typically in a CDS trade, the party that receives the upfront payment and hence has a negative PV, posts the upfront amount right back as collateral.

Since the PV (and the Upfront) is directly proportional to the discount factor through the value (Coupon – ParSpread), the further away from par that the CDS is struck at, the larger the impact from the change in discount factor. E.g. A CDS contract on an issuer trading at 150bp, struck at a coupon of 100bp will have a smaller absolute change in PV than a contract on a name trading at 250bp, also with a 100bp coupon.

Effect on CDS spreads

Since 2009, market convention for spread-quoted names has been to quote ISDA spreads. The ISDA spread is derived from the upfront value assuming a flat CDS spread curve, a standard ISDA recovery rate and the ISDA standard discount rate fixing for the corresponding day and trade currency. The Bloomberg CDSW screen incorporates a Standard ISDA calculator that can be used to convert upfront values to ISDA spreads and vice-versa. Note that ISDA rate fixings for CDS calculations continue to be based on LIBOR.

If we start with a par spread curve and calculate upfront values,

1. if the contract coupon is less than the par spread for that tenor, then the upfront calculated using OIS discounting will be higher than the upfront using LIBOR discounting i.e. the protection seller receives a higher initial payment through OIS discounting. Since the upfront is higher, the corresponding ISDA spread will be higher.
2. if the contract coupon is greater than the par spread for that tenor, then the upfront calculated using OIS discounting will be more negative than the upfront using LIBOR discounting i.e. the protection seller pays the buyer a higher upfront through OIS discounting. Since the upfront is lower (more negative), the ISDA spread will be lower.

Note that, since we use OIS to calculate upfront from the par curve, but LIBOR to derive the ISDA spread from the upfront, if the LIBOR curve changes between two days, but the par CDS curve and OIS curve remain unchanged, the corresponding ISDA spread will change.

If we start with an ISDA spread curve for a particular fixed coupon, the conversion to upfront values does not change because we continue to use the ISDA standard fixings for this, which is LIBOR based. However, the par curve derived from these upfront values will be different based on the discounting mechanism. This in turn affects the quotes for non-conventional contracts. E.g. let's assume we have a credit that is typically traded with a 100bp coupon. An investor wishes to execute the trade with a 500bp coupon instead. We refer to the 500bp trade as non-conventional as it falls away from market convention for this issuer. To derive the corresponding ISDA quote for the 500bp trade, we start with the ISDA100 curve which is quoted in the market and calculate the corresponding upfronts for each tenor. Next, we can derive the par spread curve using these upfront values. The par curve so extracted will be different under OIS discounting compared to LIBOR discounting. Consequently, the upfront value calculated for the 500bp trade will also differ between the two discounting methods. And hence, the ISDA500 quote derived from the upfront will be different based on the discount factor.

CSA specific quotes

We assume in general that current market ISDA quotes are based on standard CSAs i.e. the upfront value implied by the ISDA quote assumes that collateral will be posted in trade currency. Hence we must use the trade currency OIS curve to derive par spreads from these upfront quotes. However, since bilateral CSAs may be non-standard, the ISDA spread quoted to a specific counterparty may be different from the market quote.

Table 3: Change in ISDA spread for Alcoa CDS, between a standard CSA (USDOIS) and a non-standard CSA (EURUSDOIS)

Coupon	3y	5y	7y	10y
25	-0.852	-2.928	-4.827	-6.900
100	-0.498	-2.217	-3.710	-5.183
300	0.381	-0.554	-1.245	-1.689
500	1.172	0.837	0.675	0.787
750	2.058	2.287	2.553	3.030
1000	2.847	3.494	4.029	4.683

Source: BofA Merrill Lynch Global Research

We take the example of Alcoa CDS, which has 100bp contracts quoted at 168bp, 290bp, 345bp and 370bp respectively for 3y, 5y, 7y and 10y (all ISDA spreads). Table 3 shows the change in ISDA spread if one had a CSA that allowed either EUR or USD collateral. Because the counterparty now has as the option to post collateral in EUR, the actual discount curve used for valuation will be different from USD OIS, which impacts quoted spreads.

If the cheapest to delivery currency is different from the trade currency, then the discount rate for the non-standard CSA trade will be higher than the standard CSA. In this case,

1. if the contract coupon is less than the spread for that tenor, then the upfront calculated for the non-standard CSA will be lower than the upfront for the standard CSA i.e. the protection seller receives a lower initial payment with a non-standard CSA. Since the upfront is lower, the corresponding ISDA spread will be lower.
2. if the contract coupon is greater than the spread for that tenor, then the

upfront calculated for the non-standard CSA will be less negative than the upfront for the standard CSA i.e. the protection seller pays the buyer a lower upfront with a non-standard CSA. Since the upfront is higher (less negative), the ISDA spread will be higher.

