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1. Introduction

In December 2017, the Basel Committee of Banking Supervision (BCBS) published the regulatory framework “Basel III: Finalising post-crisis reforms” (BCBS 424, see [6]) including new rules for the calculation of CVA risk capital, in an attempt to

- ensure that all important drivers of CVA risk, including CVA hedges, are covered in the Basel regulatory capital standard
- align the capital standard with the fair value measurement of CVA applied under various accounting regimes
- ensure consistency with the proposed revisions to the market risk framework under the Basel Committee’s Fundamental Review of the Trading Book (BCBS 352 and 457, see [1])

This paper highlights the key differences between current and future calculation approaches for regulatory CVA risk capital charges. The Basel Committee proposes two new CVA risk capital frameworks, to acknowledge banks’ different capabilities regarding the computation of CVA sensitivities:

- the standardized approach (SA-CVA), which is based on CVA sensitivities
- the basic approach (BA-CVA), based on a formula similar to the current standardized method

In section 2, we define different sample portfolios as well as a market data environment which we then use to calculate example CVA risk capital requirements for the different approaches. In section 3, we present and discuss our calculation results. We conclude by summarizing and by recommending courses of action.

Current Standardized Approach

The current standardized approach for the calculation of the CVA risk capital charge has been implemented as part of the Capital Requirements Regulation (CRR, see [9], article 384); the corresponding formula for an unhedged portfolio is:

\[ K_{\text{CVA}} = 2.33 \sqrt{h} \sqrt{\left( \sum_w 0.5 \cdot w_i \cdot M_i \cdot \text{EAD} \right)^2 + \sum_0.75 \cdot w_i^2 \cdot (M_i \cdot \text{EAD})^2} \]

where:

- \( h \) is the risk horizon, i.e. 1 year
- \( i \) is the considered counterparty
- \( w_i \) is the counterparty risk weight based on rating class (1 to 6)
- \( M_i \) is the effective maturity of the set of transactions with counterparty \( i \)
- \( \text{EAD}_i \) is the regulatory exposure for counterparty \( i \), determined according to one of the regulatory methods (such as e.g. the Current Exposure Method)

Future Basic Approach

Banks must use the BA-CVA, which closely relates to the current standardized method unless they receive approval from their relevant supervisory authority to use the SA-CVA. Improvements to the current standardized approach include a better recognition of eligible credit risk hedges. Exposure hedges will remain excluded from capital charge calculations in the BA-CVA. The formula for the basic approach in its reduced form (without CDS or CDS index hedges) is (see [6]):

\[ K_{\text{reduced}} = \sqrt{\left( \rho \cdot \sum c \text{ SCVA}_c \right)^2 + (1 - \rho^2) \cdot \sum c \text{ SCVA}^2_c} \]

where:

- \( \rho = 0.5 \)
- \( c \) is the considered counterparty
- \( \text{SCVA}_c \) is the CVA capital requirement that counterparty \( c \) would receive if considered on a stand-alone basis, calculated as:
  \[ \text{SCVA}_c = \frac{\text{RW}_c \cdot \sum N_S \cdot M_{NS} \cdot \text{EAD}_{NS} \cdot DF_{NS}}{\rho \cdot \sum c \text{ SCVA}_c} \]
- \( \text{RW}_c \) is the counterparty risk weight based on credit quality (grade) and sector (similar to SA-CVA)
- \( \text{EAD}_{NS} \) is the regulatory exposure at default of the netting set \( NS \), determined according to the SA-CCR (see [8])
- \( M_{NS} \) is the effective maturity of the netting set \( NS \)
- \( DF_{NS} \) is the supervisory discount factor of the netting set \( NS \)

1 The internal model approach IMA-CVA, which was discussed in a consultative document (BCBS 325, see [2]) and in the CVA QIS (see [4]), has been eliminated later on; the elimination was announced in a consultation paper regarding credit risk RWA (BCBS 362, see [5]) and confirmed in BCBS 424 ([6]). A further approach may be followed by banks with less than 100 billion EUR notional in uncleared bilateral derivatives. These may choose to set the CVA risk capital equal to their capital requirement for counterparty credit risk (BCBS 424, see [6]).

