U.S. SA-CCR Proposed Rulemaking
Meeting with U.S. Banking Agencies

April 2019

TABLE OF CONTENTS	

Executive Summary (1/3)

Overview

- The development of the SA-CCR has brought a significant change in methodology which achieves various objectives, including:
  - Its application and different treatment of margined and unmargined trades. The SA-CCR further incentivizes banks to make greater use of margining
  - It also addresses known deficiencies of the current standardized approach while improving the risk sensitivity of the capital framework without creating undue complexity
- The industry generally supports the move from CEM to a more risk-sensitive based measure and believes that an appropriately revised version of SA-CCR would be a major improvement over the current framework (i.e., CEM methodology for measuring counterparty credit risk exposure)
- Given the prevalence of counterparty credit risk with the capital framework, SA-CCR will impact a number of complex but fundamental areas of the Basel capital framework. In addition to the counterparty credit risk default RWA in the Basel 3 standardized approach, the main areas where SA-CCR will have an impact are:
  - ❖ The supplementary leverage ratio (SLR) framework
  - ❖ The credit valuation adjustment (CVA) capital framework
  - ❖ Exposure amount for derivatives in the BCBS output floor
  - ❖ The Global Systemically important Banks (G-SIB) buffer
  - ❖ Use in Single Counterparty Credit Limits
  - ❖ Use in the FDIC assessment charge
  - ❖ Comprehensive Capital Analysis and Review (CCAR)

Timing

- Banks should be permitted to adopt SA-CCR as soon as the Agencies issue the final rules, but the formal compliance deadline should be aligned with the mandatory compliance date for the Basel III reform package in the United States
- Piecemeal implementation of SA-CCR followed by further changes to the U.S. capital framework would be disruptive, burdensome and inefficient. The Basel package projects a January 2022 compliance date for relevant reforms
- Ask Agencies to provide clear guidance that banks will not have to incorporate SA-CCR into their Comprehensive Capital Analysis and Review (**"CCAR"**) projections until they have actually implemented SA-CCR into their spot capital ratios

Executive Summary (2/3)

It is critical the U.S. banking agencies review and appropriately calibrate their implementation of SA-CCR to ensure a controlled transition from CEM. We believe such a review is best pursued with the BCBS to ensure international consistency, but at the very least, should be considered ahead of U.S. adoption.

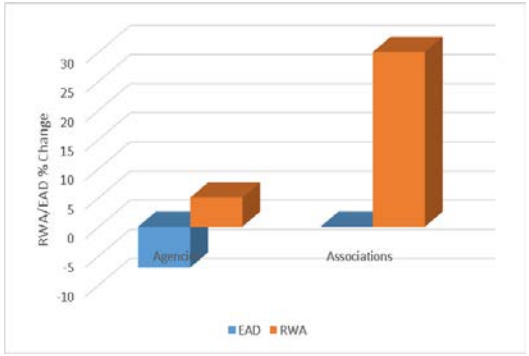
Industry Key Recommendations

1. Recalibrate the supervisory factors proposed for commodities and equities. If recalibration is not feasible, then at a minimum, revert to the supervisory factors for commodity derivatives in the Basel Committee standards
2. Provide a more risk-sensitive treatment of initial margin that accounts for initial margin mandated by regulators following the financial crisis as a mitigant to counterparty credit exposure
3. Reconsider the application and calibration of the alpha factor to avoid overstating the risk of derivatives
4. Recalibrate SA-CCR as it applies to transactions with CEUs to ensure consistency across regulatory frameworks for clearing, margin and capital. At a minimum do not apply the alpha factor to the exposure calculation for CEUs
5. Remove restrictions to net all transactions covered by an agreement that satisfies the requirements for “qualifying master netting agreements” under the existing U.S. capital rules
6. Ensure SA-CCR does not negatively impact client clearing

Executive Summary (3/3)

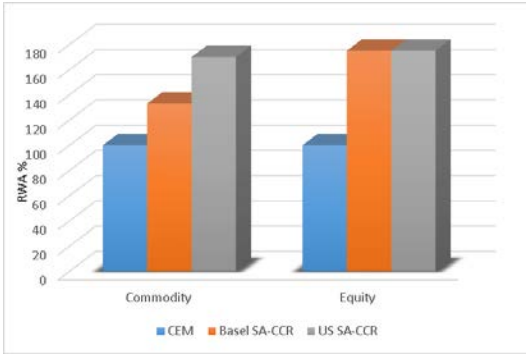
Overall Impact

Based on the preamble to the U.S. SA-CCR proposed rules, the Agencies expected EAD to decrease by 7% and standardized RWA to increase by 5% when compared to CEM. The Industry data shows the U.S. SA-CCR will result in EAD remaining flat and an increase in standardized RWA of 30% as compared to CEM



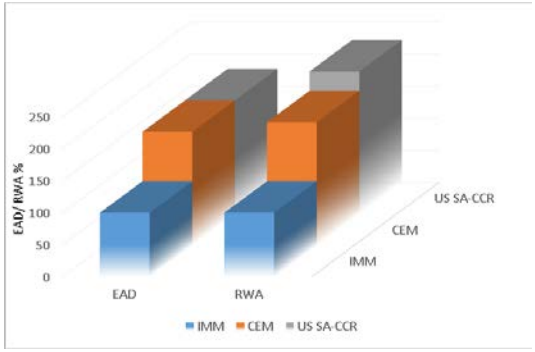
Supervisory Factors

US SA-CCR will also result in a significant increase of 70% for commodities and 75% for equities standardized RWA as compared to CEM. The US Agencies' proposal for SA-CCR diverted from BCBS for oil/gas commodities, this deviation results in an increase of 37% in standardized RWA for oil/gas when compared to the BCBS



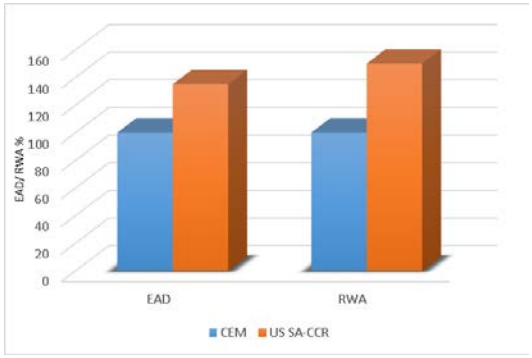
CEM/ SA-CCR/ IMM

Industry data shows, the U.S. SA-CCR EAD and RWA would be 77% and 122% respectively, higher than EAD and RWA under the advanced approaches where banks can use the internal models methodology (IMM)



Commercial End Users

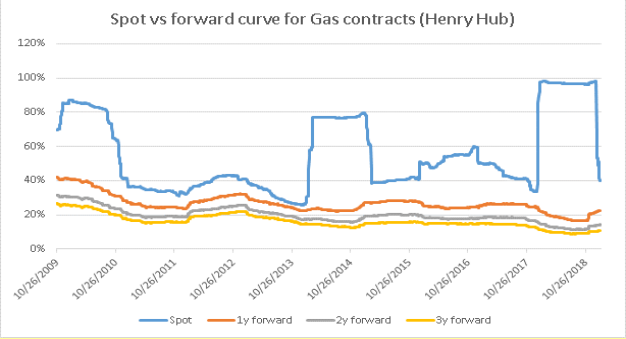
The proposal would result in a 35% increase in EAD and a 50% increase in standardized RWA for transactions with commercial end users as compared to CEM.



