ICE CDS MARGIN SIMULATION CALCULATOR

OVERVIEW

• Buy-side institutions and their clearing counterparties may access the ICE Clear Credit LLC and ICE Clear Europe Limited margin risk tool to calculate clearing margin requirements in the ICE Link GUI

• Users can simply point and click which positions to calculate margin, whether it be pre-trade, hypothetical/what-if trades, or historical non-cleared trades

• Users may also bulk upload hypothetical portfolios via spreadsheet upload for simulating different portfolio scenarios

• Margin is always calculated at a portfolio level (e.g. fund/legal entity) per Clearing Broker / Futures Commission Merchant (FCM)

• Portfolio benefits provided between Index, Single Name and Options positions as appropriate

• The margin calculator provides users with detailed analysis of the margin details providing deeper transparency of the ICE margin methodology
# ICE CDS MARGIN SIMULATION CALCULATOR
## COMPONENTS – MARGIN RISK MODELLING APPROACH

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<td>▪ Statistical modeling of credit spread and recovery rate fluctuations via Monte Carlo Framework</td>
<td>▪ 99.5% VaR measures in accordance with EMIR(^1)</td>
<td>▪ Margin Period of Risk (MPOR) at least 5 days(^3)</td>
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| Enhancement for Options |  |  |  |  |  |  |  |  |  |
|--------------------------|  |  |  |  |  |  |  |  |  |
|  | ▪ Capital efficient spread response requirement considering index, SN and option positions in one portfolio | ▪ Asymmetric heavy-tailed Implied Distribution describes credit spread log-return fluctuations consistently pricing all strikes for a given expiry | ▪ Extract implied forward price at each expiry using EOD submissions and Put-Call Parity relationship | ▪ Re-price options at each simulated forward-looking scenario by using the calibrated Implied Distribution | ▪ Use existing approach of applying Interest Rate stress scenarios to estimate Profit/Loss response | ▪ Not applicable | ▪ Analyze Delta Equivalent Notional Amount (DENA) underlying “pseudo” index positions for Default Risk purposes as part of the existing index portfolio | ▪ Establish option-specific Bid/Offer widths consistent with market observed option and underlying index Bid/Offer widths under stress conditions | ▪ Establish stand-alone option CC thresholds and requirements | ▪ Analyze option positions, by means of their DENAs, in the presence of underlying index positions to identify an increased directionality |

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\(^1\) In accordance with Article 27 of Commission Delegated Regulation (EU) No. 153/2013 of EMIR RTS

\(^2\) In accordance with Article 28 of Commission Delegated Regulation (EU) No. 153/2013 of EMIR RTS

\(^3\) Increased MPOR (up to 6 days) is applied to instruments/sub-portfolios that trade during market hours different from the clearinghouse’s hours of operations

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ICE CDS MARGIN SIMULATION CALCULATOR
MARGIN COMPONENTS – SPREAD RESPONSE RISK

- **Integrated Spread Response I**
  - Capital efficient portfolio approach to market dynamics via Copula-based Monte Carlo simulations\(^1\),\(^2\)
  - 99.5% VaR measures reflecting joint Credit Spread and Recovery Rate Profit/Loss moves
  - Margin Period of Risk (MPOR): at least 5 days
    - increased MPOR (up to 6 days) is applied to instruments/sub-portfolios that trade during market hours different from the clearinghouse’s hours of operations

- **Integrated Spread Response (iSR) measures:**
  - \(iSR\)\(^{RF}\): Associated with positions in instruments related to the same Risk Factor
  - \(iSR\)\(^{sP}\): Associated with positions in instruments related to Risk Factors with common risk characteristics
    - NA Corporate sub-portfolio, European Corporate sub-portfolio, Western-European Sovereign sub-portfolio, Asia-Pacific sub-portfolio, etc.
    - Multi-currency benefits between NA and European corporate sub-portfolios are recognized
  - \(iSR\)\(^p\): Associated with all portfolio positions introducing limits on portfolio benefits\(^3\)
  - \(iSR\)\(^{IM}\): Associated with all portfolio positions introducing anti-procyclical Initial Margin (IM) features\(^4\)

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\(^1\) Stanislav Ivanov, “Initial Margin Estimations for Credit Default Swap Portfolios”, Journal of Financial Market Infrastructures, Volume 5, Number 4, June 2017
\(^3\) In accordance with the Article 24 of the Commission Delegated Regulation (EU) No. 153/2013 of European Market Infrastructure Regulation (EMIR) Regulatory Technical Standards (RTS)
\(^4\) In accordance with the Article 27 and (5) in accordance with the Article 28 of the Commission Delegated Regulation (EU) No. 153/2013 of EMIR RTS
Integrated Spread Response II

- Portfolio level $iSR_P$ measure (offset benefits & limits) is computed as

$$iSR_P = 80\% \times \sum_{SP \in P} iSR_{SP} + 20\% \times \sum_{RF \in P} iSR^{(RF)}$$