2 For banks using the IMM to calculate EAD, the supervisory discount factor is set to 1.
\( \alpha \) is the so-called conversion factor which is defined for CCR capital in the IMM and in the SA-CCR; it is currently set to 1.4.

Differences between the current standardized approach and the basic approach are further outlined in section 3, where the resulting quantitative impact is discussed.

Future Standardized Approach (SA-CVA)

The new standardized approach for CVA risk (SA-CVA) is based on CVA sensitivities, following the idea and principles of the standardized approach for market risk (SA-TB) defined as part of the FRTB (see [1]). In contrast to SA-TB, banks need supervisory approval to use SA-CVA and the following requirements must be fulfilled (see [6]):

1. The calculation of regulatory CVA and CVA sensitivities from predefined market risk factors must be based on the simulation of exposure paths (discounted with the risk-free interest rate).

2. Default probabilities must be market-implied and the credit spreads of illiquid counterparties must be approximated with a suitable method.

3. The bank must have a dedicated CVA desk or similar function responsible for risk management and hedging of CVA.

Banks qualifying for SA-CVA need to follow general principles to calculate regulatory CVA. The exposure scenarios must be calculated from the same models, calibration, market, and transaction data as used for accounting CVA (and/or front-office CVA). Model calibration must be carried out with respect to market-based parameters wherever possible. The recognition of collateral requires the capturing of all relevant contractual features and a margin period of risk with a supervisory floor of at least 10 business days. The requirements on documentation, independent validation, and processes show similarities to those applicable to internal model banks (compare IMM-CCR).

Generally, CVA risk assumes that the bank itself is default risk-free. In particular, it disregards the debt valuation adjustment (DVA).

The formula for regulatory capital based on SA-CVA is:

\[
K_{CVA} = m_{CVA} \cdot \sqrt{\sum_{b} K_{b}^2 + \sum_{b \neq c} \gamma_{bc} \cdot K_{b} \cdot K_{c}}
\]

The multiplier \( m_{CVA} \) has default value 1.25 but may be increased by the bank’s supervisory authority, e.g. to capture wrong way risk, and the \( \gamma_{bc} \) are regulatory correlation parameters (see [6]). The so-called bucketed capital charges \( K_{b} \) is defined as:

\[
K_{b} = \sqrt{\left( \sum_{k \in b} WS_{k}^2 + \sum_{k \in b, k \neq l} \rho_{kl} \cdot WS_{k} \cdot WS_{l} \right) + R \cdot \sum_{k \in b} (WS_{k}^{\text{Hdg}})^2}
\]

These are based on weighted sensitivities \( WS_{k} \) as well as intra-bucket correlation parameter \( \rho_{kl} \) and \( R \) is the hedging disallowance factor, set to 0.01, that prevents the possibility of perfect hedging of CVA risk.

2. Sample Calculations

To carry out sample calculations we define synthetic portfolios and consider actual market data\(^3\) in order to obtain a realistic assessment of potential CVA risk capital charges. Our calculations of SA-CVA and BA-CVA capital charges are based on the risk weights that have been introduced in the latest BCBS paper (BCBS 424, see [6]).

Sample portfolios and market data

Our sample portfolios consist of interest rate swaps (EUR) and cross currency swaps (USD/EUR) and cover typical maturities and moneyness levels. They include the following spot starting trades:

A. Vanilla swap

- Currency: EUR
- Notional: 100m
- Maturities: 1y, 4y and 10y
- Pay: annual fixed rate, fixed at Euribor 6M
- Rec: bi-annual floating rate, fixed at Euribor 6M

B. Cross currency swap

- Currency: EUR/USD
- Notional\(^5\): 100m EUR vs USD amount corresponding via spot FX
- Maturities: 1y, 4y and 10y
- Pay: bi-annual floating rate, fixed at Euribor 6M
- Rec: bi-annual floating rate, fixed at USDLibor 6M

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\(^3\) This market data reflects a snapshot taken as of the end of October 2017.

\(^4\) We assume trades at par to have a market value slightly positive, ergo NGR is set to 1.

