INDEX OPTION SETTLEMENT PAYMENTS

ICE Clear Credit

Version 1.2
May 2021

SUMMARY

The ICE Cleared Index Option Instrument provides certainty and standardization of cash flows, including those related to credit events in the underlying Index

- **Bilateral market practices vary between firms and between underlying index types (i.e., CDX vs. iTraxx) for the determination of defaulted-constituent accrual-related cash flows**

- **The clearinghouse acts as the calculation agent at exercise for the cleared product, which must be standardized and consistently applied to facilitate clearing**

- **In collaboration with its Clearing Members, ICE Clear Credit has defined the standard cash flows it will apply in the presence of credit events**

- **Options expiring after a hard credit event is announced, but on or prior to Auction Settlement Date, will deliver the "old" version of the index and the following cashflow components (the first two components are delivered as part as option settlement, the third as part of auction processing)**
  - Trade date (expiry date) clean price upfront-fee determined at the strike price ("old" version index factor)
  - Trade date (expiry date) accrued for all constituents, including the defaulted constituent
  - Auction settlement date Fixed Amount or Rebate, as appropriate

- **Options expiring after Auction Settlement Date will deliver the "new" version of the index and the following cashflow components**
  - Trade date (expiry date) clean price upfront-fee determined at the strike price ("old" version index factor)
  - Trade date (expiry date) auction payout, i.e., (1 – Auction Price) X Constituent Weight X Notional
  - Trade date (expiry date) accrued for non-defaulting constituents

STANDARD SCENARIO

When expiry date falls on or before auction settlement date, an Index Option delivers the underlying version of the Index and a cash payment identical to an upfront fee for a standard Index trade in that version at the strike price

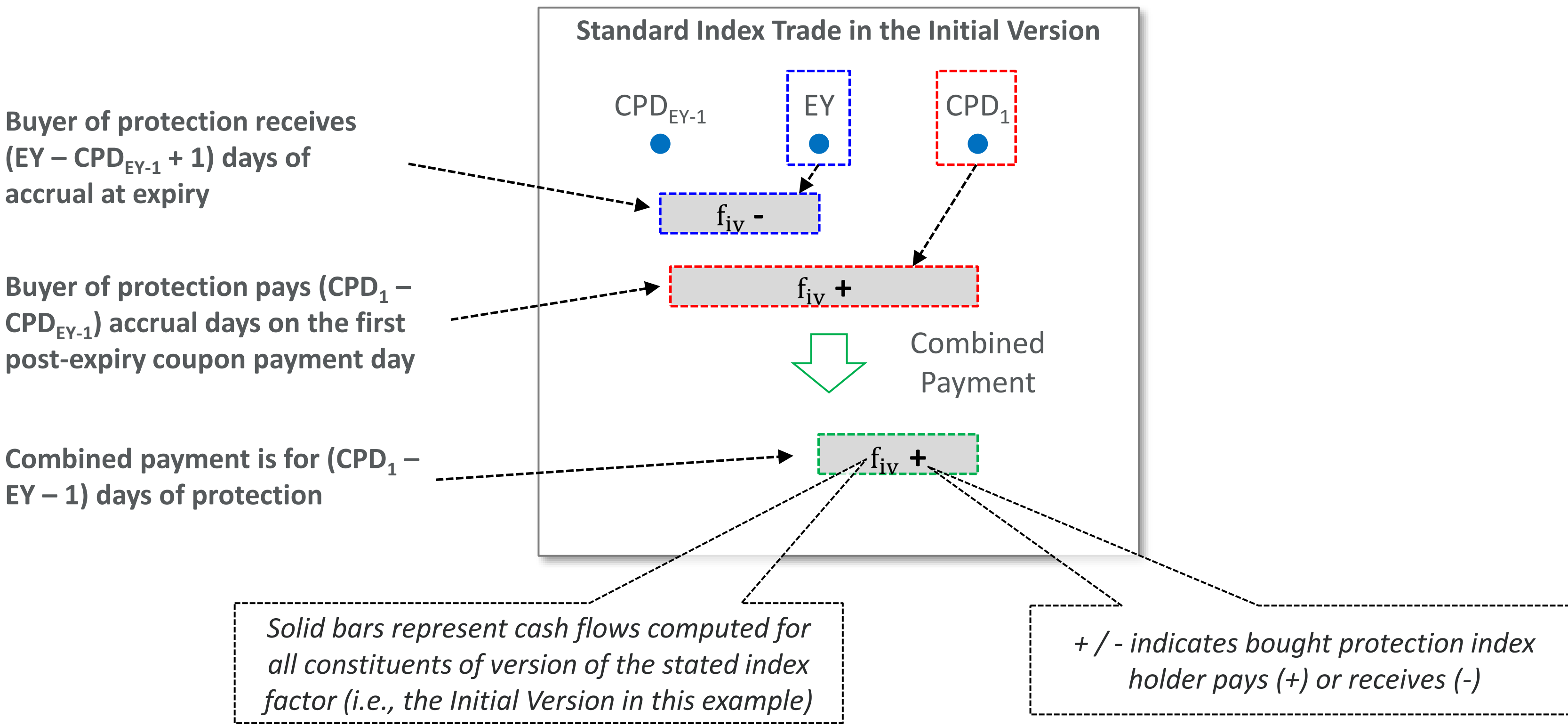
- **Standard Scenario:**
  - Option delivers the Index version of underlying index on which the option was written (the Initial Version)
  - E.g., Option written on HY.S34.V1 delivers HY.S34.V1 if a) there are no credit events, or b) the Expiry Date (EY) is before the Auction Settlement Date **(**ASD**)**

