FDIC

FEDERAL DEPOSIT INSURANCE CORPORATION

Standardized Approach for Counterparty Credit Risk (SA-CCR)

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Overview of Derivative Contracts

- Derivatives are agreements between parties to make/receive payments or to buy/sell an underlying asset on a certain date(s) in the future.
- The value of a derivative contract, and thus a party's exposure to its counterparty, changes over the life of the contract based on movements in the value of the reference rates, assets, indicators or indices underlying the contract.
- A party with a positive current exposure expects to receive a payment or other beneficial transfer from the counterparty and is subject to the risk that the counterparty will default on its obligations and fail to pay the amount owed under the transaction, which is referred to as counterparty credit risk.

Overview of Derivative Contracts

- Parties to a derivative contract often exchange collateral to mitigate counterparty credit risk.
  - If a counterparty defaults, the non-defaulting party can sell the collateral to offset its exposure.
  - May include variation margin and initial margin (also known as independent collateral).
- To facilitate the exchange of collateral, parties may enter into variation margin agreements that typically provide for a threshold amount (TH) and a minimum transfer amount (MTA).
  - MTA: smallest amount of collateral that a party must transfer when it is required to exchange collateral under the variation margin agreement.
  - VMT: maximum amount by which the market value of the derivative contract can change before a party must collect or post variation margin.
- Two parties may enter into a netting agreement to allow for the offsetting of the derivative contracts under the agreement in the event that one of the parties defaults and to streamline certain aspects of the transactions, including the exchange of collateral.

COUNTERPARTY RISK

There are two general elements of the counterparty risk:

- Counterparty Credit Risk (CCR), or default risk.
  - If a transaction has a positive value, what is the risk that a loss occurs before the final settlement with a defaulting counterparty?
  - Driven by market value and counterparty's probability of default.

- Credit Valuation Adjustment (CVA), or market value of expected CCR.
  - What is the risk that a positive value of a trade deteriorates because the counterparty credit risk deteriorates without a default?
  - Driven by market value and counterparty's credit spread.

SA-CCR

- The Standardized Approach for counterparty credit risk (in short, SA-CCR) is a new approach for calculating the exposure amount of derivative contracts under the regulatory capital rule of the FDIC, the Board of Governors of the Federal Reserve System, and the Office of the Comptroller of the Currency.

- SA-CCR supplements the existing methodology known as the Current Exposure Method (CEM).

SCHEDULE

- The federal bank regulatory agencies jointly issued a final rule on November 19, 2020.

- The effective date of the final rule is April 1, 2020.

- The mandatory compliance date of the final rule is January 1, 2022, for advanced approaches banking organizations.

SCOPE: STANDARDIZED RISK-WEIGHTED ASSETS

- The final rule also requires banking organizations subject to the Category I and II standards to use SA-CCR for purposes of calculating their standardized risk-weighted assets.

- All other banking organizations—Category III, Category IV, and all other banks using the risk-based capital framework—may elect to use either CEM or SA-CCR for purposes of calculating their standardized risk-weighted assets.

Scope: Supplementary Leverage Ratio

- The final rule requires Category I and Category II banking organizations to use SA-CCR and provides an option to all other banking organizations to use CEM or SA-CCR in their supplementary leverage ratio.
- If a Category III banking organization chooses to use CEM to calculate the total risk-weighted assets, it must use CEM to determine the exposure amount of all derivative contracts for purposes of the supplementary leverage ratio.

COMPARING CEM AND SA-CCR: STRUCTURE OF THE CURRENT EXPOSURE METHOD (CEM)

EAD = Current Credit Exposure + Potential Future Exposure (PFE)

Current credit exposure means, with respect to a netting set, the larger of zero or the fair value of a transaction or portfolio of transactions within the netting set that would be lost upon default of the counterparty, assuming no recovery of value of the transactions. Current exposure is also called replacement cost.

