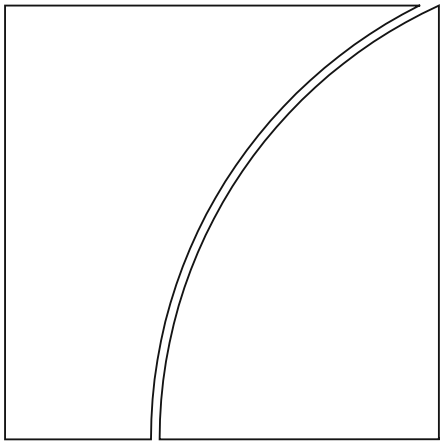
Basel Committee
on Banking Supervision



Instructions: CVA QIS

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BANK FOR INTERNATIONAL SETTLEMENTS

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1. Introduction

1.1 General

The workbook available for download on the Basel Committee's website is for information purposes only. While the structure of the workbooks used for the exercise is the same in all participating countries, **it is important that banks only use the workbook obtained from their respective national supervisory agency to submit their returns.** Only these workbooks are adjusted to reflect the particularities of the regulatory frameworks in participating countries. National supervisory agencies may also provide additional instructions, if deemed necessary.

1.1.2 Filling in the Data

Data should only be entered in the yellow shaded cells. There are also some pink cells which will be completed by the relevant national supervisory agency. **It is important to note that any modification to the worksheets might render the workbook unusable both for the validation of the final results and the subsequent aggregation process.**

Cell colours used in the Basel III monitoring reporting template

Colour	Content
Yellow	Input cell.
Pink	To be completed by the supervisor.
White, orange	Calculation result. Must not be changed.

Where information is not available, the corresponding cell should be left empty. No text such as "na" or zeroes should be entered in these cells. However, leaving a cell empty could trigger exclusion from some or all of the analyses if the respective item is required, ie participating institutions should aim to provide data for all **yellow** cells. The automated calculations in the workbook indicate whether or not a certain item can be calculated using the data provided.

Data can be reported in the most convenient currency. The currency which has been used should be recorded in the "General Info" worksheet. Supervisors will provide the relevant exchange rate for converting the reporting currency to euros. The **units** must be reported in **thousands** to avoid inconsistencies within submissions. The same currency and unit should be used for all amounts throughout the workbook, irrespective of the currency of the underlying exposures.

Percentages should be reported as **decimals** and will be converted to percentages automatically. For example, 1% should be entered as 0.01.

1.1.3 Scope of exercise

Participation in the QIS on the review of the Credit Valuation Adjustment risk framework (CVA) will be carried out on a voluntary basis. However, participation is expected in particular from large internationally active banks. Participation of small and medium-sized banking institutions is also encouraged, as all of the banking institutions will likely be affected by some or all of the revisions to the reform being considered.

1.1.4 Reporting date

All data should be reported as of **31 December 2015**, unless the national supervisor provides alternative guidance.

1.1.5 Process

The Basel Committee or its Secretariat will not collect any data directly from participating institutions. Therefore, participating institutions in participating countries should contact their supervisory agency to discuss how the completed workbooks should be submitted. National supervisors will forward the relevant data to the Secretariat of the Basel Committee where individual institution data will be treated strictly confidential and will not be attributed to individual institutions.

Similarly, participating institutions should direct all questions related to this study, the related rules, standards and consultative documents to their national supervisory agencies. Where necessary, the supervisory agencies will coordinate their responses through the Secretariat of the Basel Committee to provide responses that are consistent across countries. A document with responses to frequently asked questions will be maintained on the Basel Committee's website.

Participating institutions should specify any instance where they had to deviate from the instructions provided in an additional document.

1.1.6 Timeline

Banks will have until **29 April 2016** to fill in the requested templates and submit them to their national supervisory agency. In case of data quality issues, some questions/requests for clarification will be sent to those banks concerned. These banks will be asked to resubmit data to their National Supervisory Authority by **13 May 2016**.

1.2 Credit Valuation Adjustment (CVA)

The Basel Committee on Banking Supervision is using this exercise to analyse the potential impact of its proposed revised CVA capital framework. The objectives are:

- to assess the capital impact of the proposed revised framework compared to the current CVA framework;
- to provide data to support the calibration of the revised framework and assess options related to netting, liquidity horizons for counterparty spread and exposure models; and
- to assess the potential implementation issues of the framework by testing large, real life portfolios.