Key Recommendations (1(a)/6)

Commodities

- The Agencies should revisit the supervisory factors for the commodities asset class, as they are calibrated to higher volatilities than are justified by historical data for the commodities forward market
  - Commodity derivatives are frequently utilized by CEUs to hedge business risks, further increasing capital requirements for these entities
- Basel appears to have calibrated the supervisory factors for commodities based on volatility in rolling spot prices. However, CEUs hedge their long term business risks, thus many commodity derivatives have maturities of at least one year
  - For example, spot/prompt month prices for a commodity such as natural gas can change significantly from one month to another as a result of changes in weather; specifically the spot price of natural gas may change significantly over the course of the winter if one month is unusually warm and the following month is unusually cold. However, the price of the natural gas contract maturing in two years will move much less over that same time period
  - Based on the survey conducted by the Associations, less than 1% for electricity and gas and less than 10% for other commodity derivatives are linked to spot markets (see appendix)
- Based on the industry QIS, under SA-CCR exposure and RWA for commodities increase **29%** and **70%**, respectively, compared to CEM
- We urge the Agencies to recalibrate the supervisory factors for the commodities asset class, focusing on contracts that are driven by forward rather than spot prices to reflect the actual volatility of the commodity derivatives market:



- The volatility and supervisory factors across 1y, 2y and 3y forward curves across electricity, gas and oil were further analysed. The annualized volatility in the below table represents the maximum rolling one year annualized volatility based on daily returns between 2009 and 2019:

		1y forward		2y forward		3y forward	
Asset Class	Quality / Location	Annualized Vol	Supervisory factor	Annualized Vol	Supervisory factor	Annualized Vol	Supervisory factor
Electricity	PJMW Peak	29%	8%	24%	6%	21%	5%
	PJMW Base	26%	7%	22%	6%	19%	5%
	ERCOTN Peak	41%	11%	31%	8%	26%	7%
	ERCOTN Base	41%	11%	31%	8%	26%	7%
Oil	WTI	56%	15%	50%	13%	47%	13%
Gas	Henry Hub	42%	11%	32%	8%	27%	7%

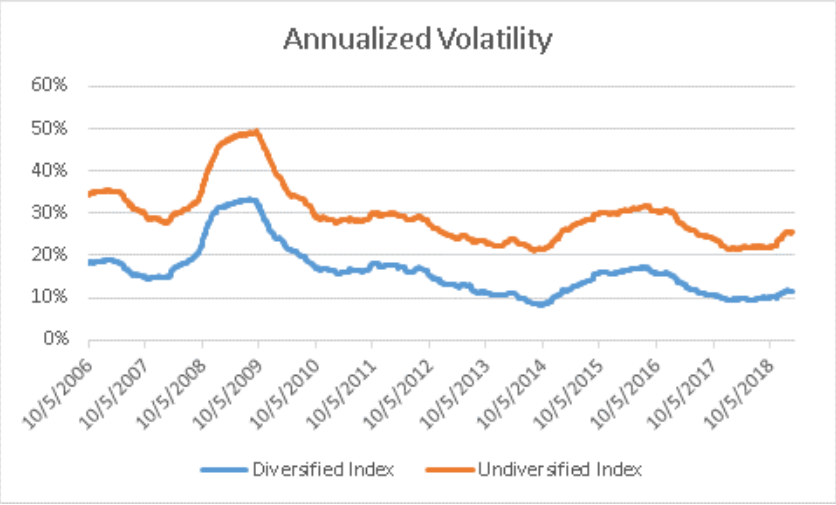
We propose the following recommendations:

- We request that the Agencies provide lower commodity supervisory factors based on the above proposed table
- If the Agencies cannot immediately recalibrate the commodity supervisory factors for U.S. implementation of SA-CCR, we strongly believe that the Agencies should ensure that the supervisory factors do not exceed the Basel standards

Key Recommendations (1(a)/6)

Commodities

- The Agencies should also consider introducing a new asset class for commodity indices, similar to those for credit and equity indices
  - Derivatives linked to multi-product or non-directional commodity indices are significantly less volatile than single product commodity derivatives, as these indices benefit from diversification across commodities included in the index
  - The chart below compares the rolling one-year annualized volatility of the Bloomberg Commodities Index[1] based on current composition where all underlying returns are fully diversified (Diversified Index) with the rolling one-year annualized volatility where the volatility of the underlying constituents are grossed up (Undiversified Index)
  - The chart demonstrates that diversification across different commodities lowers the volatility of the diversified index by around 50% on average compared to the undiversified volatilities of the constituents of the index



[1] The Bloomberg Commodities Index ("BCOM") is an example of a diversified commodities index. It includes assets across different commodity groups, including energy, agriculture, and precious metals. No individual commodity group has a weighting larger than 30%, thus allowing counterparties to gain broad and diversified exposure to the commodities market

Key Recommendations (1(b)/6)

Equities

- The Associations remain concerned about the increase in capital requirements for equities under SA-CCR. The CCR standardized RWA using SA-CCR instead of CEM would increase by **75%**. Given this material increase, the industry conducted a volatility analysis of the equity universe across three different windows (please see appendix for details on the analysis). Based on this analysis, the industry believes that that both introduction of granularity as well as recalibration of supervisory factors is warranted as per below
- Introduction of granular supervisory factors for equities
  - The industry recommends to differentiate equities based on quality and ultimately risk, at a minimum between:
    - IG / NIG (Market data during period of varying stress windows show that NIG equities are 30%-60% more volatile than IG equities)
    - Advanced / emerging markets (Market data during period of varying stress windows show that emerging market equities are 15%-25% more volatile than advanced market equities)
  - The industry also looked at two other factors (Large cap / Small Cap and Industry sectors) but could only find limited evidence that equities grouped by these factors show materially different volatility levels over time. Therefore, the industry does not recommend using them, at least not in isolation
- Recalibration of supervisory factors for equities
  - The industry recommends to recalibrate supervisory factors for equities. The supervisory factor of 32% under SA-CCR is almost twice as high than what market data would imply based on observed volatilities even under stressed market conditions

We propose the following recommendations:

- Introduce granular supervisory factors for equities by IG vs NIG and Advanced vs Emerging Markets
- Recalibrate the supervisory factors for equities

Key Recommendations (2/6)

Recognition of IM

- Initial Margin: the recognition of IM in the SA-CCR is far more conservative than CEM. IM reduces PFE under CEM by **43%** as opposed to **14%** under SA-CCR. Given the increase in IM requirements (phase-in of more counterparties under UMR / replacement of legacy trades with new trades) this impact is expected to grow
- To demonstrate the conservative calibration underlying IM recognition, the industry compared the SA-CCR add-on to the SIMM IM, the regulatory approved methodology to calculate IM under the uncleared margin requirements (UMR). Based on the 20 largest netting sets that are subject to SIMM IM, industry data shows that the ratio of SIMM IM to SA-CCR Add-on is 0.9. Given that SIMM IM is calculated at a 99th percentile, the IM to volatility ratio should be around $2.33\sqrt{2\pi} = 5.84$ under normal distribution assumptions. While SIMM IM makes certain assumptions that may not be appropriate for the capital model (e.g. MPOR of 10 business days), the ratio 5.84/0.9 = 6.5 shows a considerable conservatism of IM recognition under SA-CCR