- **Cash payment upon exercise / assignment is the same as the upfront fee (UFF) of a standard Index trade in the Initial Version, with a trade date of EY and a trade price equal to the strike price Ξ**
  - **Cash payment "principal" or clean price component is given by $(1 - \Xi) \times \mathrm{f_{iv}} \times \mathrm{N} \times I_{P,R}$, where**
    - $\mathrm{f_{iv}}$ is the index factor for the Initial Version of the underlying index
    - N is the exercised or assigned Option notional amount (a positive value represents a long / bought position and a negative value represents a short / sold position)
    - $\mathrm{I_{P,R}}$ is a Payer/Receiver indicator function that has a value of +1/-1 respectively
  - **Cash payment "accrued" component is determined by $\frac{\mathrm{A_{Days}}(EY)}{360} \times \mathrm{f_{iv}} \times \mathrm{K} \times \mathrm{N} \times -I_{P,R}$, where**
    - $\mathrm{A_{Days}}(\mathrm{EY})$ is the day count from the coupon payment date prior to EY to EY, inclusive of both dates
    - K is the coupon of the underlying Index

STANDARD SCENARIO: NO CREDIT EVENT

The accrued component of an Index upfront fee combines with future coupon payments such that the protection buyer pays for the received number of protection days

- **As for a standard Index trade, the accrual paid from seller to the buyer of protection is required because this accrual combines with future standard coupon payments from buyer to seller of protection, such that the buyer of protection only pays for the days of protection received in the future, post trade**



STANDARD SCENARIO: EXPIRY PRIOR TO RRD (CONTINUED)

If expiry falls prior to the Resolution Request Date, the standard accrued payment on expiry combines with a Fixed Amount or Rebate at auction settlement such that the buyer of protection pays exactly for the days of protection received

- If no coupon payment date falls between the credit event Resolution Request Date (RRD) and ASD, then without an additional payment, the buyer of protection would not pay for protection received from the coupon payment date prior to RRD ($\mathrm{CPD}_{\mathrm{RRD}-1}$) to RRD inclusive of both dates; and for the case where EY falls between $\mathrm{CPD}_{\mathrm{RRD}-1}$ and RRD, without an additional payment, the buyer of protection receives a payment for days of protection from $\mathrm{CPD}_{\mathrm{RRD}-1}$ to EY

- If one or more coupon payment dates fall between RRD and ASD, then without an additional payment, the buyer of protection pays for days of protection that were not received from RRD to the coupon payment date prior to ASD ($\mathrm{CPD}_{\mathrm{ASD}-1}$)