- Final Initial Margin $iSR_{IM}$ measure (anti-procyclical) is computed as

$$iSR_{IM} = 0.75 \times iSR_P + 0.25 \times \min(iSR_P, SRP_{Stress\ Events})$$

Full Cross-RF portfolio benefits are provided

No Cross-RF portfolio benefits are provided

Portfolio responses to stress market events, e.g. LB default period
Multi-currency Spread Response Risk portfolio benefits among risk factor Profit / Loss vectors with applied FX conversion

- Convert the EUR denominated P/L vector into USD denominated P/L vector and add the results to P/L\textsuperscript{S} vector.
- The resultant P/L vector is further used to estimate the risk measures for the EUR/USD combined portfolio of corporate instruments.
- The currency-specific P/L\textsuperscript{E} and P/L\textsuperscript{S} vectors are used to estimate the risk measures for the currency-specific sub-portfolios of corporate instruments.
ICE CDS MARGIN SIMULATION CALCULATOR
CALCULATE MARGIN PRE-AFFIRMED TRANSACTION

**ICE Link Affirm/Allocate screen; View Projected Margin**

1. Prior to clearing a trade, any party to the transaction can calculate the clearing house projected initial margin by selecting the **View Projected Margin** button after providing FCM and allocation details.

2. After selecting the **View Projected Margin** button, users may select to view the margin amount weighted against all existing cleared positions from yesterday’s end of day, only today’s trades, all trades (selecting both yesterday and today’s trades), or view the isolated margin amount (deselecting yesterday’s and today’s trades) and select OK to run the calculations.

3. The calculator returns the margin results for each fund/portfolio (separate row for each portfolio-FCM combination; users may optionally email the calculation results).

**Note:** The ‘Simulation’ option is for future eligible instruments margin testing or for Self Clearing Participants for ICE Clear Europe.

The margin tool may be accessed pre-trade via the ‘New Deal-Upload’ option in the Menu (or) the Positions Blotter.
Users may run hypothetical Margin calculations on non-cleared clearing eligible positions in the ICE Link Position Blotter to project the clearing house required minimum margin amounts

To calculate margin from the Position Blotter, users may:

1. Filter positions eligible for margin simulation
2. Select All (or) Specific Positions
3. Click the Margin button and select a potential FCM

Note:

A. ICE Link automatically synchronizes all client DTCC warehouse positions in the Position Blotter, simplifying margin calculations
B. Additional positions may be manually entered or uploaded via spreadsheet *
C. Select ‘Include Cleared Trades’ to automatically include open cleared trades into the calculation
D. The Simulation checkbox is only for ICE Clear Europe calculations for Self Clearing members or for testing with new instruments with ICE Clear Credit

* Note: Buy-side firms have the ability to upload positions for testing clearing house margin requirements by selecting the Upload feature in the GUI Menu, see the Help Documents screen for more details
1. View all portfolios with summary margin information per portfolio
   - 6 key risk components: Spread, Basis, Jump-to-Default/Health, Liquidity, Concentration and Interest Rate Risk
   - FX Rate, Haircut, Equivalent IM Requirement and Equivalent Currency for multi-currency portfolios
2. Access Margin Simulation Guides in the results screen
3. Export results to spreadsheet/file
1. Hypothetical trade positions may be uploaded directly to the Margin Calculator via spreadsheet (CSV file) for testing; the upload template and template instructions are available in the Help Documents screen.

2. After selecting the ‘Margin’ option in the menu, select ‘Upload’ in the Margin Calculation criteria screen, select the spreadsheet file (CSV) and the Open button to upload (any upload displayed in the errors window).

3. Select the Clearing House the hypothetical portfolio will be cleared to.

4. Select OK to run the calculation.

Note: ICE Clear Credit and ICE Clear Europe trades must be uploaded separately; calculations can be mixed with existing non-cleared, cleared, and hypothetical trades.

• Note: The ‘Simulate’ option is only applicable for self-clear ICE Clear Europe parties; to include pre-existing cleared trades from yesterday’s end of day or for today’s activity (or both for all), select the ‘Include Cleared Trades’ options.
1. To manually calculate margin on a single hypothetical pre-trade position for margin calculation, select the New Deal-Single Name or Index option in the GUI menu.

2. In the trade entry screen, select a counterparty (‘Clearing Executing Broker’) and a clearing eligible instrument with a notional amount, scheduled termination date, and fixed rate (spread).

3. On a Pre-trade basis, users may select the ‘View Proj. Margin’ button without actually uploading the trade to run the margin calculation.

4. On the margin calculation selection screen, select the Clearing House ‘Include Cleared Trades’ options if calculating against existing trades and select OK to perform the calculation.

Note: A list of clearing instruments are available in the Margin Upload file in the help documents screen or on the internet at [https://www.theice.com/publicdocs/clear_credit/ICE_Clear_Credit_Clearing_Eligible_Products.xls](https://www.theice.com/publicdocs/clear_credit/ICE_Clear_Credit_Clearing_Eligible_Products.xls)
ICE CDS MARGIN SIMULATION CALCULATOR
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ICE Link web information page https://www.theice.com/technology/ice-link

ICE Link Documentation Portal https://community.theice.com (requires registration)