All reporting banks are asked to complete the worksheets "General Info" and "Proposed CVA". In the worksheet "Proposed CVA", all reporting banks are asked to complete sections relating to the Basic Approach, even those banks that also complete sections relating to the FRTB-CVA framework. Banks are encouraged to implement as many of the FRTB-CVA framework approaches as possible (eg SA-CVA and IMA-CVA under Option A or Option B) and should at least implement one of those approaches.

All calculations for "Proposed CVA" worksheet should be done according to the revised version of the proposed CVA framework as provided in Annex 1 in this document. The changes with respect to the CVA Consultative Paper (http://www.bis.org/bcbs/publ/d325.htm) are marked in Annex 1 (via either tracking changes or yellow highlighting).

Throughout this exercise, the term "CVA" unless otherwise qualified, is intended to refer to "unilateral CVA". Where CVA might be considered as including a "debit value adjustment" (or "DVA"), it will be referred to explicitly as "bilateral CVA".

For the purposes of this QIS exercise, banks should exclude CVA calculations for derivatives cleared through a qualifying central counterparty.

2. General Info

There are six panels within the "General Info" worksheet. Panel A gathers general bank reporting data, and Panels B-F gather basic information that is needed to process and interpret the survey results, and should be completed by all participating institutions.

2.1 Panel A: General bank data

Panel A of the "General Info" worksheet deals with bank and reporting data conventions.

Row	Column	Heading	Description
6	C	Country code	Leave Blank.
7	C	Region code	Leave Blank.
8	C	Bank number	Leave Blank.
9	C	Bank group	Leave Blank.
10	C	Conversion rate (in euros/reporting currency)	Leave Blank.
11	C	Units	Do not change. Units in which results are reported. Set in thousands to avoid inconsistencies within submissions.
12	C	Submission date (yyyy-mm-dd)	Leave Blank.
13	C	Reporting date (yyyy-mm-dd)	Date as of which all data are reported in worksheets.
14	C	Reporting currency (ISO code)	Three-character ISO code of the currency in which all data are reported (eg USD, EUR).
15	C	Accounting standard	Indicate the accounting standard used.

2.2 Panel B: Breakdown of total accounting CVA and DVA

This panel asks for an overview of the total CVA that banks recognise for their global group for accounting purposes.

Row	Column	Heading	Description
19	C	Accounting CVA	The unilateral CVA based on internal calculations that would be recognised for accounting purposes
20	C	Accounting DVA	The DVA (debit valuation adjustment) based on internal calculations that would be recognised for accounting purposes. This DVA amount should not include any funding valuation adjustment (FVA) that banks recognise for accounting purposes.

2.3 Panel C: Breakdown of total Basel III CVA risk capital charges

This panel asks for an overview of the total Basel III CVA risk capital charges that banks must hold capital against, for their global group for regulatory purposes.

Row	Column	Heading	Description
26-28	C	Using CEM for non-IMM exposure / Including the effects of all recognised eligible hedges	CVA capital charge amounts including the effects of all recognised eligible hedges. The bank should use CEM for non-IMM exposure.
26-28	D	Using CEM for non-IMM exposure / Excluding the effects of all recognised eligible hedges	CVA capital charge amounts excluding the effects of all recognised eligible hedges. The bank should use CEM for non-IMM exposure.
26-28	E	Using SA-CCR for non-IMM exposure / Including the effects of all recognised eligible hedges	CVA capital charge amounts including the effects of all recognised eligible hedges. The bank should use SA-CCR for non-IMM exposure.
26-28	F	Using SA-CCR for non-IMM exposure / Excluding the effects of all recognised eligible hedges	CVA capital charge amounts excluding the effects of all recognised eligible hedges. The bank should use SA-CCR for non-IMM exposure.
26	C-F	Capital charges under the advanced approach	The capital charges using the current Basel III advanced approach, for those portfolios that are presently calculated under the advanced approach.
27	C-F	Capital charges under the standardised approach	The capital charges using the current Basel III standardised approach, for those portfolios that are presently calculated under the standardised approach.
28	C-F	Total capital charges	Sum of rows 26 and 27

2.4 Panel D: Breakdown of accounting CVA and total Basel III CVA risk charge per counterparty margining type

This panel provides a breakdown of the data reported in panels B and C on accounting CVA and total Basel III CVA risk capital charges. Reporting banks should categorise counterparties based on the main line of activity of that counterparty. CEM should be used for non-IMM exposures.