ISDA Standard Credit Support Annex (SCSA)

Most existing CSAs have a high degree of optionality embedded in them; in particular the option to switch the type of collateral posted. This gives rise to hedging and valuation complexities. With a view to "standardize market practices by removing embedded optionality in the existing CSA, promote the adoption of overnight index swap (OIS) discounting for derivatives and align the mechanics and economics of collateralization between the bilateral and cleared OTC derivative markets", ISDA began discussions in 2010 on introducing a Standard Credit Support Annex (SCSA)[1]. The SCSA has yet to be finalized and will likely be published sometime this year.

Broadly, parties to the SCSA will have their bilateral trades bucketed under one of 17 currency silos based on the trade payment currency. Transactions in currencies other than these can be included within one of the 17 silos as agreed between the counterparties or fall into the USD bucket. Variation margin to be posted on a transaction will be in cash and in the currency of the bucket that the transaction falls into. Cashflows for a transaction that, for example, falls in the GBP silo will be discounted using Sterling OIS (SONIA) and so on. Hence, for the most part, (at least for trades in one of the 17 currencies), the collateral currency will be the same as the trade currency.

In the event that two parties have multiple trades in various currencies between them, the above mechanism will result in a number of collateral flows – one for each currency silo. To minimize this, each party can designate one of 7 currencies as its Transport Currency which will be used to deliver the collateral. Say OTM designates EUR as its Transport Currency for trades with ITM – first, trades under each currency silo will be evaluated to calculate the amount owed in that bucket's currency and then, OTM will post the equivalent amount in EUR as collateral. This simplifies the collateral transfer to some extent, but also introduces an element of foreign exchange risk. Should the EUR weaken against one of the underlying trade currencies, OTM will have to post additional EUR to bring the collateral value up, to be equivalent to the trade PV.

Clearing

The terms of the SCSA are more in-line with the model followed by clearing houses. Note that major swap participants and dealers are required by CFTC to start clearing certain CDS index trades and interest rate swaps as of 11th March 2013. Clearing houses tend to accept variation margin in cash only, typically in the currency of the underlying trade. Investors wishing to transfer legacy transactions to clearing houses should bear in mind that this might be at a cost. If the legacy trade allowed collateral substitution, as the switch option is eliminated when centrally cleared, dealers may require counterparties to pay a fee if the switch option is in the dealer's favour.

To the extent that many major market participants begin using the SCSA, it will reduce the basis between bilateral and cleared trades. It may however be some time before a significant number of market participants are able to modify their infrastructure to accommodate the changes needed in order to adopt the SCSA. In any case, as the market proceeds towards central clearing, the issues over non-standard CSAs will eventually be confined largely to legacy transactions.

[1] See http://www2.isda.org/functional-areas/infrastructure-management/standard-csa/

Link to Definitions

Credit

Click here for definitions of commonly used terms.

Important Disclosures

BofA Merrill Lynch Credit Opinion Key

The BofA Merrill Lynch Global Research Credit Opinion Key is designed to allow BofA Merrill Lynch Global Credit Research to provide recommendations on an issuer's bonds, capital securities, equity preferreds and CDS as described below. An issuer level recommendation may also be provided in respect of an issuer as explained below. BofA Merrill Lynch Global Research credit recommendations are assigned using a three-month time horizon.

Issuer Recommendations: If an issuer credit recommendation is provided, it is applicable to all bonds of the issuer except bonds specifically referenced in the report with a different credit recommendation. Where there is no issuer credit recommendation, only individual bonds with specific recommendations are covered.

Issuer credit recommendations do not cover equity preferreds or CDS related to the issuer. Issuer credit recommendations do not cover capital securities of the issuer unless a statement to that effect is provided in the relevant research report.

CDS Recommendations: CDS are recommended on an individual basis under the Credit Opinion Key. Issuer credit recommendations do not apply to CDS.

Capital Securities: Capital securities are recommended individually unless the research report specifically states that the issuer credit recommendation applies to such securities. In cases where the issuer credit recommendation applies to capital securities of the issuers, it is not applicable to capital securities that we classify as equity preferreds.

Equity Preferreds: Equity preferreds are recommended on an individual basis under the Credit Opinion Key. Issuer credit recommendations do not apply to equity preferreds.

Recommendation	Investor Action Points (Cash and/or CDS)	Primary Investment Return Driver
Overweight-100%	Up to 100% Overweight of investor's guidelines	Compelling spread tightening potential
Overweight-70%	Up to 70% Overweight of investor's guidelines	Carry, plus some spread tightening expected
Overweight-30%	Up to 30% Overweight of investor's guidelines	Good carry, but little spread tightening expected
Underweight-30%	Down to 30% Underweight of investor's guidelines	Unattractive carry, but spreads unlikely to widen
Underweight-70%	Down to 70% Underweight of investor's guidelines	Expected spread underperformance
Underweight-100%	Down to 100% Underweight of investor's guidelines	Material spread widening expected

Time horizon – our recommendations have a 3 month trade horizon

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