\(^5\) The notional of Trade B are assumed to be exchanged at the start and maturity of the swap.
C. Same swap legs as Trade A but with fixed rate =
   AT PAR · 1.2 and maturity 10y

D. Same swap legs as Trade A but with fixed rate =
   AT PAR · 0.8 and maturity 10y

All calculations are carried out using the regulatory
formulas that apply in the non-hedged case. Both the
uncollateralized and the collateralized case (with and with-
out initial margin) are considered. The CSA is assumed
to have a minimum transfer amount (MTA) of 500k EUR6,
a bilateral threshold of 0 and a margin period of risk
(MPOR) of 10 business days. Initial margin is assumed to
cover the 99% confidence interval of the clean PnL over
the MPOR, in line with BCBS 3177 (see [7]).

For the sample calculations, we consider two different
types of counterparties:

1 A financial counterparty with an investment grade
   rating. Interbank portfolios typically benefit from signifi-
cant netting effects, and they are generally collateralized,
with the collateral mitigating exposures at default.

2 A corporate counterparty with an investment grade
   rating. Portfolios with corporates are generally smaller,
with no large netting effects and no collateral in place.
We point out that the exemption of certain corporate
counterparties with respect to CVA risk, which is currently
valid under European regulation, is not recognized in this
paper.

The following market data as of 30 October 2017 is used
for the calculations:

- Interest rate (IR) curves for both currencies
  (discounting via EONIA and USD FEDFUNDS and
  projection of forward rates via USDLibor and Euribor)
- IR volatilities based on co-terminal ATM swaptions up
to 30 years
- EUR/USD FX spot, FX basis curve, FX volatilities up to
  fifteen years
- A flat CDS spread of 40 bps8 for both the financial and
  the corporate counterparty
- A generic recovery rate of 40% for PD computations
  and CVA computations
- Realistic correlations for IR and FX, based on a 4Y
  history of zero rates and FX spot rates

Simulation approach

For BA-CVA and SA-CVA, we implement a framework
that complies with the standards and definitions laid out
in the finalized BCBS framework [BCBS 424, see [6]]. For
CVA sensitivity calculations, we use a hybrid Hull-White
model with one driving Brownian motion per IR curve
and one driving Brownian motion per FX rate. Exposures,
variation margin and initial margin (IM) are simulated
within the same Monte Carlo framework. The pathwise
simulation of IM is based on the Nadaraya-Watson kernel
regression method [13]. As required by BCBS 424, sen-
sitivities are based on 1 bp tenor shifts for IR and credit
spread delta and on relative 1% shifts for FX delta, as well
as relative parallel 1% shifts for IR and FX volatilities for
vega sensitivities. All calculated sensitivities are used
as an input to our aggregation tool, which computes the
CVA risk capital charges. An important additional input
for the calculation of capital charges is given by each
counterparty’s risk weight. Our selection of investment
grade financial and corporate9 counterparties leads to
the following counterparty risk weights for the current
standardized approach and the future basic approach,
and credit spread delta risk weights for the future stan-
dardized approach:

<table>
<thead>
<tr>
<th>Approach</th>
<th>Financial</th>
<th>Corporate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>1.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Standardized</td>
<td>5.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>BA-CVA</td>
<td>5.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>SA-CVA</td>
<td>5.0%</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

Table 1: Risk weights for the current and future approaches

6 According to BCBS 317 (see [7], 2.3), “all margin transfers between parties may be
subject to a de-minimis minimum transfer amount not to exceed €500,000”.
7 The threshold of the initial margin is set to zero (BCBS 317 [7] allows max. €50m) and
it is assumed that Trade B is not subject to the FX notional exemption (which may be
applied to cross currency swaps according to BCBS 317 [7]).
8 For reasons of generality and comparability, we use an artificial CDS spread instead
of actual market data.
9 The corporate is assumed to belong to one of the following sectors: basic materials,
energy industries, agriculture, manufacturing, mining and quarrying, consumer
goods and services, transportation and storage, administrative and support service
activities.
3. Calculation Results

Current CVA risk capital charge

We first compute current CVA risk capital charges, using the methodology described in article 384 of the CRR [see [9]], ignoring the corporate exemption. We calculate EADs according to the Current Exposure Method (CEM) as described in article 274 of the CRR\(^\text{10}\) and we recognize netting according to article 298 of the CRR. Since we assume the same credit quality “3” for both counterparties, we obtain identical risk weights of 1% and, thus, identical CVA risk charges.

