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Proposal and Comment Information

Title: Regulatory Capital Rule: Category I and II Banking Organizations, Banking Organizations with Significant Trading Activity, and Optional Adoption for Other Banking Organizations, R-1887

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Submitter Information

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See attached

Re: Proposed SA-CCR Amendments in Regulatory Capital Rule: Category I and II Banking Organizations, Banking Organizations With Significant Trading Activity, and Optional Adoption for Other Banking Organizations

Dear Sir or Madam,

I am a former risk and finance professional who has worked at leading banks and consulting firms, with experience in Basel implementation across the 2013 Basel III reforms, SA-CCR, and the preparatory implementation work for the 2023 Basel III endgame. Since leaving the industry, I have followed developments in capital regulation and written commentaries on technical aspects of the capital framework, including articles in Risk.net.

This letter comments on two specific technical issues in the NPR related to SA-CCR, with the aim of improving the precision and logical consistency of the proposal. It does not address the appropriate level of capital or advocate any particular capital outcome.

I submit these comments as a private citizen to support the agencies' public rulemaking process. The views expressed are solely my own.

The letter argues that:

- The supervisory delta signs penalize rather than incentivize netting when the underlying collateral is a debt instrument. The NPR should be updated to address this issue and prevent similar issues from happening in the future.
- Decomposition of index options should be permitted to reflect economic substance, align with other parts of the NPR, and avoid a direct conflict with another SA-CCR provision.

Supervisory Delta Signs for Repo-Style Transactions in Cross-Product Netting

The NPR updates SA-CCR to permit netting across derivatives and repo-style transactions (RSTs) under qualifying cross-product master netting agreements. This represents a positive development. However, the proposed deltas would penalize rather than incentivize netting arrangements when the RST’s underlying collateral is a debt instrument, as discussed below.

Problem statement

The NPR states (§ ____.114(a)(2)(ii)):

- Delta is +1 for a repo or securities lending transaction.
- Delta is -1 for a reverse repo or securities borrowing transaction.

Below, we analyze three scenarios to highlight the issue:

Scenario 1 — repo on risky bonds

In a repo on a risky bond, the bank agrees to repurchase the bond at a fixed price at maturity. The NPR requires this repo to be treated as a credit derivative (§ ____.114(a)(2)(i)(B)-(C)). As a credit derivative, the bank is selling credit protection because it commits to buy back the risky bonds at maturity.

In addressing a drafting issue on CDOs dating back to 2019, the NPR clarifies (Federal Register page 14987) that selling credit protection requires a negative delta, while purchasing protection requires a positive delta. Thus, if the bank hedges the repo by purchasing CDS protection, both the repo (§ __.114(a)(2)(ii)) and the CDS (per page 14987) would carry positive deltas. As a result, although the CDS hedges the repo, its exposure will be added to rather than subtracted from the repo's exposure — the opposite of what the NPR intends.

Scenario 2 — treasury repo

The assignment of a delta of +1 to treasury repo will similarly lead to unintended results.

As rates increase, the mark-to-market (MTM) value of the treasury repo decreases (because the value of the treasury that the bank agreed to buy back at a fixed price falls). The bank may hedge this exposure with a receive-float interest rate swap. This swap carries a positive delta under SA-CCR, as its value increases when interest rates rise (§ __.114(i)(3)(i)).

As a result, both the repo and its hedge carry positive deltas — and as in Scenario 1, the hedge exposure will be added to rather than subtracted from the repo's exposure —again, the opposite of what the NPR intends.

Scenario 3 — repo on equities

This issue does not arise for repos collateralized by equities because sensitivities for both the repo and the corresponding OTC equity derivatives are measured with respect to equity prices on a consistent basis.

Root cause

The root cause of issues surrounding repos on risky bonds and treasuries is that the delta assignments contradict SA-CCR's conceptual framework. SA-CCR's aggregation logic assumes each trade in a hedging set is driven by a single primary risk factor from a set of positively correlated primary risk factors¹ — as evidenced by the fact that supervisory correlations are all positive. Economically sensible netting calculation requires that sensitivities for trades in the hedging set are measured with respect to positively correlated factors. The anomalous results for repos on debt instruments arise because the NPR's debt collateral repo delta assignments deviate from this principle: repo deltas are measured with respect to prices, which are negatively correlated with the primary risk factors against which SA-CCR measures OTC derivatives—namely, interest rates and credit spreads.