- To correct for the above two scenarios, on ASD, in addition to the conversion of each position in the Initial Version of the index to a position in the new version of the index, and the exchange of the auction recovery, the appropriate market infrastructure provider (clearinghouse or DTCC) also facilitates the exchange of either a Fixed Amount or a Rebate

- The Fixed Amount applies if no coupon payment dates fall between RRD and ASD

  $$\text{Fixed Amount} = \frac{1}{360}(\mathrm{RRD} - \mathrm{CPD}_{\mathrm{RRD}-1} + 1) \times \omega_{\mathrm{iv}} \times \mathrm{K} \times \mathrm{N} \times I_{P,R},$$

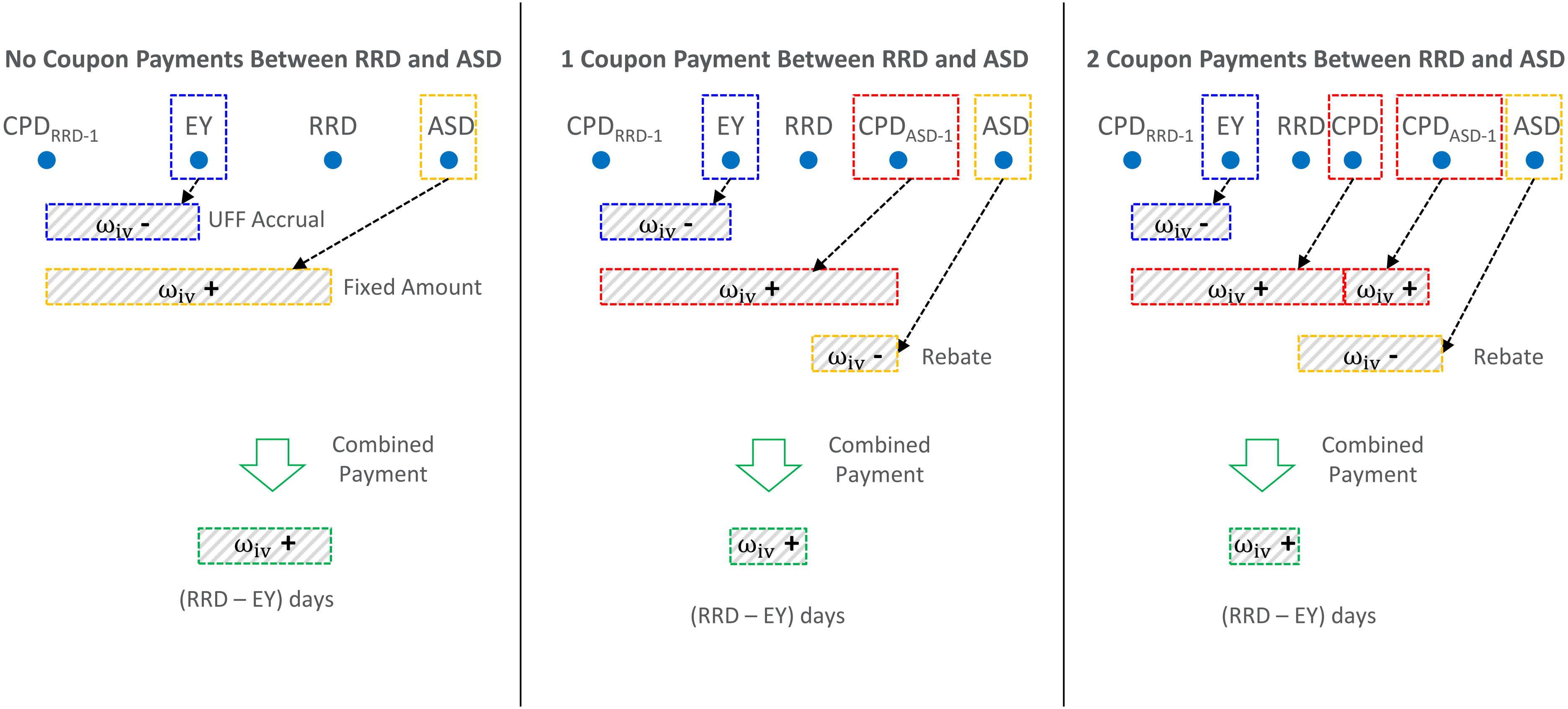
  where ω_{iv} is the index weight of the defaulting constituent in the Initial Version of the index

