ISDA®

ISDA Standard CDS

Converter Specification[1]

Functionality

- Converting between spread and upfront
- Computing cash settlement amount

Specification

- User Inputs:
  - Trade date T (should default to Today (current business day))
  - Maturity Date
    - Specified by year and month (one of Mar/Jun/Sep/Dec)
    - 20th of month is assumed
  - Notional Amount (MM)
  - Standard Coupon as defined by the Standard CDS Contract Specifications
  - Recovery Rate (%) 40% is used for senior unsecured. 20% is used for subordinate. 25% is used for emerging markets.(both senior and subordinate)
  - Spread (bp) or Upfront (%)
- Locked Inputs:
  - Locked LIBOR levels (deposits and swaps rates) from T-1 business day
    - When expressed in decimal, the rates should be provided to six (6) decimal digits[2]
    - Also display riskless discount factors (to eight decimal places) for each instrument maturity
- Outputs:
  - Spread if Upfront is input. Upfront if Spread is input
    - Spread (bp) (display to three decimal places)
    - Upfront (%) (display to eight decimal places)
  - Cash Settlement Amount (display to nearest currency unit)[3]
  - Assumed Cash Settlement Date

---

[1] Version: May 5, 2009
Contacts: shuwie.chen@barcap.com, ozgur.kaya@barcap.com, marco.naldi@barcap.com, claus.pedersen@barcap.com, ryan.mccorvie@gs.com, jacob.eliosoff@gs.com, keith.jia@jpmorgan.com, marc.barrachin@markit.com, manish.mehra@markit.com, manfung.chow@markit.com, kevin.krabbenhoeft@markit.com

[2] For instance, a rate of 5.123456789% should be provided as .051235

[3] It is important to note that the Cash Settlement Amount is always as computed by The Converter even when the computation done in The Converter is based on the assumption that some days that are in fact holidays are valid business days. The actual cash settlement date and coupon payment dates, on the other hand, may differ from those reported in The Converter. This is relevant because of the Business Day Calendar used in The Converter (see below).

- Assumptions when valuing the Standard CDS:
  - Trade date T from input; T means T@11:59pm
  - Protection Leg:
    - Protection Effective Date: T+1[4] calendar
    - Protection Maturity Date: Maturity Date from input
    - Protection includes Protection Effective Date and Protection Maturity Date:
      - Number of days of protection = Protection Maturity Date – Protection Effective Date + 1
    - Payoff: Notional times (100% - Recovery Rate from input)
    - Protection Leg is discretized at each point of the discount curve, the credit curve, and the protection effective date, and the protection maturity date
  - Premium Leg:
    - Coupon payment dates and amounts are determined as specified in the Standard CDS Contract Specification using a Coupon Rate equal to the input Standard Coupon.
    - Payments are assumed to be made @11:59pm on the dates specified
    - Accrual Begin Date:
      - The first adjusted CDS date on or before T+1 where the adjusted CDS dates are the CDS dates business-day adjusted Following.
    - Premium accrued before and including T is considered riskless:[5]
      - Number of days of riskless premium = T - Accrual Begin Date + 1
    - Premium accrued after and including T+1 is considered risky:
      - Number of days of risky premium = Maturity Date – T[6] = Number of days of protection
    - Premium accrued is paid on default
  - Business Day Calendars:
    - For non-JPY currencies: To avoid calendar maintenance issues, all computations, including both discount and credit curve constructions, will assume a business day calendar of weekdays (Monday to Friday) only; weekends (Saturday, Sunday) will be the only non-business days.
    - For JPY: All computations, including both discount and credit curve constructions, will assume the TYO holiday calendar published on https://cdsmodel.com. Weekends (Saturday, Sunday) will also be non-business days.
  - Discount Curve:
    - Assuming that the locked LIBOR levels from T-1 are valid market levels at T

[4] Since any protection coverage before and including T is assumed to have a value of 0 (valuation is to T@11:59pm) , a protection effective date of T+1 produces the same protection value as a protection effective date of T-60D/90D, the legal effective date.