¹ The term "primary risk factor" is used throughout SA-CCR but is not formally defined. However, they are clearly discernible from the aggregation logic. As noted in BCBS Working Paper No. 26, the SA-CCR framework assumes that "all trades of a given single-factor subset (SFS) are driven by the same market factor." The agencies provide the detailed specifications for these SFSs within § __.114(h). Under SA-CCR, Potential Future Exposure (PFE) add-ons within a given SFS are permitted to offset fully, whereas add-ons across different SFSs are aggregated using supervisory correlation matrices. Consequently, a "primary risk factor" should be understood to refer to the risk factor driving a given SFS defined by the rule.

For example, the USD interest rate hedging set is divided into three enddate-based SFSs: less than 1 year, 1 year to less than 5 years, and 5 years or more. Thus, the primary risk factors for USD interest rate hedging set are effectively represented by the short-, medium-, and long-term segments of the USD curve.

SA-CCR practitioners are familiar with these primary risk factor constructs.

This issue mirrors the 2019 CDO drafting error that this NPR itself corrects: in both cases, supervisory deltas are assigned based on price sensitivities rather than sensitivities to the primary risk factors of the hedging set. The longevity of the 2019 drafting error shows that case-by-case corrections can be time-consuming for both the agencies and affected banks. Rather than issuing a bespoke fix by simply reversing the repo delta signs, the agencies should consider a broad principle-based clarification that prevents recurrence.

Recommendation

The NPR should be updated to state that the delta is positive if the value of the position increases when the relevant primary risk factor of the hedging set increases, and negative otherwise. In other words, extend the principles on the signage of supervisory delta in § __.114(i)(3)(i) from linear trades to all trades, including options, CDOs, and RSTs. This convention should take precedence over the sign conventions associated with the Black-Scholes deltas in Table 1 to § __.114, which can be necessary, for example, for options on interest rate futures, where the underlying is quoted on price rather than rate. Principle-based guidance of this nature would also help prevent the recurrence of product-specific drafting issues like those affecting CDOs and repos on debt instruments.

Prohibition on Decomposition of Non-Linear Index Contracts

The NPR permits decomposition of linear index contracts (e.g., total return swaps) into constituent risk factors. However, it explicitly prohibits decomposition for non-linear index contracts, such as options on equity indices (§ __.114(e)(6)). As a result, an index option must be treated as a single exposure to the index with no recognition of offsetting against constituent positions.

Possible supervisory rationale for the prohibition

The NPR cited a concern that the delta with respect to index constituents cannot be calculated, but did not provide further technical details. The NPR appears to assume that because Black-Scholes cannot be applied at the constituent level, delta cannot be calculated.

If this is indeed the concern, the NPR might be conflating form and substance of the delta calculations. At a conceptual level, SA-CCR determines exposure for options by treating them as linear trades but with contractual notional replaced by delta-adjusted notional, where delta represents the sensitivity of the option value to the underlying risk factor. The framework relies on delta as a measure of sensitivity, not on any particular measurement model. Black-Scholes in the rule text is merely a form of the calculation—it is not the substance of sensitivities.

Therefore, the relevant question is not whether Black-Scholes can be used, but rather whether sensitivities can be calculated.

Proposal: computing sensitivities using partial derivatives

This letter proposes that deltas for the constituents be calculated using familiar tools from calculus: partial derivatives and the chain rule.

For example, consider an index defined as:

$$I = \sum w_i \cdot S_i, \text{ where } S_i \text{ denotes the price of the constituent } i \text{ and } w_i \text{ its weight}$$

Let the option's sensitivity to the index be D (likely calculated using Black-Scholes):

$$\partial C / \partial I = D, \text{ where } C \text{ is the value of the option}$$

Then, by the chain rule:

$$\partial C / \partial S_i = \partial C / \partial I \cdot \partial I / \partial S_i = D \cdot w_i$$

In short, the delta for a constituent is the product of the index-level delta and its weight.