- The Rebate applies if one or more coupon payment dates fall between RRD and ASD

  $$\text{Rebate} = -\frac{1}{360}(\mathrm{CPD}_{\mathrm{ASD}-1} - \mathrm{RRD}) \times \omega_{\mathrm{iv}} \times \mathrm{K} \times \mathrm{N} \times I_{P,R}$$

STANDARD SCENARIO: EXPIRY PRIOR TO RRD (CONTINUED)

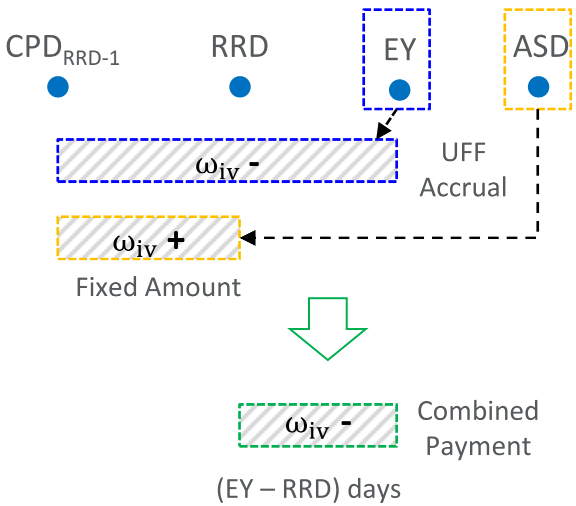
If expiry falls prior to the Resolution Request Date, the standard accrued payment on expiry combines with a Fixed Amount or Rebate at auction settlement, such that the buyer of protection pays exactly for the days of protection received



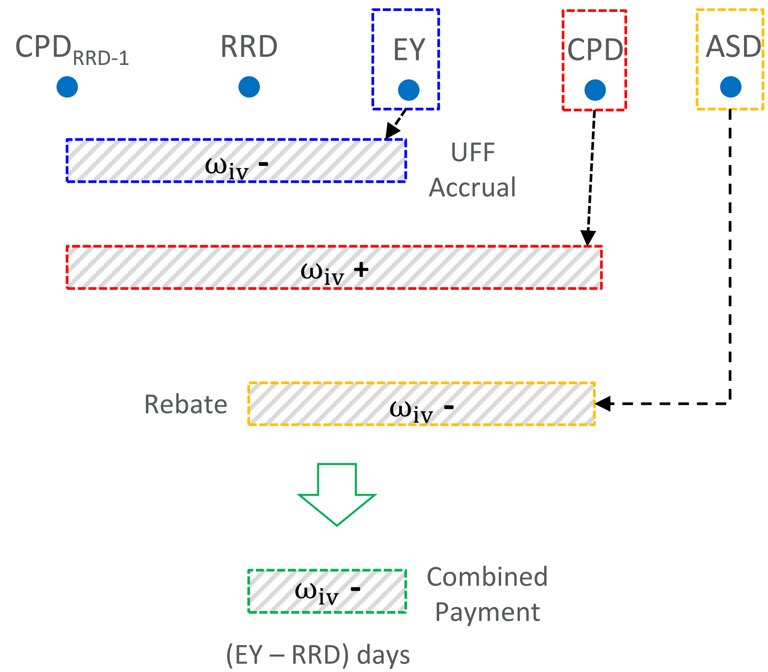
STANDARD SCENARIO: EXPIRY AFTER RRD

As for a standard Index trade, if EY falls between RRD and ASD, the combination of Index upfront fee and Fixed Amount / Rebate lead to an “anomaly” where the buyer of protection receives accrual for the defaulted constituent with a day count from RRD to trade date