Note that only Trade D has positive market value, resulting in a difference between collateralized and uncollateralized replacement costs.

\(^{10}\) In the CRR, the CEM is referred to as the Mark-to-Market method. IM is not mentioned in this method, whence we do not distinguish between collateralization with or without IM for the current CVA risk capital charge.

<table>
<thead>
<tr>
<th>Trades</th>
<th>No CSA</th>
<th>CSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade A 1y</td>
<td>11,364</td>
<td>11,364</td>
</tr>
<tr>
<td>Trade A 4y</td>
<td>42,236</td>
<td>42,236</td>
</tr>
<tr>
<td>Trade A 10y</td>
<td>275,035</td>
<td>275,035</td>
</tr>
<tr>
<td>A {1y, 4y, 10y} netted</td>
<td>257,697</td>
<td>257,697</td>
</tr>
<tr>
<td>Trade B 1y</td>
<td>113,635</td>
<td>113,635</td>
</tr>
<tr>
<td>Trade B 4y</td>
<td>422,357</td>
<td>422,357</td>
</tr>
<tr>
<td>Trade B 10y</td>
<td>1,375,175</td>
<td>1,375,175</td>
</tr>
<tr>
<td>B {1y, 4y, 10y} netted</td>
<td>1,803,880</td>
<td>1,803,880</td>
</tr>
<tr>
<td>Trade C 10y</td>
<td>110,014</td>
<td>110,014</td>
</tr>
<tr>
<td>Trade D 10y</td>
<td>584,132</td>
<td>366,713</td>
</tr>
</tbody>
</table>

Table 2: Calculation results for the CVA risk capital charge under the current standardized approach

<table>
<thead>
<tr>
<th>Trade</th>
<th>EAD CEM No CSA</th>
<th>EAD CEM CSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade A 1y</td>
<td>500,000</td>
<td>500,000</td>
</tr>
<tr>
<td>Trade A 4y</td>
<td>500,000</td>
<td>500,000</td>
</tr>
<tr>
<td>Trade A 10y</td>
<td>1,500,000</td>
<td>1,500,000</td>
</tr>
<tr>
<td>A {1y, 4y, 10y} netted</td>
<td>2,500,000</td>
<td>2,500,000</td>
</tr>
<tr>
<td>Trade B 1y</td>
<td>5,000,000</td>
<td>5,000,000</td>
</tr>
<tr>
<td>Trade B 4y</td>
<td>5,000,000</td>
<td>5,000,000</td>
</tr>
<tr>
<td>Trade B 10y</td>
<td>7,500,000</td>
<td>7,500,000</td>
</tr>
<tr>
<td>B {1y, 4y, 10y} netted</td>
<td>17,500,000</td>
<td>17,500,000</td>
</tr>
<tr>
<td>Trade C 10y</td>
<td>600,000</td>
<td>600,000</td>
</tr>
<tr>
<td>Trade D 10y</td>
<td>3,185,768</td>
<td>2,000,000</td>
</tr>
</tbody>
</table>

Table 3: EADs for CEM and SA-CCR for different trades and maturities
Future BA-CVA charge

Our calculations for the future basic approach (BA-CVA) are based on EAD figures derived from the new standardized approach for CCR capital (SA-CCR) presented in BCBS 279 (see [8]), which was scheduled to become effective by January 1, 2017.

The SA-CCR provides a more risk sensitive approach than the CEM, it recognizes netting and margin agreements in a better way, and it incorporates the IMM multiplier \( \alpha \) to account for model inaccuracies. Table 3 demonstrates that for interest rate swaps without CSA, the SA-CCR EAD is significantly higher than the EAD implied by the CEM.