PFE of a single trade:

1. Determine the asset class
2. Determine maturity date
3. In the look up table (below) find the % add-on
4. Multiply notional of the trade by % add-on

PFE of portfolio of trades:

Agross: the sum of the PFE amounts of each individual derivative contract subject to the qualifying master netting agreement.
NGR: the ratio of the net current credit exposure to the gross current credit exposure.
Gross current credit exposure: the sum of the positive current credit exposure of all individual derivative contracts subject tot eh qualifying master netting agreement.
Net current credit exposure: the greater of zero and the net sum of all positive and negative fair values of the individual OTC derivative contracts subject to the master netting agreement

Remaining maturity	Interest rate	Foreign exchange rate and gold	Credit (investment grade reference asset)	Credit (noninvestmentgrade reference asset)	Equity	Precious metals (except gold)	Other
One year or less	0.00	0.01	0.05	0.10	0.06	0.07	0.10
Greater than one year and less than or equal to five years	0.005	0.05	0.05	0.10	0.08	0.07	0.12
Greater than five years	0.015	0.075	0.05	0.10	0.10	0.08	0.15

Comparing CEM and SA-CCR: Structure of the SA-CCR

EAD = Alpha x (Replacement Cost + Potential Future Exposure)

Alpha:
1.4 or 1.0 for Commercial End Users.

Replacement Cost:
Captures the loss that would occur if a counterparty were to default and were closed out of its transactions.

Multiplier:
Allows partial recognition of excess collateral.

Add-on:
Derived from add-ons developed for different asset classes.

PFE add-on

Determining Replacement Cost

- Reflects the amount that it would cost a bank to replace the derivative contract if the counterparty were to immediately default.
- SA-CCR provides separate approaches to determine replacement cost based on whether a counterparty is required to post variation margin.

Not subject to margin agreement: $replacement\ cost = max\{V - C; 0\},$

Subject to margin agreement: $replacement\ cost = max\{V - C; VMT + MTA - NICA; 0\}$

Where:

- V is the fair values (after excluding any valuation adjustments) of the derivative contracts within the netting set;
- C is the sum of the net independent collateral amount and the variation margin amount applicable to such derivative contracts;
- VMT is the variation margin threshold applicable to the derivative contracts within the netting set;
- MTA is the minimum transfer amount applicable to the derivative contracts within the netting set; and
- NICA is the net independent collateral amount applicable to such derivative contracts.

Determining PFE

- Reflects the possibility of changes in the value of the derivative contract over a specified period.
- Under SA-CCR, the PFE amount is based on:
  - notional amount and maturity of the derivative contract,
  - volatilities observed during the financial crisis for different classes of derivative contracts (i.e., interest rate, exchange rate, credit, equity, and commodity),
  - the exchange of collateral, and
  - full or partial offsetting among derivative contracts that share an economic relationship.

Determining PFE

- The PFE for a netting set equals the product of the PFE multiplier and the aggregated amount, which equals the sum of all hedging set amounts within a netting set.
- To determine the aggregated amount, a bank determines the hedging set amounts for the derivative contracts within a netting set, where a hedging set is comprised of derivative contracts that share similar risk factors based on asset class (i.e., interest rate, exchange rate, credit, equity, and commodity).
  - First, determine the composition of a hedging set by asset class.
  - Second, determine hedging set amount using asset class specific formulas.
- The PFE multiplier decreases exponentially from a value of one as the value of the financial collateral held by the banking organization exceeds the net fair value of the derivative contracts within the netting set, subject to a floor of five percent.

Determining PFE

- The PFE calculation allows a bank to fully or partially offset derivative contracts within the same netting set that share similar risk factors, based on the concept of hedging sets.
- Determined by grouping contracts into separate hedging sets that share similar risk factors based on the following asset classes:
  - Interest rate, exchange rate, credit, equity, and commodity.
- A bank then determines each hedging set amount using asset-class specific formulas that allow for full or partial offsetting.

Determining PFE

- Interest rate contracts: full offset provided for contracts within same tenor category (i.e. <1 year, 1-5 years, >5 years), otherwise partial offset is provided.
- Exchange rate contracts: Full offset for contracts referencing same currency pair.
- Credit and Equity contracts: full offsetting for credit or equity contracts that reference the same entity, and partial offsetting when aggregating across distinct reference entities.
- Commodity contracts: based on four commodity categories (energy, metal, agricultural and other), allowing full offsetting for all derivative contracts within the same commodity category that reference the same commodity type.