No Coupon Payments Between RRD and ASD



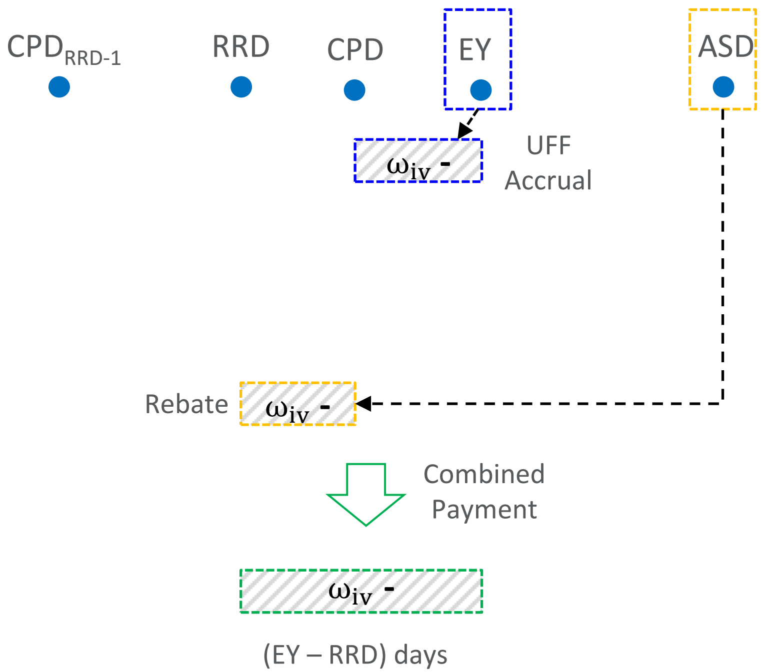
1 Coupon Payments Between RRD and ASD, after EY



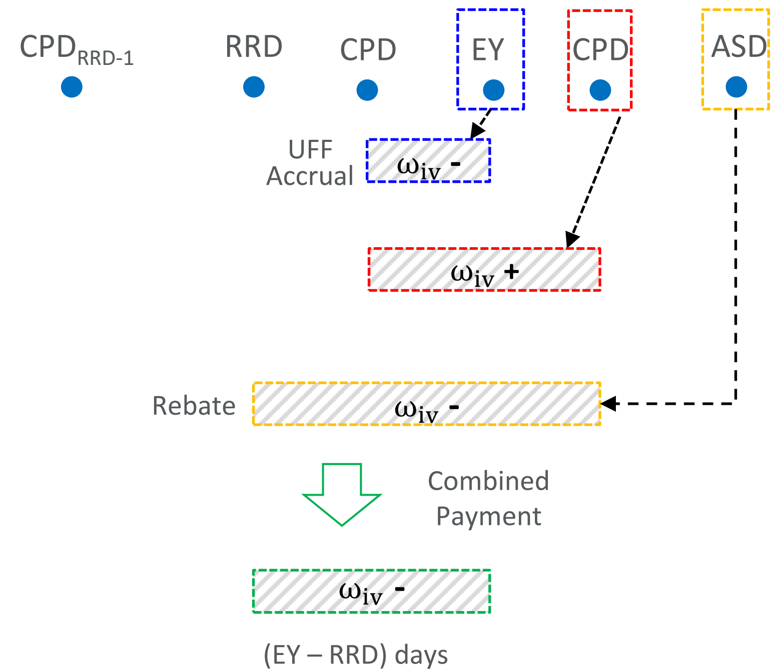
STANDARD SCENARIO: EXPIRY AFTER RRD (CONTINUED)

As for a standard Index trade, if EY falls between RRD and ASD, the combination of Index upfront fee and Fixed Amount / Rebate lead to an “anomaly” where the buyer of protection receives accrual for the defaulted constituent with a day count from RRD to trade date

1 Coupon Payments Between RRD and ASD. Before EY



2 Coupon Payments Between RRD and ASD, Either Side of EY



It can be shown that the same combined payment of (EY – RRD) days results for any number or sequence of coupon payment days between RRD and ASD

STANDARD SCENARIO: EXPIRY AFTER RRD (CONTINUED)

The industry fixed the “anomaly” for Single Names traded between RRD and ASD by changing the accrued amount exchanged on trade date