<table>
<thead>
<tr>
<th>Trades</th>
<th>No CSA</th>
<th>CSA</th>
<th>CSA + IM</th>
<th>No CSA</th>
<th>CSA</th>
<th>CSA + IM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade A 1y</td>
<td>23,786</td>
<td>31,521</td>
<td>22,303</td>
<td>14,272</td>
<td>18,913</td>
<td>13,382</td>
</tr>
<tr>
<td>Trade A 4y</td>
<td>328,568</td>
<td>189,193</td>
<td>42,788</td>
<td>197,141</td>
<td>113,516</td>
<td>25,673</td>
</tr>
<tr>
<td>Trade A 10y</td>
<td>1,548,166</td>
<td>661,174</td>
<td>184,072</td>
<td>928,900</td>
<td>396,704</td>
<td>110,443</td>
</tr>
<tr>
<td>A {1y,4y,10y} netted</td>
<td>1,379,170</td>
<td>524,331</td>
<td>174,292</td>
<td>827,502</td>
<td>314,599</td>
<td>104,575</td>
</tr>
<tr>
<td>Trade B 1y</td>
<td>195,081</td>
<td>82,909</td>
<td>68,003</td>
<td>117,049</td>
<td>49,745</td>
<td>40,802</td>
</tr>
<tr>
<td>Trade B 4y</td>
<td>725,088</td>
<td>308,158</td>
<td>123,766</td>
<td>435,053</td>
<td>184,895</td>
<td>74,259</td>
</tr>
<tr>
<td>Trade B 10y</td>
<td>1,573,846</td>
<td>668,867</td>
<td>144,188</td>
<td>944,308</td>
<td>401,320</td>
<td>86,513</td>
</tr>
<tr>
<td>B {1y,4y,10y} netted</td>
<td>2,654,374</td>
<td>906,901</td>
<td>426,678</td>
<td>1,592,625</td>
<td>544,440</td>
<td>256,007</td>
</tr>
<tr>
<td>Trade C 10y</td>
<td>1,251,241</td>
<td>428,024</td>
<td>98,365</td>
<td>750,745</td>
<td>256,814</td>
<td>59,019</td>
</tr>
<tr>
<td>Trade D 10y</td>
<td>2,211,479</td>
<td>1,127,752</td>
<td>368,246</td>
<td>1,326,887</td>
<td>676,651</td>
<td>220,947</td>
</tr>
</tbody>
</table>

Table 4: Calculation results for future BA-CVA risk capital charge based on SA-CCR

In addition to different EADs, the general differences between the current standardized approach and the future basic approach are the following:

- risk weights for different counterparty sectors from the current range of 0.7% to 10% change to a new range of 0.5% to 12%.
- there is a reduction by the conversion factor \( \alpha = 1.4 \) and the factor 2.33 does not appear explicitly any more.

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11 We point out that the SA-CCR has still not been completely adopted by many countries, including countries in the European Union (see [3]). SA-CCR is included in the CRR2 (see [10]), which entered into force in June 2019. The rules need to be applied by banks two years later.

12 For trade A 1Y , the CSA increases the SA-CCR EAD, which is due to the CSA’s minimum transfer amount (MTA). For longer maturities, such effects are dominated by the PFE terms.

13 The method for determining the main risk driver(s) of a transaction is still under consultation (see [11]).

14 The scaling factor of 1.5 included in the consultative paper (see [2]) to account for additional risk from increasing exposures was dropped in the finalized BCBS framework (see [6]).
Overall, for the investment grade financial counterparty (with an old risk weight of one percent), the scaling factor between the BA-CVA charge and the current standardized approach charge (assuming unchanged EADs) is $15:\$

\[
\frac{\text{RW}^\text{BA-CVA} \cdot \text{scaling}^\text{BA-CVA}}{\text{RW}^\text{curr-SA} \cdot \text{scaling}^\text{curr-SA}} = \frac{5\% \cdot 1.4}{1\% \cdot 2.33} \approx 1.53
\]

and for the corporate counterparty it is:

\[
\frac{\text{RW}^\text{BA-CVA} \cdot \text{scaling}^\text{BA-CVA}}{\text{RW}^\text{curr-SA} \cdot \text{scaling}^\text{curr-SA}} = \frac{3\% \cdot 1.4}{1\% \cdot 2.33} \approx 0.92
\]

In particular, the differences between the financial and the corporate counterparty are triggered by the different risk weights (5% vs. 3%) for the same rating class, so the ratio of financial to corporate is $5/3 = 1.67$ for all trades.