SA-CCR is a first-order approximation framework — higher-order effects (e.g., convexity) fall outside its scope. Within SA-CCR, the complexity of stochastic dependence is addressed by supervisory correlation at the aggregation stage and does not need to be resolved at the trade level. Furthermore, SA-CCR compensates any residual higher-order risks through conservative structural assumptions and calibrations². The linearization of a trade using the partial derivative approach, therefore, does not introduce approximation error beyond what is already embedded in the framework and addressed or compensated for by these conservative calibrations.

Sensitivities in FRTB and SA-CVA—entirely partial derivative based

In other derivative-related provisions of the NPR, the agencies have already determined that partial derivative sensitivities provide a sufficiently reliable basis for capital calculations. Both SA-CVA and FRTB rely on partial derivatives to measure sensitivities to underlying risk factors in substantially more complex settings. For example, SA-CVA sensitivities for the CVA of a GSIB can involve millions of positions, with risk interactions spanning multiple asset classes, counterparties, time horizons, and scenarios. If partial derivatives are considered appropriate in those contexts, there is no compelling reason to prohibit their use for the simpler and more transparent case of an index option under SA-CCR.

SA-CCR provision on multi-risk trades mandates index option decomposition

Implementing an existing SA-CCR provision on multi-risk trades could make decomposition of index options mandatory, as discussed further below.

Current SA-CCR rule (§ __.114(b), clause (viii)) provides that where a trade depends materially on more than one risk factor (e.g., interest rate, equity, commodity), a bank may be required by the agencies to include the trade in multiple hedging sets. Such trades are rare, but one notable example is a derivative on a multi-asset index, for example, a composite index that combines indices from interest rate, equity, and commodity markets. The prudent practice is to assign such trades to either the equity index or commodity hedging sets, since these carry the highest supervisory factors. But what if the agencies exercise the supervisory authority and require the bank to put the trade into all three hedging sets?

Consider a call option on a composite index that comprises three indices from equity, commodity, and interest rate asset classes, with weights w_E , w_C , and w_I . If the trade must be split

² Refer to the [SA-CCR comment letter in March 2019](https://www.isda.org/a/XFKME/US_SA-CCR_NPR_Response_Letter_03.18.19.pdf) by the industry associations for the industry's perspectives on the conservatism in SA-CCR. (https://www.isda.org/a/XFKME/US_SA-CCR_NPR_Response_Letter_03.18.19.pdf)

across hedging sets, the bank must, as required by SA-CCR, compute sensitivities with respect to risk factors in each hedging set:

$$\partial C / \partial S_i = D \cdot w_i, \text{ for the relevant asset class } i$$

Thus, the multi-risk trade provision in SA-CCR requires the ability to decompose index options. However, this is precisely the type of decomposition that the prohibition would not permit. The prohibition, therefore, creates a conflict with the multi-risk-factor provision by making economically sensible implementation impossible.

Recommendation

Permit decomposition of non-linear index contracts using the index-level supervisory delta multiplied by constituent weights. This will lead to a more risk-sensitive approach for SA-CCR that is consistent with approaches in other parts of the NPR, and avoid creating a direct conflict with an existing SA-CCR provision on multi-risk trades.

Conclusion

This letter raises two technical issues with the NPR's SA-CCR amendments.

The first issue concerns delta signage for repo-style transactions in cross-product netting. The NPR's price-based convention conflicts with the rate/spread-based convention used for OTC derivatives, producing results contrary to NPR's intention. Aligning delta signs to the primary risk factor of the hedging set would address this issue and help prevent similar issues in the future.

The second issue concerns the prohibition on decomposing non-linear index contracts. This restriction is unnecessary because constituent sensitivities can be calculated using partial derivatives, consistent with the approaches used in SA-CVA and FRTB. The restriction is also problematic because it conflicts with the NPR's own treatment of trades whose risk depends on multiple risk factors.

Addressing these issues would materially improve the coherence and internal consistency of the framework.

I appreciate the agencies' consideration of these comments and hope that the recommendations in this letter contribute to the coherence and internal consistency of the final rule.

Sincerely,

Steve Wang