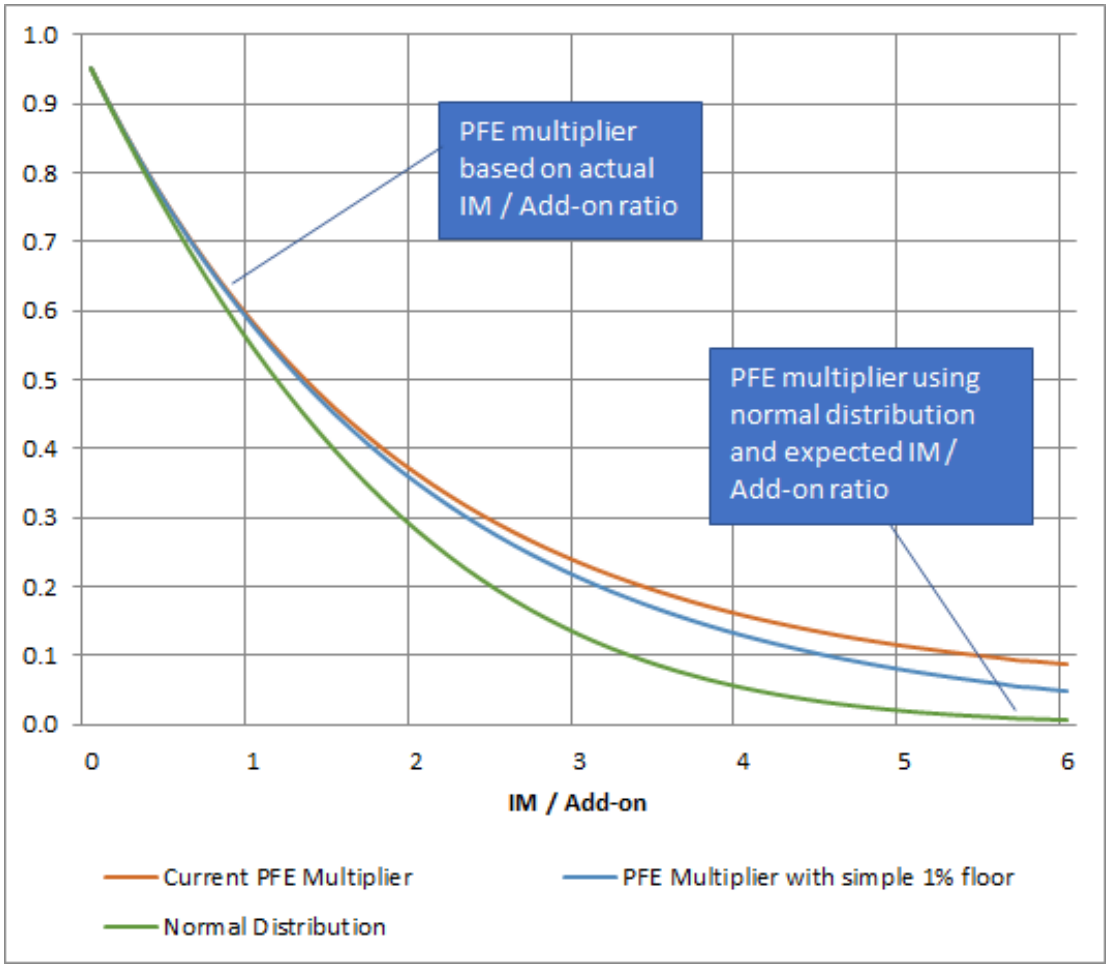
We propose the following recommendations:

- **Recommendation 1:** We recommend to divide the add-on in the denominator of the PFE multiplier by at least 2 to adjust for the conservative nature of the SA-CCR add-on and ensure a more risk-sensitive recognition of IM. This would increase the IM reduction from **14%** to **21%**
- **Recommendation 2:** We recommend making the following technical amendments to the floor. While The IM reduction would only increase to **22%**, it would be important for highly collateralized netting sets (e.g. equities):
  - Floor should be reduced to 1% given that IM models (across clearing and UMR) are calibrated to at least a 99th percentile
  - The floor should not impact the function itself, but the Agencies should set a floor for the result calculated based on the function. For example, the current exponential function could be amended as follows:

$$\boldsymbol{Revised\ PFE\ Multiplier} = \boldsymbol{min}\left\{1; \boldsymbol{Max}\left\{\boldsymbol{Floor}; \boldsymbol{exp}\left(\frac{V-C}{\boldsymbol{Addon}^{aggregate}}\right)\right\}\right\}$$

Key Recommendations (2/6)

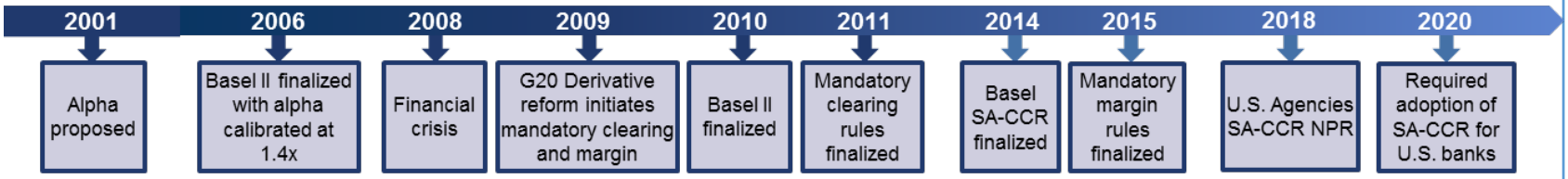
Recognition of IM



Key Recommendations (3/6)

Alpha Factor

- Basel undertook a significant effort to develop the SA-CCR methodology to modernize CEM, but maintained a legacy calibration of alpha
- Alpha increases the exposure calculated under the SA-CCR methodology by **40%**
- As shown below, alpha was introduced under Basel II to address the perceived shortcomings of IMM, including model risk, wrong way risk, and stressed parameters[2]



- **Many of the risks intended to be addressed through alpha have been captured in other rules, such as wrong way risk and stressed parameters in Basel III. Therefore using the same alpha calibration from Basel II results in a significant double count of exposures**
  - Basel III implemented an explicit Pillar 1 capital charge where specific wrong way risk has been identified, and requires banks to identify, monitor, and manage general wrong way risk
  - Basel III also modified IMM to capture stressed parameters within Effective EPE to address general wrong way risk
  - The academic research at the time supported an alpha calibration of **1.1 – 1.2.**[2] ISDA re-created these studies in 2017, yielding an alpha **below 1.1**[3]
- The proposal states that the rationale for alpha is to maintain appropriate conservatism over IMM. The industry quantitative impact study ("QIS") demonstrates that SA-CCR results in a significant increase of **77%** in exposure and **122%** in RWA when compared to IMM

We propose the following recommendations:

- **Remove alpha from the Replacement Cost ("RC")**: RC is a balance sheet amount that represents banks' official valuation of their derivative book, which is verified by independent auditors and is not subject to model risk that is applicable to IMM. RC is also not subject to any wrong-way risk, which alpha aims to correct for
- **Recalibrate alpha for the application to the Potential Future Exposure ("PFE")**: Various regulator and industry studies indicate an alpha less than 1.4 was appropriate under Basel II. Since then, Basel III has explicitly addressed some of these shortcomings but alpha has not been recalibrated

[2] ISDA-TBMA-LIBA (2003);

[3] "SA-CCR: Why a Change is Necessary" briefing note highlights findings of a quantitative impact study by ISDA and FIS using Basel hypothetical portfolios

Key Recommendations (4/6)

Commercial End Users

- **Recalibrate SA-CCR as it applies to transactions with CEUs to achieve risk-sensitivity and coherence in the regulatory framework**
  - Margined / un-margined distinction generally applicable in SA-CCR:
    - Does not result in risk-sensitive CEU requirements, given the reliance on non-margin collateralization practices in CEU transactions; and
    - Conflicts with policy objectives of margin / clearing exemptions for CEUs
  - CEUs have commercial/non-financial risk which they hedge with derivatives, which results in a directional portfolio
  - Alpha factor originally designed to address concentration and systemic market risk, which may be less applicable to CEU transactions
  - SA-CCR does not include exposure adjustments to reflect CEUs' investment grade status or the letters of credit, liens and similar pledges that reduce a banking organization's counterparty credit risk
    - ISDA survey indicates that banks generally recognize L/Cs and liens as risk mitigants, and L/Cs are reflected in EAD in some cases
    - Tension with treatment of credit derivatives in SA-CCR, which recognize IG, speculative grade, sub-speculative grade distinctions
    - L/Cs may serve in some transactions as the functional equivalent of IM or VM
  - CEUs typically use rates, FX and commodities
    - Positions are often long-dated
    - Overlap with Commodity SF concerns, given CEU presence in commodity derivatives markets
  - Significant potential "real economy" impacts, as recognized by the Agencies' rulemaking and the ISDA data study, which shows the proposal would result in a **35%** increase in EAD and a **50%** increase in standardized RWA for transactions with CEUs as compared to CEM

We propose the following recommendations:

- Recalibrate SA-CCR as it applies to transactions with CEUs to achieve risk-sensitivity and coherence in the regulatory framework
- At a minimum, do not apply the alpha factor to the exposure calculation for CEUs

Key Recommendations (5/6)

Netting Across a Single Qualified Master Netting Agreement (QMNA) for PFE calculation