Row	Column	Heading	Description
33-42	D	Number of counterparties	The total number of counterparties
33-42	E	Accounting CVA	The unilateral CVA based on internal calculations that would be recognised for accounting purposes
33-42	F	Total capital charge with hedges	The hypothetical regulatory CVA risk capital charge that would be calculated if the counterparties in the row were the only exposures of the bank. The risk charge should be calculated using the same approach as prescribed in panel B (ie using the standardised approach for portfolios that are presently not permitted to be calculated under the advanced approach, and the advanced approach otherwise). This calculation should include the effects of single-name hedges that may be recognised as eligible hedges against the relevant counterparties. All index hedges should be excluded from this calculation. Where possible, the regulatory CVA risk capital charge reported in this column should be calculated using the Revised version of the Basel III capital rules reflecting the CVA modification published 1 June 2011, as opposed to the version implemented by the reporting bank's national supervisory agency.
33-42	G	Total capital charge without hedges	The hypothetical regulatory CVA risk capital charge that would be calculated if the counterparties in the row were the only exposures of the bank. The risk charge should be calculated using the same approach as prescribed in panel B (ie using the standardised approach for portfolios that are presently not permitted to be calculated under the advanced approach, and the advanced approach otherwise). This calculation should exclude the effects of all eligible hedges against the relevant counterparties. Where possible, the regulatory CVA risk capital charge reported in this column should be calculated using the Revised version of the Basel III capital rules reflecting the CVA modification published 1 June 2011, as opposed to the version implemented by the reporting bank's national supervisory agency.
33-42	D-G	Margined / Unmargined	A margined netting set is a netting set for which there is a periodic exchange of collateral connected to the mark-to-market movements of the transactions with the counterparty. An unmargined netting set is a netting set for which there is no exchange of collateral connected to either the mark-to-market movements or the potential future exposure of the trades. A netting set where the bank only posts collateral, but does not receive, should be considered unmargined. Where reporting banks have both margined and unmargined netting set with the same counterparty, the associated CVA and capital charge amounts should be correspondingly split between margined and unmargined categories, and this counterparty should be recorded as 0.5 in both the margined and unmargined rows for the column "Number of counterparties".

2.5 Panel E: Breakdown of accounting CVA and total Basel III CVA risk charge per counterparty grade type

This panel provides a breakdown of the data reported in panels B and C on accounting CVA and total Basel III CVA risk capital charges. Reporting banks should categorise counterparties based on the main line of activity of that counterparty. CEM should be used for non-IMM exposures.

Row	Column	Heading	Description
47-56	D	Number of counterparties	The total number of counterparties
47-56	E	Accounting CVA	The unilateral CVA based on internal calculations that would be recognised for accounting purposes
47-56	F	Total capital charge with hedges	The hypothetical regulatory CVA risk capital charge that would be calculated if the counterparties in the row were the only exposures of the bank. The risk charge should be calculated using the same approach as prescribed in panel B (ie using the standardised approach for portfolios that are presently not permitted to be calculated under the advanced approach, and the advanced approach otherwise). This calculation should include the effects of single-name hedges that may be recognised as eligible hedges against the relevant counterparties. All index hedges should be excluded from this calculation. Where possible, the regulatory CVA risk capital charge reported in this column should be calculated using the Revised version of the Basel III capital rules reflecting the CVA modification published 1 June 2011, as opposed to the version implemented by the reporting bank's national supervisory agency.
47-56	G	Total capital charge without hedges	The hypothetical regulatory CVA risk capital charge that would be calculated if the counterparties in the row were the only exposures of the bank. The risk charge should be calculated using the same approach as prescribed in panel B (ie using the standardised approach for portfolios that are presently not permitted to be calculated under the advanced approach, and the advanced approach otherwise). This calculation should exclude the effects of all eligible hedges against the relevant counterparties. Where possible, the regulatory CVA risk capital charge reported in this column should be calculated using the Revised version of the Basel III capital rules reflecting the CVA modification published 1 June 2011, as opposed to the version implemented by the reporting bank's national supervisory agency.
47-56	D-G	Investment Grade/High Yield and Non-Rated	Number, CVA and capital charge amounts should be separately reported for the two categories: investment grade counterparties and high yield/non rated counterparties.