- **For Single Name instruments traded after RRD, the accrued exchanged as part of the UFF was modified to cancel the combined future coupon payments and/or credit event Fixed Amount / Rebate, leaving no net accrual exchanged**

ISDA. Safe, Efficient Markets

ISDA CDS Standard Model
Proposed Amendments to Standardize Post-Event Trading

Background
In a continued effort to promote further standardization within the Credit market, the Credit Steering Committee has set out the below proposal to standardize single name trading practices subsequent to the occurrence of a Failure to Pay or Bankruptcy Credit Event.[1] The current industry trading practice, after the occurrence of an event, is to execute non-standard contracts with points quoted upfront and a zero coupon. This type of contract is intended to have no accrued interest settlement. Upon the Auction Settlement Date the two counterparties will exchange par minus recovery.

There are several issues which are inherent in the current process:

- The non-standard zero contract often calls for manual booking, which leaves room for errors and confirmation breaks.
- The contracts are not clearing eligible.
- There is also a lack of fungibility with pre-default standard positions with the same reference entity.

Proposal
The proposal sets out to harmonize the economics of standard transaction types executed pre and post default. Firms will have the option to execute standard transaction types instead of the zero contract upon the occurrence of a Credit Event. This standardization is made possible by ensuring that the proper accrued amount is exchanged in the form of the Initial Payment Amount. In order to facilitate proper calculation of the Initial Payment Amount, it is necessary to make amendments to the ISDA CDS Standard Model, using agreed new standard input parameters to allow CDS market participants to tie out upfront calculations on defaulted reference entities. The CDS Converter is not used because a standard contract would accrue to the usual T+1, with one party ‘over-paying’ for accrued that they would not receive under Auction Settlement mechanics.

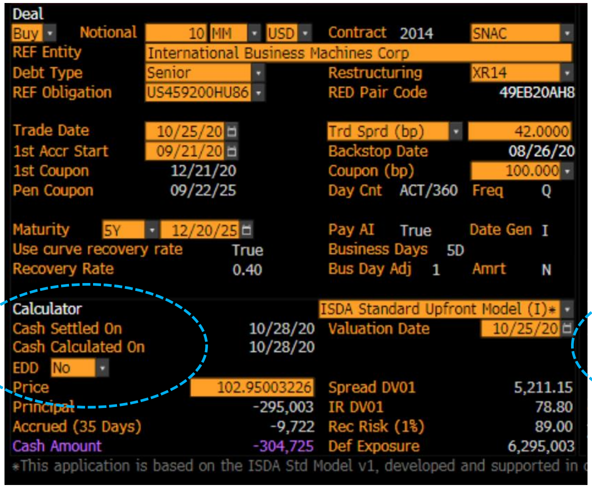
The CDS Converter will be amended to include the input of an EDD (see Standard CDS Examples document). Specifications for the Converter will be adjusted to account for two overarching questions; 1) what is the EDD? 2) Is the trade date prior to the next payment date? The answers to these questions determine whether the Buyer pays a rebate or if the Seller pays accrued.[2] There are some edge cases which warrant different outcomes, which are explained in Markit's 'Standard CDS Examples' document.

Benefits
Several benefits have been highlighted for this proposed change:

- Firms are able to continue trading standard transactions and not rely on manual booking processes for non-standard contracts.
- This process will allow for the netting of pre-EDD and post-EDD standard transactions on the Auction Settlement Date, as they will be identical.
- Contracts that are clearing eligible will be fungible with pre-EDD positions upon trade date, and non-clearing eligible names are fungible with pre-EDD transactions and can be compressed or torn up accordingly.
- The netting of positions at the Clearing House removes the need to margin two different positions.

[1] Current proposal excludes usage of the CDS Converter if the defaulted contract has an EDD in relation to a Restructuring Credit Event.
[2] If the trade date is prior to the next roll date than the Seller pays accrued between the previous IMM and EDD. If the trade date is after the roll date than the Buyer pays the rebate between EDD and the next payment date.