- **Allow all agreements under a single QMNA to net consistent with treatment under U.S. law where netting is provided at close out regardless of the MPOR or CTM vs. STM treatment**
  - We appreciate the Agencies permitting netting across multiple Credit Support Annexes (CSAs) subject to a single QMNA
  - However, the requirement to differentiate netting sets based on MPOR, is inconsistent with the legal framework that provides that all contracts (regardless of MPOR) subject to a QMNA would net at close-out of the contract
  - In addition, differentiating STM (as unmargined) from CTM (margined) also is inconsistent with the legal framework where if these contracts are under a single QMNA, regardless of settlement mechanism, they will net at close-out
    - Different markets operate under CTM vs. STM (futures and options on futures)
    - It is neither possible nor appropriate from a risk perspective for banks to move all contracts to CTM
- **LCH's Swap Agent platform was recently introduced to simplify processing by aggregating and netting bilateral payment obligations between OTC derivative counterparties.**
  - Volume under this platform is expected to increase over time but banks are likely to have exposures both on and off platform
  - An ability to net CTM v. STM will allow for the accurate legal close out exposure measurement of these transactions

We propose the following recommendations:

- Allow all agreements, regardless of the MPOR, under a single QMNA to net consistent with treatment under U.S. law where netting is provided at close out
- Recognize the ability to net transactions under CTM and STM to accurately reflect the U.S. legal framework that allows for close out netting of exposures for both types of settlement

Key Recommendations (5/6)

Netting Across a Single QMNA for PFE Calculation - Example

- Consider the following example: Market Maker A is long a $100 position in the S&P 500 index hedged with a short delta adjusted $90 notional future on the S&P 500

Option and Future in Same Netting Set

		Delta Adjusted Notional Amount	MPOR/ Maturity	Supervisory Factor	Maturity Factor	Adjusted Derivative Contract Amt	Aggregate Add-On
Option on the S&P 500	CTM	100	5	20%	0.212	4.24	
Future position for S&P 500	STM	-90	10	20%	0.200	(3.60)	
Net position in S&P 500							**0.64**

Option and Future in Separate Netting Set

		Delta Adjusted Notional Amount	MPOR/ Maturity	Supervisory Factor	Maturity Factor	Adjusted Derivative Contract Amt	Aggregate Add-On
Option on the S&P 500	CTM	100	5	20%	0.212	4.24	
Future position for S&P 500	STM	-90	10	20%	0.200	(3.60)	
Net position in S&P 500							**7.84**

- Failure to allow a single netting set will be inconsistent with the risk, drive up costs for market makers and ultimately could lead to a decrease in liquidity for this important market
- The same dynamic is true for interest rate options (CTM) hedged with interest rate futures (STM)

Note that the example above assumes a 5 day MPOR for the Options on the S&P 500 while the NPR still dictates 10 days.

Key Recommendations (6/6)

Client Clearing

- **SA-CCR methodology for SLR and RWA should include an offset for IM and VM provided by a client in a cleared derivatives transaction**
  - Industry data shows that implementation of SA-CCR in the SLR without an offset for IM would not sufficiently address the negative consequences of the SLR's current treatment of client clearing under CEM
  - An offset for IM and VM in the SLR would reduce the existing disincentives for banking organizations to provide client clearing services without having a negative impact on overall safety and soundness of banking organizations
- **Clarify that the five business-day MPOR floor applies to client-facing cleared exposures if a clearing member that is a bank acts as an agent or intermediary for those transactions**
  - US Proposed Rulemaking states that the five business-day MPOR floor is applicable to "cleared derivatives", however, the Proposed Rulemaking also states that a client cleared exposure is an "OTC derivative" and not a "cleared derivative"
  - As a result, the Proposed Rulemaking would not extend the five business-day floor to client-facing cleared exposures. This treatment is inconsistent with the current U.S. IMM requirements and the Basel Committee standards for SA-CCR and would further disincentivize client clearing
- **The netting issue related to STM, discussed on slide 13 could have significant impact on client-facing cleared exposures**

We propose the following recommendations:

- SA-CCR methodology for SLR and RWA should include an offset for IM and VM provided by a client in a cleared derivatives transaction
- Clarify that the five business-day MPOR floor applies to client-facing cleared exposures if a clearing member that is a bank acts as an agent or intermediary for those transactions

Additional Recommendations (1 (a)/4)

Recognition of Diversification and Netting Benefits - FX

- The industry is concerned about the overestimation of FX exposures under both ways described in the US NPR:
  - Netting by currency pairs consistent with the BCBS rules (See appendix for a triangulation example)
  - Netting by currency excluding the settlement currency (double count issue by splitting up each currency pair into two exposures). Compared to netting by currency pair, EAD for FX would increase by **2%** and RWA by **3%**
- The industry believes that in principle netting by currency reflects FX exposures better but the double count inherent in this methodology change would need to be corrected through one of the two method (See appendix for an example):
  - Preferred Method: Incorporation of a correlation parameter into the net currency aggregation. The most straightforward approach would be to use the same SA-CCR formula already applied to equity / commodity and credit derivative exposures:

$$AddOn_{FX} = \left(\left[\sum_j \rho_{FX} AddOn_j^{ccy} \right]^2 + \sum_j (1 - \rho_{FX}^2) \left(AddOn_j^{ccy} \right)^2 \right)^{\frac{1}{2}}$$

    - EAD for FX under this option would decrease by **16%** and CCR RWA for FX by **13%** compared to the method specified currently in the NPR (currency pair netting)
  - Alternative Method: Take the maximum of the long and short positions:

$$AddOn_{FX} = Max \left(\sum_{AddOn_j^{ccy} < 0} \left| AddOn_j^{ccy} \right| ; \sum_{AddOn_j^{ccy} > 0} AddOn_j^{ccy} \right)$$

    - EAD for FX under this option would decrease by **9%** and CCR RWA for FX by **7%** compared to the method specified currently in the NPR (currency pair netting)

We propose the following recommendation:

- Incorporate a correlation parameter into a net currency aggregation for the FX asset class

Note: $AddOn_j^{ccy}$ in both formulas above refers to the adjusted derivative contract amount at the hedging set level, i.e. net currency exposure, which can either be positive or negative

Additional Recommendations (1 (b)/4)

Recognition of Diversification and Netting Benefits - IR

- The industry believes that SA-CCR should reflect diversification benefits across interest rate exposures in different currencies
- Correlation analysis across the four major currencies (USD, EUR, GBP, JPY), shows correlations between 0% and 70% for the period between 2005 – 2009, the period used to calibrate intra-currency correlations (see the appendix)
- Based on this the associations believe that a potential approach could be to calculate the exposure as the maximum under two correlation scenarios (Option 1 – please see appendix for formulation):
  - Correlation is 0% across interest rate exposure in different currencies
  - Correlation of 70% across interest rate exposures in different currencies
- An simpler approach would be to recognize diversification benefits through the following formula (option 2):

$$AddOn^{IR} = \sqrt{\left(\sum_j \rho_j AddOn_j\right)^2 + \sum_j \left(1 - (\rho_j)^2\right)(AddOn_j)^2}$$

  - While it is true that this formula looks similar to the preferred approach for FX (see previous slide), the difference is that that for FX there is no intra-hedging set aggregation across different buckets and therefore the AddOn at a hedging set level for FX can reflect directionality (i.e. whether the bank is net long or short a given currency). In contrast, $AddOn_j$ in the above formula would always be positive. This makes this formula less risk sensitive in the context of IR exposures as all IR exposures at a currency level are treated as equally additive regardless of whether the bank is net long or short

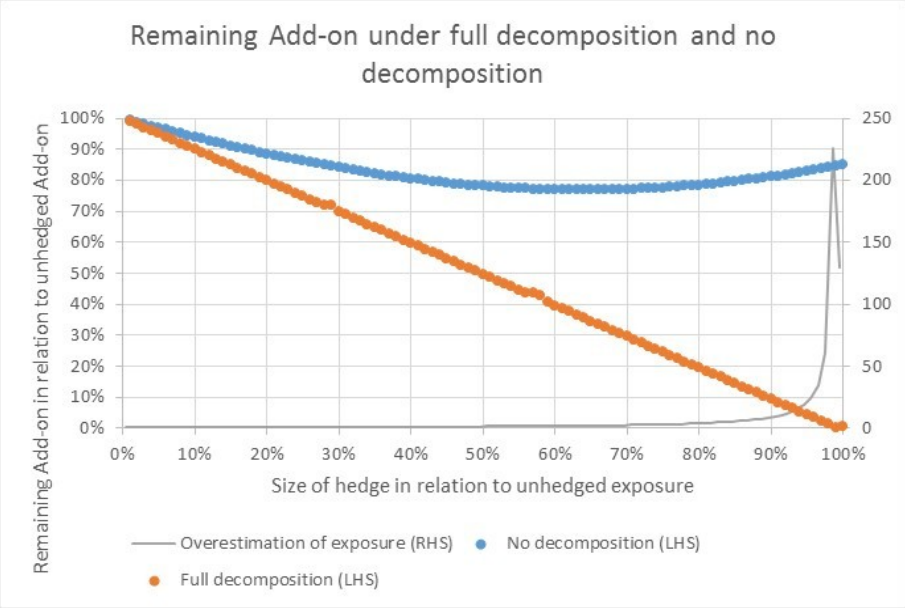
We propose the following recommendation:

- Consider diversification benefit across currencies within the IR asset class as per option 1

Additional Recommendations (1 (c)/4)

Recognition of Diversification and Netting Benefits - Decomposition

- To increase risk-sensitivity banks should be allowed to decompose indices across equity / credit and commodity indices
- With respect to equity and credit indices, this allows to reflect properly the risk of long and shorts in closely related indices. For example, within equities it is common to have option positions in the S&P 500 index and on the SPDR S&P ETF that tracks the index. The following graph shows the add-on for a long position in the ETF vs a short position in the index based on different hedge ratios depending on whether decomposition is allowed or not allowed:



- Clearly, treating these closely related indices as different names causes for the total exposure to be overestimated
- At a hedge ratio of 99%, so the short position in the index is 99% of the size of the long position in the index, the exposure assuming no decomposition is 226 times higher than when decomposition is allowed
- The same principle also applies to credit derivatives with different indices, e.g. CDX IG series 31 vs 30. In this particular case three of the 125 names are different

- In addition to credit and equity indices, the industry also believes that a bank should be allowed to decompose commodity indices (see the appendix for an example using BCOM).

We propose the following recommendation:

- Banks should have the option to decompose commodity, credit and equity indices to the underlying

Additional Recommendations (2 (a)/4)

Supervisory Delta Adjustment – Application of Internal Deltas

- **While we welcome the application of deltas in SA-CCR, we are concerned with the mandated use of the Black-Scholes formula for all options**
- **Black-Scholes is an appropriate approach for vanilla European options, but cannot be mathematically applied directly to calculate deltas for path dependent options such as Bermudan, Asian and Barrier options**
  - Black-Scholes formula's underlying assumption is that option pay-off is based on the underlier price on the maturity date, but for path dependent option the pay-off is not dependent on a price on a specific single point in the future but on the path the underlier takes during the option's tenor
- **One potential way to attempt to apply the Black-Scholes formula to a path dependent option is to replicate some aspects of the option by using multiple European options**
  - We believe that such an approach is flawed it will create more divergence as banks can use different number of options, different strikes, different maturities and different Greeks to replicate the path dependent options
  - Even though the methodology will use the Black-Scholes formula, it will still be dependent on a model based input (depending on the Greek the bank decides to replicate) for the calculation
  - It will also result in banks maintaining a parallel calculation for deltas that would be different from bank's internal risk management and may therefore lead to operational risks
- **Banks use internally developed models that rely on simulation techniques that incorporate different probabilities to calculate deltas for such options, which we believe best reflects the risk**

We propose the following recommendation:

- We request that the Agencies allow use of internal models to calculate deltas for path dependent options
  - Internal models are subject to governance and controls applicable to the banks' financial and regulatory disclosures
  - Regulatory capital rules allow use of internal deltas under the market risk rule, so it would be a consistent approach for calculating counterparty credit exposure

Additional Recommendations (2 (b)/4)

Adjusted Derivative Notional Amount (TBAs)

- The industry is concerned about the substantial increase in RWAs for agency TBAs under SA-CCR given the increase in the exposure amount through multiplication with the supervisory duration (typically around 16 on a 30 year agency pass-through security)
- The industry recommends the notional amount for TBAs should be defined as the time-weighted average of underlying pass-through securities reflecting the amortization schedule of the underlying mortgages. This will still result in a conservative estimate given that pass-through securities would also be subject to pre-payments. The following table issues the issue as well as the industry proposal:

							Risk-Based Exposure		SA-CCR based Exposure (no			SA-CCR based Exposure (time weighted notional)			
Program / Coupon	Program	Settle-ment Date	Under-lying maturity	Avg interest rate of mort-gages	Price [A]	Pool factor [B]	Effective Duration (based on BBG) [C]	Adjusted Notional based on Effective Duration [A*B*C]	SA-CCR supervis ory duration [D]	SA-CCR Adjusted Notional using current notional [B*D*100]	Over-estimation of duration in % [D/C-1]	Time Weighted average notional [E]	SA-CCR Adjusted Notional using time weighted notional [D*E]	Implied Duration using time weighted notional [F=((D*E)/(B*100))]	Over-estimation of duration in % [F/C-1]
FNCL 3%	FNMA 30y	Apr-19	5/25/2047	3.77%	97.4	0.931	6.8	619.3	15.1	1406.7	121%	53.9	815.3	8.8	28%
FNCI 3%	FNMA 15y	Apr-19	3/25/2033	3.69%	99.8	0.928	3.8	352.3	10.1	935.0	165%	49.7	500.9	5.4	42%

We propose the following recommendation:

- The notional amount for TBAs to be defined as the time-weighted average of the underlying pass-through securities reflecting the amortizing schedule of the underlying mortgages

Adjusted Derivative Notional Amount (IR swaps)

- The industry recommends a clarification with respect to the start date (S) as an input into the supervisory calculation of IR derivatives. For the vast majority of interest rate derivatives, the floating rate is determined at the beginning of the payment period and paid out at the end. Given that during the rest period the payments for both legs are fixed, the period till the next reset date should be removed from the supervisory duration. Hence, the industry recommends to define S as the earliest reset date.
- For example, for a fixed / floating interest rate swap with a remaining maturity of 5.75 years resetting semi-annually, the supervisory duration would be 4.75 instead of 5 if S is defined as per above

We propose the following recommendation:

- Define S as the earliest reset date for IR swaps

Additional Recommendations (2 (c)/4)

MPOR

- **The Proposed Rulemaking includes new language related to MPOR. The industry would like to confirm the MPOR determination under SA-CCR would be consistent with IMM**
  - The applicable MPOR floor is doubled for a derivative contract subject to an outstanding dispute over VM
    - The conditions for doubling MPOR in the proposed rulemaking is not consistent with IMM (a bank has to double MPOR only if over the two previous quarters, more than two margin disputes in a netting set have occurred and lasted longer than the MPOR).
  - The term "exotic derivative" is new and different from the comparable term "not easily replaceable" in the current rules

We propose the following recommendations:

- The industry requests confirmation that under SA-CCR, a bank has to double MPOR if over the two previous quarters, more than two margin disputes over the VM for a netting set have occurred and lasted longer than the MPOR
- The industry requests confirmation that the meaning of exotic derivative is consistent with the term not easily replaceable

Additional Recommendations (3/4)

Valuation Adjustments

- The SA-CCR proposal does not allow banks to adjust exposure for valuation adjustments such as CVA
- This approach is inconsistent with IMM, which allows for incurred CVA to be subtracted from the EAD, and the 2015 technical clarifications issued by the Agencies expanded this approach to CEM to allow a bank to reduce EAD by the CVA recognized for the fair value of derivatives reported on the bank's balance sheet under the Advanced Approach
  - The Agencies did not make a similar clarification for the standardized approach but indicated that they would revisit the treatment of valuation adjustments under the standardized approach in the context of future rulemakings
- Additionally, we believe that removing the double counting of valuation adjustments would also ensure that derivatives transactions with CEUs are not unduly penalized, as they tend to enter into unmargined derivatives

We propose the following recommendation:

- We request that the Agencies allow banks to deduct valuation adjustments such as CVA from EAD in SA-CCR to avoid double counting in the capital framework and to align with IMM

Additional Recommendations (4/4)

Supervisory Factors for Credit Derivatives

- While the industry understands that due to section 939A of the Dodd-Frank Act, the agencies cannot adopt the use of external credit ratings, we believe that a more risk-sensitive approach is advisable. In this context, the industry recommends for the agencies to take the same approach for single name credit derivatives under SA-CCR as for the simple CVA implementation to substitute references to external credit ratings with PD ranges as below table illustrates:

Basel Committee Table 2	Table 26 - Assignment of counterparty weight under the Simple CVA		Basel Committee Table 2	Moody's
Credit Ratings	Internal PD (in percent)	Weight w_i (in percent)	SA-CCR Supervisory Factor (in percent)	Average PDs (in percent)
AAA-AA	0.00-0.07	0.70	0.38	0.00-0.058
A	>0.07-0.15	0.80	0.42	0.092
BBB	>0.15-0.40	1.00	0.54	0.269
BB	>0.40-2.00	2.00	1.06	1.029
B	>2.00-6.00	3.00	1.6	3.191
CCC	>6.00	10.00	6.0	10.541

- Such granularity would be more risk sensitive and more dynamically reflect changes in bank's single name credit derivative exposures
- If the Agencies decide against the more granular approach, the industry believes that at least the calibration of the IG bucket should be reviewed. Generally, the IG supervisory factor of 0.5% is on the higher end of the range specified in the BCBS standards as per above. Industry QIS shows that a notional-weighted average supervisory factor of IG is 0.46%

We propose the following recommendations:

- We recommend granular supervisory factors by PD ranges consistent with the current simple CVA approach
- At a minimum the industry recommends to round the supervisory factors for single name credit derivatives to the hundredth decimal

Other Items for Consideration (1 /2)

GSIB

- **Interconnectedness**
  - The alpha factor should be excluded from the exposure calculation that feeds into the GSIB interconnectedness indicator, which was designed as a measure of a bank's activity.
- **Size**
  - Increased exposure under the SLR feeds into the GSIB size indicator, which compounds the impact of non-recognition of IM and VM for client cleared trades.

PFE Adjustment for Credit Derivatives in the SLR

- The Proposed Rulemaking would double-count exposures for long credit derivatives in the SLR. This should be removed by providing banks with the option to exclude these derivatives from the PFE calculation under SA-CCR.
- Avoiding the double count would be consistent with the current U.S. Basel III rules, the Basel Committee leverage ratio framework, and also the revised European Union Capital Requirement Regulations II.

Definition of Netting Set

- The Proposed Rulemaking changes the definition of "netting set" to cover "either one derivative contract…or a group of derivative contracts," whereas the U.S. Basel III rules currently define the same term as "a group of transactions."
- Changing the definition of "netting set" may have undue consequences on transactions not within the scope of SA-CCR (e.g., repo-style transactions).

Other Items for Consideration (2/2)

Default Fund Contributions

- We urge the agencies to revise Regulation HH to require that QCCPs regulated by the FRB provide any information required to calculate the QCCP's hypothetical capital requirement for their clearing members' RWA calculations.
- We also urge the agencies to work with other domestic and international regulators to ensure that necessary data is available to U.S. banks in time for implementation of SA-CCR, and to explicitly allow U.S. banks to rely on foreign QCCPs' hypothetical capital requirement produced under a Basel-compliant SA-CCR regime.
- As described in greater technical detail in Appendix 2.10 of the comment letter, there appear to be some technical issues with the proposed revisions to the capital requirements for default fund contributions:
  - One of the technical revisions for default fund RWA calculations omits the factor of 12.5. The Agencies should clarify whether this was intentional.
  - The formula for the hypothetical capital requirement of the QCCP is based on the exposure of a clearing member bank to the QCCP, rather than the exposure of the QCCP to clearing member banks. This is the opposite of BCBS 282, and appears to be a drafting error.
  - As written, the hypothetical capital requirement for QCCPs would increase as the QCCP collects collateral and default funds, which would penalize firms for posting risk-mitigating collateral and is contrary to the intention of the Basel Committee.

Other Technical Issues

- Certain cross references between sections seem to allow advanced approaches firms to use either SA-CCR or IMM to calculate RWA for cleared transactions and default fund contributions for the standardized approach, which seems contrary to the Agencies' intent.
- There are a few sections that appear to be misplaced and cross-references to sections that do not exist.
- There are a few sections where CEM references would ned to be replaced by SA-CCR references, in particular the IMM and CVA sections

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APPENDIX

Appendix
Key Recommendations (1 (a) /6) – Commodities Duration

Survey results of distribution of commodity derivative exposures across maturity buckets

Survey Results	Average % Value Across Respondents			
	Spot	<1Y	1-3Y	>3Y
Electricity	0.1%	31.5%	38.1%	30.2%
Gas	0.5%	38.4%	41.2%	19.9%
Other Energy (e.g. oil / coal)	4.2%	53.9%	37.4%	4.6%
Metals	8.8%	73.5%	16.4%	1.3%
Agriculture / Index	7.9%	81.7%	10.0%	0.4%

Appendix

Key Recommendations (1 (b)/6) – Equity Analysis

Equity analysis

Market Data analysis shows that IG / NIG and Advanced Markets / Emerging Market splits show consistent differences in volatilities:

IG / NIG:

	2008-2011			2011-2014			2014-2018		
Credit Quality	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor
IG	27,963,686	64.4%	17.1%	38,452,587	33.2%	8.8%	45,710,072	32.0%	8.5%
Non-IG	1,325,752	82.0%	21.8%	1,768,893	49.3%	13.1%	2,932,701	50.4%	13.4%
NR	6,365,904	64.3%	17.1%	7,924,169	38.6%	10.3%	9,183,868	39.2%	10.4%
Grand Total	35,655,342	65.1%	17.3%	48,145,649	34.7%	9.2%	57,826,641	34.1%	9.1%

Advanced Markets / Emerging Markets:

	2008-2011			2011-2014			2014-2018		
Country Class	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor
Advanced	26,889,280	62.7%	16.7%	38,312,289	33.6%	8.9%	45,922,485	32.3%	8.6%
Emerging market	8,766,062	72.4%	19.3%	9,833,360	38.7%	10.3%	11,904,156	40.9%	10.9%
Grand Total	35,655,342	65.1%	17.3%	48,145,649	34.7%	9.2%	57,826,641	34.1%	9.1%

However, this is less the case for large cap / small cap or for a more granular differentiation by sectors:

	2008-2011			2011-2014			2014-2018		
Market Cap	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor
Large Cap	35,072,680	65.1%	17.3%	47,690,050	34.6%	9.2%	57,389,409	34.0%	9.0%
Small Cap	582,662	65.6%	17.4%	455,599	43.3%	11.5%	437,232	48.0%	12.8%
Grand Total	35,655,342	65.1%	17.3%	48,145,649	34.7%	9.2%	57,826,641	34.1%	9.1%

Appendix

Key Recommendations (1 (b)/6) – Equity Analysis

Equity analysis

	2008-2011			2011-2014			2014-2018		
Industry Sector	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor	Market Cap (in $MM)	Annualized Volatility	Supervisory Factor
Basic Materials	3,439,907	79.4%	21.1%	2,772,514	38.7%	10.3%	2,887,801	44.7%	11.9%
Communications	3,286,739	56.3%	15.0%	4,707,466	32.2%	8.6%	6,620,520	34.1%	9.1%
Consumer, Cyclical	3,423,525	64.9%	17.3%	5,201,228	37.0%	9.8%	5,818,051	36.0%	9.6%
Consumer, Non-cyclical	6,083,900	46.6%	12.4%	9,482,707	27.6%	7.3%	11,310,204	29.7%	7.9%
Diversified	301,288	59.8%	15.9%	393,230	34.7%	9.2%	374,760	31.3%	8.3%
Energy	4,873,401	72.0%	19.1%	4,270,401	34.6%	9.2%	4,911,559	41.2%	11.0%
Financial	11,048,598	80.6%	21.4%	12,688,364	39.6%	10.5%	11,048,598	32.9%	8.8%
Industrial	3,260,315	63.7%	16.9%	4,652,192	36.7%	9.8%	5,393,612	33.8%	9.0%
Technology	2,737,286	58.1%	15.5%	3,788,262	34.8%	9.3%	5,964,867	33.6%	8.9%
Utilities	1,501,602	51.3%	13.7%	1,829,052	29.7%	7.9%	1,856,903	30.6%	8.2%
Grand Total	35,655,342	65.1%	17.3%	48,145,649	34.7%	9.2%	57,826,641	34.1%	9.1%

Appendix
Key Recommendations (4/6) – LOC/ Liens Survey

Survey results of the application of credit risk mitigants for credit risk purposes

Supplemental Survey #1 Results - US NPR SA-CCR QIS

Letters of Credit

		Yes	No
Q.1	For risk management purposes do you recognize letters of credit (LOR) as a risk mitigating feature?	86%	14%
Q.2	For risk management purposes do you reflect LORs in the EAD estimate?	43%	57%

Liens on Financial Assets*

*This relates to the type of "collateral" that is not removed from automatic stay and / or does not meet the financial collateral definition.