**Future SA-CVA charge**

Results for the future standardized approach are presented in Table 5. The most relevant risk factors are credit spreads, especially for the collateralized portfolios. For those portfolios with cross currency swaps, the FX Vega cannot be neglected either. Both effects are prominently visible in Trade B with a maturity of 10y, due to the large exposure originating from the notional exchange at maturity. For instance, in the Financial case without CSA, the bucketed capital charge $K$ is around 530k EUR for credit spread delta, 180k EUR for IR delta and 130k EUR for IR vega, while the total charge for FX is around 50k EUR. Since we assume identical credit spreads (and, thus, identical CVA sensitivities) for both counterparties, the differences between Financial and Corporate are solely due to different risk weights for credit spread delta.

**Comparison**

Table 6 compares the results for the current standardized method, for BA-CVA and for SA-CVA.

The general observation is that the BA-CVA is unfavorable in the uncollateralized case. In a collateralized setting, the SA-CVA is most favorable.

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15 We write curr-SA for the current standardized approach.
<table>
<thead>
<tr>
<th></th>
<th>Financial</th>
<th>Corporate</th>
<th></th>
<th>Financial</th>
<th>Corporate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current</td>
<td>BA-CVA</td>
<td>SA-CVA</td>
<td>Current</td>
<td>BA-CVA</td>
</tr>
<tr>
<td>A01</td>
<td>11,361</td>
<td>53,786</td>
<td>11,761</td>
<td>11,361</td>
<td>14,175</td>
</tr>
<tr>
<td>A04</td>
<td>43,248</td>
<td>328,538</td>
<td>166,389</td>
<td>43,248</td>
<td>197,561</td>
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<tr>
<td>A10</td>
<td>275,955</td>
<td>1,058,160</td>
<td>1,271,491</td>
<td>275,955</td>
<td>928,302</td>
</tr>
<tr>
<td>AN</td>
<td>207,657</td>
<td>1,379,270</td>
<td>1,539,864</td>
<td>207,657</td>
<td>823,052</td>
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<td>BX01</td>
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<td>150,491</td>
<td>13,112</td>
<td>132,655</td>
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<tr>
<td>BX04</td>
<td>453,577</td>
<td>765,888</td>
<td>292,864</td>
<td>453,577</td>
<td>435,039</td>
</tr>
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<td>BX10</td>
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<td>1,124,937</td>
<td>1,970,171</td>
<td>944,308</td>
</tr>
<tr>
<td>BN</td>
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<td>1,193,354</td>
<td>1,809,889</td>
<td>1,530,635</td>
</tr>
<tr>
<td>BX01</td>
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<td>1,327,241</td>
<td>1,170,639</td>
<td>150,016</td>
<td>750,745</td>
</tr>
<tr>
<td>BX10</td>
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<td>2,331,479</td>
<td>1,529,527</td>
<td>584,392</td>
<td>1,325,887</td>
</tr>
</tbody>
</table>

Table 6: Comparison of the current standardized method, the BA-CVA and the SA-CVA for different collateralization scenarios and different counterparty scenarios; Trade A 1y is abbreviated as A01, netting set A {1y, 4y, 10y} is abbreviated as AN, and similarly for the other trades / netting sets. The spark lines indicate which method yields the highest (red) or lowest (green) capital charge for the trade or netting set, whereas the heat map relates all results.
For the Financial, CVA risk charges for BA-CVA show a significant increase compared to the current standardized approach. Exceptions are the collateralized cross-currency swaps and the IM collateralized portfolios, for which the larger collateralization benefit recognized by the SA-CCR EAD is visible.

Without CSA, the basic approach significantly increases the capital charge for both counterparties – except for the 10y cross currency swap – compared to current standardized approach.

The ratio of Financial to Corporate for BA-CVA is flat at 1.67, while for SA-CVA it is within the range of 1.1 to 1.6. The variation originates from varying credit sensitivities between the trades which remain the dominant part of the SA-CVA capital charge.

It is plausible that the future SA-CVA capital charge is favorable for collateralized trades; the SA-CVA computations build upon real CVA sensitivities, fully acknowledging the exposure mitigating effect of collateral. For trades with maturities larger than 4y and without CSA, SA-CVA charges are generally higher than the current capital charge, whereas for trades with CSA this order is reversed.