[5] By riskless, we mean that the premium accrued is certain to be paid, though the timing of the payment is uncertain as it will be either at the next payment date or upon a credit event, whichever occurs first.

[6] Maturity Date – (T+1) + 1 = Maturity Date - T

        - Using piece-wise constant instantaneous forward rates with grid points equal to maturities of market instruments (deposits and swaps) defined with respect to T and assuming the closing market levels for T-1 as the closing market levels for T.
        - Riskless discount factor is 1 at T
        - The discount curve is fixed and used for all trades executed on trade date T
    - Credit Curve
        - Using a Constant Hazard Rate (to be solved for using Spread or Upfront input as specified below)
        - Survival probability is 1 at T
    - Mark-to-market (MTM)
        - MTM[7] is computed by discounting the expected Protection Leg and Premium Leg cashflows to T (the Value Date). A positive MTM means that the contract has positive value to the protection *buyer*.

- Cash Settlement Amount, Accrued Premium and Upfront
    - The Cash Settlement Amount is the amount[8] paid by the protection buyer to the protection seller on an assumed[9] Cash Settlement Date of T plus 3 business days.
    - The Accrued Premium is the premium that has accrued from Accrual Begin Date[10] to T where both dates are inclusive. The Accrued Premium is a non-negative number.
    - Upfront is (Cash Settlement Amount plus Accrued Premium) divided by Notional. Notional is a positive number.
        - Alternatively, Cash Settlement Amount equals Notional * Upfront - AccruedPremium

- Solving for the Constant Hazard Rate
    - The Constant Hazard Rate is required to be non-negative. In some situations where Upfront is input it may not be possible to solve for a non-negative Constant Hazard Rate[11]. If this occurs, the Cash Settlement Amount is computed as Notional * Upfront – Accrued Premium, where Accrued Premium is computed as specified above.

[7] Since the standard contract trades with accrued, the MTM will include accrued premium.
[8] Under certain cases when a contract is trading below the standard coupon, the Cash Settlement Amount will be negative, meaning that the protection *seller* will pay the protection *buyer*.
[9] In practice, the actual Cash Settlement Date must be a valid payment date as determined by a legal business day calendar. The Cash Settlement Amount is computed based on an assumed Cash Settlement Date for simplicity and reproducibility. For payment purposes, each firm is responsible for determining the actual Cash Settlement Date using the appropriate legal business day calendar.
[10] This Accrual Begin Date is determined using the assumed business calendar of weekdays-only and may differ from the actual Accrual Begin Date. The computed Accrued Premium will differ accordingly. Also, see the footnote under Cash Settlement Amount in Outputs section.
[11] This usually occurs when one minus Recovery Rate is not sufficiently greater than Upfront.

  - When the Upfront is input: Solve for the Constant Hazard Rate that gives the Standard CDS a MTM equal to Notional * Upfront – AccruedPremium[12] discounted riskless to T
  - When the Spread is input: Consider a CDS with exactly the same specification as the Standard CDS *except* that its Coupon Rate is equal to the Spread. Assume that the Upfront of this CDS is zero. Solve for the Constant Hazard Rate that gives this CDS a MTM equal to minus its Accrued Premium (based on a Coupon Rate equal to Spread) discounted riskless to T

- Determining the Cash Settlement Amount, Upfront and Spread once the Constant Hazard Rate has been solved for
  - Cash Settlement Amount: MTM of the Standard CDS divided by the riskless discount factor to T plus 3 business days
  - Upfront: (Cash Settlement Amount plus Accrued Premium) divided by Notional
  - Spread: Consider a CDS with exactly the same specification as the Standard CDS *except* that its Coupon Rate is equal to the Spread that must be solved for. Solve for the Coupon Rate that gives this CDS an Upfront of zero.
  - If a non-negative Constant Hazard Rate can not be solved for, then the Spread is not defined.

[12] We need to introduce the AccruedPremium since the MTM includes accrued and the Upfront does not.