2.6 Panel F: Additional information – closed form questions

This panel collects additional qualitative information on accounting and regulatory CVA via closed-form questions. A number of initial questions are defined in the template. The Committee may circulate additional closed-form questions in due course. For the additional questions, a set of up to 100 answers will be provided. Banks will have to pick from the list in the "Answer" column the answer relevant to them.

Row	Column	Heading	Description
49-88	C	Answer	Banks should pick from the list the answer relevant to them when any additional closed-form questions are circulated.
49-88	D	Remarks	Include any comments related to additional closed-form questions.

3. Breakdown of proposed revised CVA risk charge

The "Proposed CVA" worksheet is used to report calculations performed according to the revised version of the proposed CVA framework, as provided in Annex 1 in this document. The scope of application is the bank's entire CVA book (see paragraph 4 for the definition of CVA book[1]).

There are three panels within the "Proposed CVA" worksheet: Panel A is used for the basic approach (BA-CVA), Panel B is used for the internal model approach (IMA-CVA) and Panel C is used for the standardised approach (SA-CVA).

[1] Unless explicitly stated otherwise, paragraph numbers in this section refer to Annex 1 in this document.

3.1 Panel A: BA-CVA approach

This Panel provides information relating to the proposed Basic Approach CVA Risk charge. All reporting banks -- regardless of their intention to use the FRTB-CVA approaches -- should complete this section for their entire CVA book.

Row	Column	Heading	Description
8-10	B	Capital charge under the BA-CVA approach, using IMM, Liquidity Horizon Option 1	Completed by IMM banks. Total capital charge under the BA-CVA approach using EADs calculated under IMM and the risk weights from the Option 1 table in paragraph 100. For all covered transactions that cannot be modelled under IMM, SA-CCR should be used. If SA-CCR cannot be implemented in time, CEM should be used.
8-10	C	Capital charge under the BA-CVA approach, using SA-CCR, Liquidity Horizon Option 1	Completed by all banks. Total capital charge under the BA-CVA approach using EADs calculated under SA-CCR and the risk weights from the Option 1 table in paragraph 100. If SA-CCR cannot be implemented in time, CEM should be used.
8-10	D	Capital charge under the BA-CVA approach, using IMM, Liquidity Horizon Option 2	Completed by IMM banks. Total capital charge under the BA-CVA approach using EADs calculated under IMM and the risk weights from the Option 2 table in paragraph 100. For all covered transactions that cannot be modelled under IMM, SA-CCR should be used. If SA-CCR cannot be implemented in time, CEM should be used.
8-10	E	Capital charge under the BA-CVA approach, using SA-CCR, Liquidity Horizon Option 2	Completed by all banks. Total capital charge under the BA-CVA approach using EADs calculated under SA-CCR and the risk weights from the Option 2 table in paragraph 100. If SA-CCR cannot be implemented in time, CEM should be used.
8	B-E	Capital charge for spread, unhedged	BA CVA capital charge for credit spreads in the absence of hedges. See paragraph 96.
9	B-E	Capital charge for spread, hedged	BA CVA capital charge for credit spreads in the presence of all eligible hedges (if there are any). See paragraphs 91-93 and 97.
10	B-E	Capital charge for spread and EE	BA CVA capital charge for credit spreads and EE computed as the sum of row 8 (if there are no eligible hedges) or 9 (if there are eligible hedges) and beta weighted row 8. See paragraphs 95 and 99.

3.2 Panel B.1: IMA-CVA approach Option A1: accounting based exposures and accounting based netting

This panel provides information relating to the proposed IMA Approach CVA Risk charge using the accounting-based exposure measure (ie Option A; see paragraphs 15-20) and accounting based netting (see paragraph 17). Alternative 1 for MPoR should be used for margined netting sets (see paragraph 13). All reporting banks that intend to use the FRTB-CVA framework should complete this section for their entire CVA book.