The differences among the new approaches derived in the unhedged case are likely to increase further in the case where CVA hedges are present, due to the following reasons:

- SA-CVA allows credit spread as well as exposure hedges, while BA-CVA only allows credit spread hedges
- the hedging benefit for BA-CVA is capped at 75% of the unhedged BA-CVA, while SA-CVA in principle allows hedging up to 90% of the unhedged SA-CVA

4. Conclusion

Our sample calculations show the potential impact of the two approaches that have been presented in the finalized BCBS framework (BCBS 424, see [6]). The most important results are:

- Compared to the current standardized approach, BA-CVA will increase of the CVA risk capital charge for most portfolios
- Collateralised portfolios (and portfolios with exposure hedges) will significantly benefit from the SA-CVA

The new CVA risk regulation framework can be a turning point for many medium-sized banks; for these institutions, the capital savings entailed by the SA-CVA for collateralized portfolios may outweigh the costs associated with the introduction and maintenance of a Monte Carlo based CVA sensitivity computation framework as well as an active CVA desk. For these banks it is the first time that the Basel committee has acknowledged simulation based approaches to CVA, which already prevail at the accounting level, at the level of regulatory capital requirements.

These results are also supported by the EBA impact study (see [14]), which determined an increase of the CVA risk charge by more than 200% on average for smaller banks. With the removal of the corporate exemption, the average impact on all banks is even 558%. The impact study also shows that, while the increase in capital requirements is almost certain for small and large banks, medium sized banks have the chance to get through the reform with zero or even negative impact.

This chance must not be missed. Banks should prepare now, conducting individual impact and gap analyses and getting their CVA sensitivity calculations and CVA hedging activities running in time, to avoid falling into the BA-CVA capital trap.

d-fine combines financial expertise and deep regulatory insight to offer solutions for SA-CCR, the new CVA risk charge and CVA management.

16 Let us note that trade B 10y without CSA is an exemption since here the SA-CCR EAD is smaller than the CEM EAD (see Table 3). This is because for FX contracts, the CEM percentage applied to the notional changes from 5% to 7.5% for maturities exceeding five years, which has no equivalent counterpart at the SA-CCR level.

17 We refer to [12] for a comprehensive discussion of further benefits coming along with active CVA management.
Appendix

References

[11] European Banking Authority. Consultation Paper: Draft Regulatory Technical Standards on mapping of derivative transactions to risk categories, on supervisory delta formula for interest rate options and on determination of long or short positions in the Standardised Approach for Counterparty Credit Risk under Article 277(5) and Article 279a(3) of proposed amended Regulation (EU) No 575/2013 (Capital Requirements Regulation 2 - CRR2). May 2019
[12] Activate your xVA Management (d-fine white paper 2019)

Authors

Dr Ruth Joachimi
Senior Consultant, d-fine GmbH, Frankfurt
ruth.joachimi@d-fine.de

Dr Christian Kappen
Manager, d-fine GmbH, Düsseldorf
christian.kappen@d-fine.de

Dr Ken Lichtner
Senior Consultant, d-fine GmbH, Berlin
ken.lichtner@d-fine.de

Dr Holger Plank
Partner, d-fine AG, Zürich
holger.plank@d-fine.ch

Nadja Schuster
Principal, d-fine GmbH, Frankfurt
nadja.schuster@d-fine.de

d-fine
Berlin
d-fine GmbH
Friedrichstraße 68
10117 Berlin
Germany
berlin@d-fine.de

Dusseldorf
d-fine GmbH
Dreischeibenhaus 1
40211 Dusseldorf
Germany
duesseldorf@d-fine.de

Frankfurt
d-fine GmbH
An der Hauptwache 7
60313 Frankfurt
Germany
frankfurt@d-fine.de

London
d-fine Ltd
6-7 Queen Street
London, EC4N 1SP
United Kingdom
london@d-fine.co.uk

Munich
d-fine GmbH
Bavariafilmplatz 8
82031 Grünwald
Germany
muenchen@d-fine.de

Vienna
d-fine Austria GmbH
Riemergasse 14 Top 12
1010 Vienna
Austria
wien@d-fine.at

Zurich
d-fine AG
Brandschenkestrasse 150
8002 Zurich
Switzerland
zuerich@d-fine.ch