WALK-THROUGH EXAMPLE

The netting set consists of two fixed versus floating interest rate swaps that are subject to the same Qualified Master Netting Agreement (QMNA). The table below summarizes the relevant contractual terms for these derivative contracts. The netting set is subject to a variation margin agreement, and the banking organization has received from the counterparty, as of the calculation date, variation margin in the amount of $10,000 and initial margin in the amount of $200,000. Both the variation margin threshold and the minimum transfer amount are zero. All notional amounts and market values are denominated in U.S. Dollars.

Derivative	Type	Residual maturity (years)	Base currency	Pay leg	Notional (thousands)	Fair value excluding valuation adjustments (thousands)
1	Interest rate swap	10	USD	Fixed	$10,000	$30
2	Interest rate swap	4	USD	Floating	10,000	−20

STEP 1: DETERMINE THE REPLACEMENT COST

- The replacement cost of a netting set subject to a variation margin agreement would equal the greater of:

  (1) the sum of the fair values (after excluding any valuation adjustments) of the derivative contracts within the netting set less the sum of the net independent collateral amount and the variation margin amount applicable to such derivative contracts;

  (2) the sum of the variation margin threshold and the minimum transfer amount applicable to the derivative contracts within the netting set less the net independent collateral amount applicable to such derivative contracts; and

  (3) zero.

The replacement cost of the netting set in the example is given as follows:

RC = max{(30-20)-(200 + 10); 0 + 0 - 200; 0} = 0

Step 2: Determine the Adjusted Derivative Contract Amount of Each Derivative Contract Within the Netting Set

The adjusted derivative contract amount would be the product of the adjusted notional amount, the supervisory delta adjustment, the maturity factor, and the applicable supervisory factor, which are given as follows:

$$\textit{Adjusted derivative contract amount}_i^{iR} = d_i^{IR} * \delta_i^{IR} * MF_i^{IR} * SF_i^{IR}$$

Where:

d_i is the adjusted notional amount;
δ_i is the applicable supervisory delta adjustment;
MF_i is the applicable maturity factor; and
SF_i is the applicable supervisory factor.

Step 2: Determine the Adjusted Derivative Contract Amount of Each Derivative Contract Within the Netting Set (Cont.)

- The adjusted notional amount accounts for the size of the derivative contract and reflects the attributes of the most common derivative contracts in each asset class.
- For each derivative contract i, the adjusted notional amount would be calculated as follows:

$$d_i^{IR} = Trade\ Notional * max\left\{\frac{\left(e^{-0.05*\left(S_i/250\right)} - e^{-0.05*\left(E_i/250\right)}\right)}{0.05}, 10/250\right\}$$

Where:

S is the number of business days from the present day until the start date for the derivative contract, or zero if the start date has already passed; and

E is the number of business days from the present day until the end date for the derivative contract.

Step 2: Determine the Adjusted Derivative Contract Amount of Each Derivative Contract Within the Netting Set (Cont.)

Derivatives 1 and 2 are in different tenor categories and therefore partial offset is provided.

The residual maturity of derivative contract 1 is 10 years and thus term E_i equals 250 multiplied by 10. The residual maturity of derivative contract 2 is 4 years and thus term E_i equals 250 multiplied by 4. Accordingly, the adjusted notional amounts for derivative contract 1 and derivative contract 2 are given as follows:

$$d_1^{IR} = 10{,}000 * max\left\{\frac{(e^{-0.05*(0/250)} - e^{-0.05*(10*250/250)})}{0.05}, 10/250\right\} = 78{,}694$$

$$d_2^{IR} = 10{,}000 * max\left\{\frac{(e^{-0.05*(0/250)} - e^{-0.05*(4*250/250)})}{0.05}, 10/250\right\} = 36{,}254$$

Step 2: Determine the Adjusted Derivative Contract Amount of Each Derivative Contract Within the Netting Set (Cont.)