		Yes	No
Q.3	For risk management purposes do you recognize liens on financial assets as a risk mitigating feature?	86%	14%
Q.4	For risk management purposes do you reflect liens on financial assets in the EAD estimate?	0%	100%

Appendix

Additional Recommendations (1 (a)/4) - FX

FX Netting by currency pair (Triangulation issue)

- The issue with the current method to net by currency pair overestimates exposures when a combination of trades with different currency pairs produces net flat currency exposures as the following example illustrates:

FX Margined: ***Netting by currency pair***			Notional Rec ($)	Notional Pay ($)	PFE	* 1.4 =	SA-CCR Exposure EAD
Trades	Rec	Pay			48,741		68,238
FX Forward 1	EUR	GBP	1,226,700	1,248,420			
FX Forward 2	GBP	USD	1,467,560	1,500,000			
FX Forward 3	USD	EUR	1,400,000	1,345,787			

- The alternative suggested to net by currency excluding the settlement currency would fix this issue:

FX Margined: ***Netting by currency***		Net Notional ($)	PFE	* 1.4 =	SA-CCR Exposure EAD
Trades	Currency		5,259		7,362
Net Currency 1	USD	-100,000			
Net Currency 2	GBP	219,139			
Net currency 3	EUR	-119,087			
If settlement currency is USD:			4,059		5,682

- By recognizing the relationship across the three trades, the alternative approach is able to produce a more accurate exposure that is less than 1 tenth of the exposure produced under the method that hedges by currency pairs

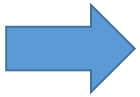
Appendix

Additional Recommendations (1 (a)/4) - FX

Alternative FX aggregation (Example)

- The following simple example illustrates the option of taking the maximum of the net long and short currency positions. It consists of seven FX forwards all with USD 100 equivalent exposures:

Trades	Buy	Sell
1	GBP	USD
2	EUR	JPY
3	JPY	GBP
4	EUR	CHF
5	CAD	USD
6	AUD	EUR
7	AUD	USD



Ccy	Long	Short
GBP		
EUR	100	
JPY		
CHF		100
CAD	100	
AUD	200	
Sum	400	100

- In this example, the total long positions equal 400 and total short positions equal 100. The maximum rule would capture the exposure at 400. This result can be rationalized by the fact that each currency exposure is always relative to other currency. In the above example, the EUR exposure would be matched with the CHF exposure. The CAD / AUD exposures would matched with the settlement currency of USD. Based on that the total exposure is 400 and not the sum of the longs and short of 500
- Under the preferred approach that incorporates the correlation parameter, the corresponding exposure would be 280 instead of 400 or 500

Appendix

Additional Recommendations (1 (b)/4) - IR

Formulation of Option 2 for IR add-on aggregation

- Under option 1, the exposure would equal the maximum exposure under the two scenarios. In particular, $AddOn_{Non-correlated}$ captures the 0% correlation while $AddOn_{LS-correlated}$ the 70% correlation:

$$AddOn_{IR} = max(AddOn_{Non-correlated}, AddOn_{LS-correlated})$$

where,

$$AddOn_{Non-correlated} = \sqrt{\sum_i AddOn_i^2}$$

i = refers to all IR add-ons by currency

and,

$$AddOn_{LS-correlated} = max(AddOn_{Long-correlated}, AddOn_{Short-correlated})$$

where,

$$AddOn_{Long-correlated} = \sqrt{\left(\sum_j \rho_j AddOn_j\right)^2 + \sum_j \left(1 - (\rho_j)^2\right)(AddOn_j)^2}$$

j = refers to IR AddOns where the net currency position is positive

$$AddOn_{Short-correlated} = \sqrt{\left(\sum_k \rho_k AddOn_k\right)^2 + \sum_k (1 - (\rho_k)^2)(AddOn_k)^2}$$

k = refers to IR AddOns where the net currency position is negative

Appendix

Additional Recommendations (1 (b)/4) - IR

Formulation of Option 1 for IR add-on aggregation

Trade Example Directional

Currency	<1Y	>=1Y and <5Y	>5Y	Total	Add-on
EUR	-5	-10	2	**-13**	**12.85**
USD	1	-5	-3	**-7**	**6.87**

Current Approach	**19.72**

Option 1

$AddOn_{Long\text{-}Correlated}$	0	
$AddOn_{Short\text{-}Correlated}$	18.35	
$AddOn_{LS\text{-}correlated}$	**18.35**	
$AddOn_{Non\text{-}correlated}$	14.57	
$AddOn_{IR}$	**18.35**	**-7%**

Trade Example Balanced

Currency	<1Y	>=1Y and	>5Y	Total	Add-on
EUR	-5	-10	2	**-13**	**12.85**
USD	2	5	4	**11**	**9.58**

Current Approach	**22.43**

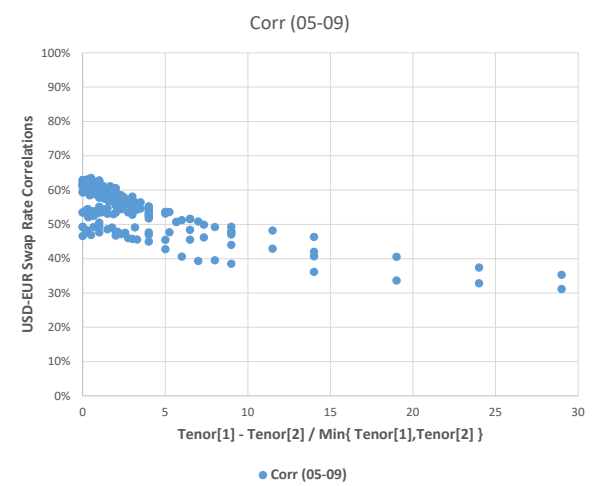
Option 1

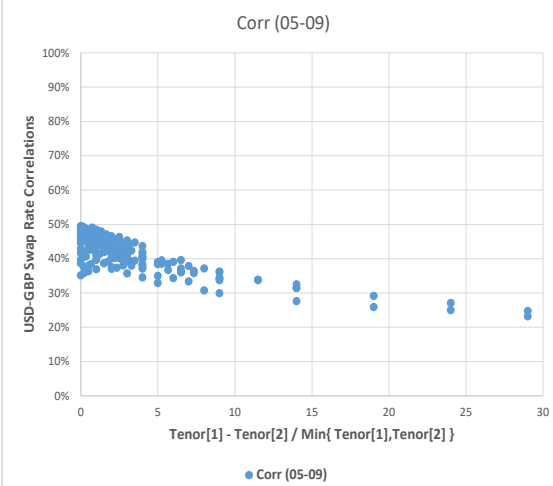
$AddOn_{Long\text{-}Correlated}$	9.58	
$AddOn_{Short\text{-}Correlated}$	12.85	
$AddOn_{LS\text{-}correlated}$	12.85	
$AddOn_{Non\text{-}correlated}$	**16.02**	
$AddOn_{IR}$	**16.02**	**-29%**