Single Name CDSW



Ability to enter EDD such that, for trades between EDD and ASD, the accrual “anomaly” is eliminated by requiring on trade date an equal and opposite exchange of accrual to the ASD Fixed Amount / Rebate exchanged through financial infrastructure providers as part of their implementation of a standardized / fungible product

Index CDSW

Accrued is computed the same way for all trades, even the ones with a trade date between EDD and ASD

POST AUCTION SCENARIO: NO CREDIT EVENT

After auction settlement, for the defaulted constituent there is no future coupon payment or Fixed Amount / Rebate to be offset, therefore the accrued amount exchanged at option expiry for the defaulted component is zero

ICE Implemented Cash Payment at Exercise

Standard Scenario (Expiry on or Prior to ASD)

Delivers Initial Version of underlying Index

Payment Determination with CDSW

- Identical payment to a standard index trade
- Determine CDSW Premium and Accrued using the index factor of the initial Version

Result (Same Result as for a Standard Index Trade)

Expiry Date on/Prior to Resolution Request Date (RRD)

- For defaulting constituent, CDSW accrued payment combines with any future coupon payments and auction settlement Fixed Amount / Rebate
- Combined payments result in recipient of bought protection index paying for protection from EY + 1 to RRD in any defaulting constituent

Expiry Date After RRD

- For defaulting constituent, CDSW accrued payment combines with any future coupon payments and auction settlement Fixed Amount / Rebate
- Combined payments result in recipient of bought protection index *receiving* accrual with a day count from RRD to EY
- This is a known accrual "Anomaly"
  - There is no reason that the buyer of protection should receive a net payment; the net payment should be zero since there are no protection days

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Post Auction Scenario (Expiry After ASD)

Delivers Current Version of Underlying Index Plus Auction Payout (no Accrued for Defaulted Constituent, no Fixed Amount / Rebate)

Payment Determination with CDSW

- Determine CDSW Premium using the index factor of the Initial Version
- Include payment of auction loss amount from seller to buyer of protection
- Determine CDSW Accrued using the index factor of the new version (the delivered version)

Result

- Index protection buyer pays for protection on defaulted and non-defaulted constituents based on the strike price
- Index protection buyer receives the auction payout associated with the defaulted constituent
- Index protection buyer receives CDSW accrued only for non-defaulted constituents at expiry; this accrued amount combines with a future coupon payments so the protection buyer only pays for the days of protection received, starting EY + 1
- No accrual exchanged for defaulted constituent since no future payments for protection are related to the defaulted constituent

GENERALIZED APPROACH

ICE Clear Credit has implemented a generalized approach to determining cash payment related to exercise / expiry

$$\text{Cash Payment} = \left(\boxed{\left((1-\Xi) - \frac{EY - CPD_{EY-1} + 1}{360} \mathrm{K} \right) \mathrm{f_{dv}}} - \mathrm{A} \right) \times \mathrm{N} \times \mathrm{I_{P,R}} \,, \qquad (1)$$

Where

$$\boxed{\mathrm{A} = \sum_{i=\mathrm{f_{iv}}}^{\mathrm{f_{dv-1}}} \omega_i \left((\Xi - \mathrm{R}_i) + \frac{\mathrm{D}_{\mathrm{Days}_i}}{360} \mathrm{K} \right) ,} \qquad (2)$$

- **Standard Trade in the Delivered Version**
  - **Standard dirty upfront fee for an Index trade on the Delivered Version of the underlying Index, dv**
  - **Index factor for the Delivered Version, $\mathrm{f_{dv}}$, is applied to both principal and accrued components of upfront fee**

- **Credit Event Adjustment**
  - **Sum of cash flows for buying/selling protection on defaulted constituents at the strike price Ξ**
  - **Sum of cash flows for receiving/paying the auction loss amounts based on auction recoveries R_i**
  - **Zero days of accrual for any defaulted constituent, i.e., $\mathrm{D}_{\mathrm{Days}_i} = 0 \; \forall \, i$**
  - **Computed as a sum across the credit events associated with all versions from the Initial Version of the Index, iv, on which the option was written, to the version $\mathrm{dv} - 1$ prior to the delivered version dv (i.e., the last version for which a credit event auction has settled)**