- The supervisory delta adjustment accounts for the sensitivity of a derivative contract (scaled to unit size) to the underlying primary risk factor, including the correct sign (positive or negative) to account for the direction of the derivative contract amount relative to the primary risk factor.
- The supervisory delta adjustment would be assigned to each derivative contract. Derivative contract 1 is long in the primary risk factor and is not an option; therefore, the supervisory delta is equal to one. Derivative contract 2 is short in the primary risk factor and is not an option; therefore, the supervisory delta is equal to negative one.

Step 2: Determine the Adjusted Derivative Contract Amount of Each Derivative Contract Within the Netting Set (Cont.)

- The maturity factor scales down, if necessary, the derivative contract amount from the standard one-year horizon used for supervisory factor calibration to the risk horizon relevant for a given contract.
- The maturity factor would be assigned to each derivative contract. Assuming a margin period of risk (MPOR) of 15 business days, the maturity factor is provided below.
  - MPOR: A potential reduction in the value of the collateral during the period between the last exchange of collateral before the close out of the derivative contract (as in the case of default of the counterparty) and replacement of the contract on the market.

$$\text{Maturity factor} = \frac{3}{2}\sqrt{\frac{MPOR = 15}{250}} = 0.3674$$

Step 2: Determine the Adjusted Derivative Contract Amount of Each Derivative Contract Within the Netting Set (Cont.)

- Supervisory factors reflect the volatilities observed in the derivatives markets during the financial crisis and reflects potential variability of the primary risk factor of the derivative contract over a one year horizon.
- The supervisory factor for interest rate derivative contracts is 0.50 percent.

For derivative contract 1, the adjusted derivative contract amount equals:

1 * 78,694 * 0.3674 * 0.50% = 144.57.

For derivative contract 2, the adjusted derivative contract amount equals

-1 * 36,254 * 0.3674 * 0.50% = -66.60.

STEP 3: DETERMINE THE HEDGING SET AMOUNT

A banking organization would determine the hedging set amount for interest rate derivative contracts, as follows:

$$[\left(AddOn^{IR}_{TB1}\right)^2 + \left(AddOn^{IR}_{TB2}\right)^2 + \left(AddOn^{IR}_{TB3}\right)^2 + 1.4 * AddOn^{IR}_{TB1} * AddOn^{IR}_{TB2} + 1.4 * AddOn^{IR}_{TB2} * AddOn^{IR}_{TB3} + 0.6 * AddOn^{IR}_{TB1} * AddOn^{IR}_{TB3}\Big)]^{\frac{1}{2}},$$

The hedging set amount of the derivative contracts would be calculated as follows:

$$Hedging\ set\ amount = \sqrt{(-66.60)^2 + 144.57^2 + 1.4 * (-66.60) * 144.57}$$

$$= 108.89$$

Step 4: Determine the Aggregated Amount

Because the netting set includes only one hedging set, the aggregated amount is equal to 108.89.

Step 5: Determine the PFE Multiplier

A banking organization would calculate the PFE multiplier as follows:

$$PFE\ multiplier = min\left\{1; 0.05 + 0.95 * e^{\left(\frac{V-C}{1.9*A}\right)}\right\},$$

$$PFE\ multiplier = min\left\{1; 0.05 + 0.95 * e^{\left(\frac{30-20-200-10}{1.9*108.89}\right)}\right\} = 0.4113$$

Step 6: Determine PFE

PFE would equal the product of the PFE multiplier and the aggregated amount. Thus, PFE would be calculated as

$$0.4113 * 108.89 = 44.79.$$

Step 7: Determine the Exposure Amount

The exposure amount of a netting set would equal the sum of the replacement cost of the netting set and the PFE of the netting set multiplied by 1.4.

Therefore, the exposure amount of the netting set in the example would be

calculated as:

$$1.4 * (0 + 44.79) = 62.70.$$

Commercial End-User

- The final rule provides relief to commercial end-users by removing the alpha factor for exposures between a banking organization and commercial end-users.

Other Elements of The Final Rule

- The final rule also incorporates SA-CCR into the determination of exposure amount of derivatives for total leverage exposure under the supplementary leverage ratio and the cleared transaction framework under the capital rule.
- Further, the final rule makes technical amendments to the capital rule with respect to cleared transactions.