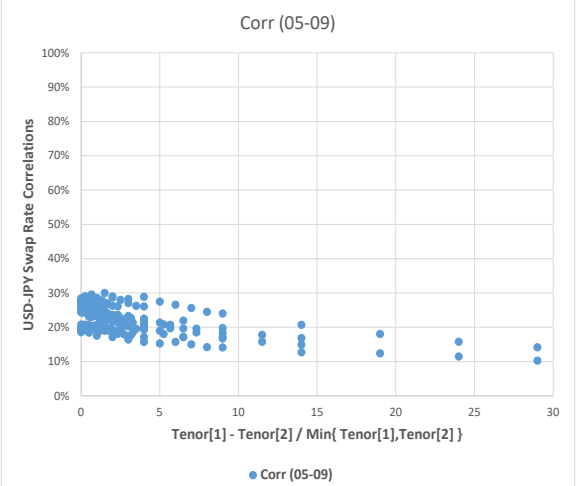
Appendix

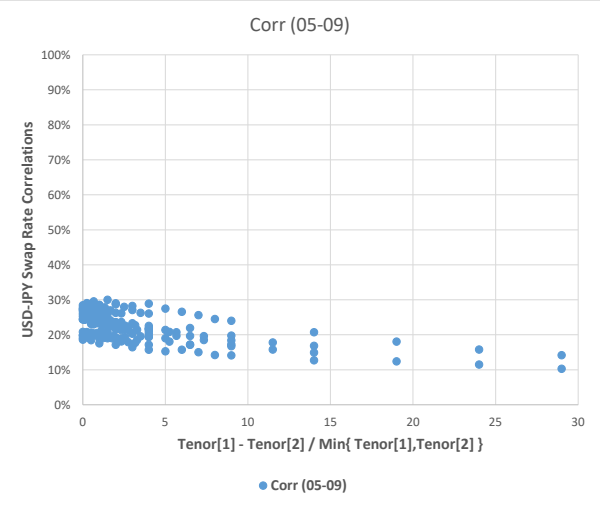
Additional Recommendations (1 (b)/4) - IR

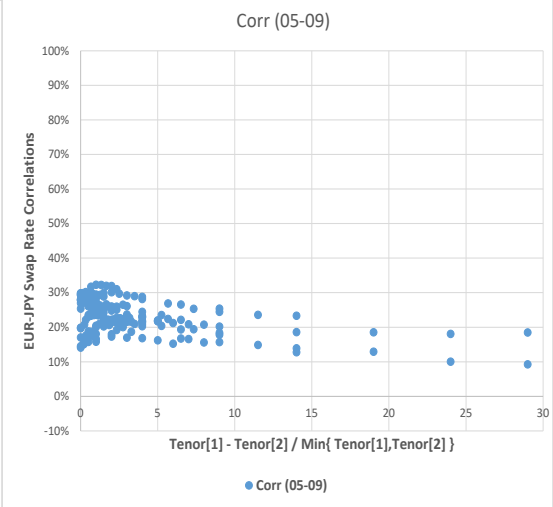
Graphs with IR cross-correlations

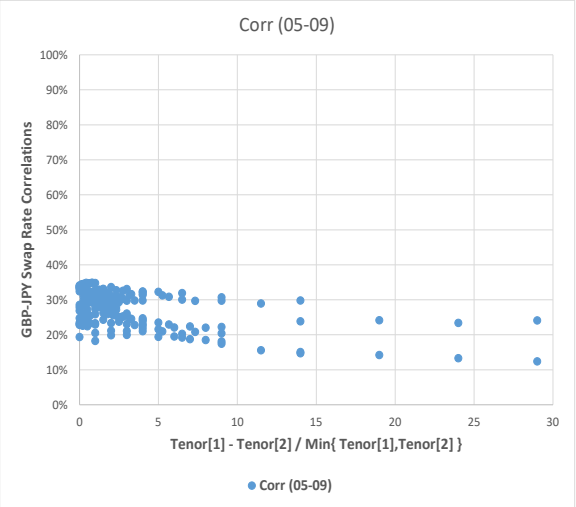












Appendix
Additional Recommendations (1 (c)/4)

Recognition of Diversification and Netting Benefits - Decomposition

- The following example illustrates this for the common Bloomberg Commodity index (BCOM):

Hedging Set	Commodity	Weight	No Decomposition	Decomposition
Energy	Crude oil (WTI)	7.66%		
	Brent	7.34%		
	Heating oil	2.16%		1.13
	Gasoil	2.62%		
	Gasoline	2.29%		
	Natural Gas	8.26%		
Agriculture	Wheat	3.14%		
	Wheat (Kansas)	1.29%		
	Corn	5.89%		
	Soybean Oil	3.10%		
	Soybean	6.03%		
	Soybean Meal	3.44%		1.10
	Cotton	1.42%		
	Coffee	2.48%		
	Sugar	3.15%		
	Lean Hogs	1.85%		
	Live Cattle	4.09%		
Metals	Gold	12.24%		
	Silver	3.89%		
	Nickel	2.71%		1.08
	Zinc	3.21%		
	Copper (COMEX)	7.32%		
	Aluminium	4.41%		
Sum		100.00%	5.40	3.31

- This example is based on a margined derivative exposure of 100 (MPOR = 10 days) with identical supervisory factors applied to all commodities consistent with the international rules in order to focus solely on the impact of diversification benefits
- As shown, the add-on of the index is almost 40% lower applying decomposition compared to the application of a singles supervisory factor to the index

Appendix
Additional Recommendations (2 (a)/4) – Internal Deltas

Application of Internal Deltas - Example

- Below is an example of our attempt to calculate delta for a 5-year SPX option with a 75% spot as the knock-in level using the Black Scholes
- The knock-in feature makes this option a path dependent option as the pay-off is not only dependent on the underlying asset price on maturity date but the price has to drop below 75% of the spot at any point before maturity for the option to come into existence
  - The Black-Scholes formula fails to capture this path dependence of the option and hence we cannot apply the formula directly to the option
- In order to apply the Black-Scholes, we have replicated the knock-in option by building a hypothetical portfolio of European options consisting of three options that will match the internally calculated delta of the knock-in option
  - Banks can choose to replicate any of the other Greeks (vega, theta, gamma) or the NPV to create the portfolio
- The three options we chose for this example are:
  - Option 1: SPX with a spot price equal to 90% of the knock-in option spot
  - Option 2: SPX with a spot price equal to knock-in option spot
  - Option 3: SPX with a spot price equal to 110% of the knock-in option spot
- Additionally, we have replicated the delta at the current spot price of the knock-in option as well as assuming spot price up 20% and down 20%. This is done to ensure that the calculated delta values hold true under different scenarios

	Knock in Option	Replicating Options		
Scenario	Delta based on internal models	Option 1	Option 2	Option 3
Spot Down 20%	(0.12)	0.44	0.32	0.21
Current Spot	(0.07)	0.69	0.61	0.50
Spot Up 20%	(0.03)	0.85	0.80	0.74
Rep Quantity		(1.20)	1.36	(0.12)
Supervisory Delta	0.01	0.82	0.80	0.79

Deltas calculated using the Black Scholes formula on the replicating European Options under different scenarios

- The above assumptions estimate a delta of 0.01 for the knock-in option, whereas the delta calculated based on the internal model is 0.07. The estimated delta of 0.01 varies significantly with the changes in the underlying assumptions

Appendix

Additional Recommendations (3/4) - CVA Example

CVA - Example

- Illustrative example of the double count under the SA-CCR proposal:
  - On day 1, Airline A enters into a 5-year, $100Mn notional crude oil swap with Bank B to hedge its business risk of the price increasing on crude oil. Bank B will book the swap at $0 NPV, i.e. fair value. As Airline A is a CEU, there is no agreement to exchange margin
  - One year later, crude oil prices have dropped, resulting in a positive NPV of $10Mn. However, credit spreads on Airline A have widened and so Bank B reserves $2Mn of CVA to account for any potential default losses. Bank B will therefore reflect a net income of $8Mn, which consists of a $10Mn mark-to-market gain on the crude oil swap, offset by the $2Mn CVA reserve. Bank B's balance sheet will also reflect the net balance of $8Mn
  - If Airline A were to default on day 365, the most that Bank B could lose is $8Mn because it has already reserved $2Mn. However, SA-CCR would require that banks use the full $10Mn in calculating exposure, thereby assuming that banks can continue to lose the full $10Mn, i.e. the risk neutral NPV
    - This results in double counting the $2Mn of reserve since it results in a reduction in shareholders' equity and is then also included in the calculation of the SA-CCR exposure. Both the numerator and denominator of the capital ratios account for the reserve
    - Therefore, to avoid this double counting of reserves, we ask that banks be able to reduce SA-CCR exposure by any reserves already accounted for in shareholders' equity