Row	Column	Heading	Description
17-25	B-D	Liquidity Horizon Option 1	Use liquidity horizons as specified in paragraph 85, Option 1.
17-25	E-G	Liquidity Horizon Option 2	Use liquidity horizons as specified in paragraph 85, Option 2.
17-25	B, E	Without hedges	Expected shortfall in the absence of hedges.
17-25	C, F	With eligible counterparty spread hedges	Expected shortfall in the presence of counterparty credit spread hedges only (exposure hedges are excluded). See paragraphs 28-31.
17-25	D, G	With all eligible hedges	Expected shortfall in the presence of all eligible hedges (both counterparty credit spread and exposure). If an instrument hedges bilateral CVA, the bank may remove the component that hedges DVA. See paragraphs 28-31.
17	B-G	Expected Shortfall (net)	The fully diversified, stressed expected shortfall with no supervisory constraints on cross risk type correlations. See paragraph 86.
18	B-G	Expected Shortfall for Counterparty credit spread risk	The partial stressed expected shortfall value for counterparty credit spread risk. See paragraph 87.
19	B-G	Expected Shortfall for Interest rate risk	The partial stressed expected shortfall value for interest rate risk. See paragraph 87.
20	B-G	Expected Shortfall for Equity risk	The partial stressed expected shortfall value for equity risk. See paragraph 87.
21	B-G	Expected Shortfall for Commodity risk	The partial stressed expected shortfall value for commodity risk. See paragraph 87.
22	B-G	Expected Shortfall for Reference Credit spread risk	The partial stressed expected shortfall value for credit spread risk of the reference entity. See paragraph 87.
23	B-G	Expected Shortfall for FX risk	The partial stressed expected shortfall value for FX risk. See paragraph 87.
24	B-G	Expected Shortfall (gross)	The sum of partial stressed expected shortfall values across risk types (from rows 18-23). See paragraph 87.
25	B-G	Expected Shortfall (aggregated)	The aggregated stressed expected shortfall calculated as weighted average of rows 17 and 24 assuming equal weights. See paragraph 88.

3.3 Panel B.2: IMA-CVA approach Option A2: accounting based exposures and Annex 4 based netting

This panel provides information relating to the proposed IMA Approach CVA Risk charge using the accounting-based exposure measure (ie Option A; see paragraphs 15-20) and Annex 4 based netting (see paragraph 17). Alternative 1 for MPoR should be used for margined netting sets (see paragraph 13). All reporting banks that intend to use the FRTB-CVA framework should complete this section for their entire CVA book.

Row	Column	Heading	Description
31-39	B-D	Liquidity Horizon Option 1	Use liquidity horizons as specified in paragraph 85, Option 1.
31-39	E-G	Liquidity Horizon Option 2	Use liquidity horizons as specified in paragraph 85, Option 2.
31-39	B, E	Without hedges	Expected shortfall in the absence of hedges.
31-39	C, F	With eligible counterparty spread hedges	Expected shortfall in the presence of counterparty credit spread hedges only (exposure hedges are excluded). See paragraphs 28-31.
31-39	D, G	With all eligible hedges	Expected shortfall in the presence of all eligible hedges (both counterparty credit spread and exposure). If an instrument hedges bilateral CVA, the bank may remove the component that hedges DVA. See paragraphs 28-31.
31	B-G	Expected Shortfall (net)	The fully diversified, stressed expected shortfall with no supervisory constraints on cross risk type correlations. See paragraph 86.
32	B-G	Expected Shortfall for Counterparty credit spread risk	The partial stressed expected shortfall value for counterparty credit spread risk. See paragraph 87.
33	B-G	Expected Shortfall for Interest rate risk	The partial stressed expected shortfall value for interest rate risk. See paragraph 87.
34	B-G	Expected Shortfall for Equity risk	The partial stressed expected shortfall value for equity risk. See paragraph 87.
35	B-G	Expected Shortfall for Commodity risk	The partial stressed expected shortfall value for commodity risk. See paragraph 87.
36	B-G	Expected Shortfall for Reference Credit spread risk	The partial stressed expected shortfall value for credit spread risk of the reference entity. See paragraph 87.
37	B-G	Expected Shortfall for FX risk	The partial stressed expected shortfall value for FX risk. See paragraph 87.
38	B-G	Expected Shortfall (gross)	The sum of partial stressed expected shortfall values across risk types (from rows 32-37). See paragraph 87.
39	B-G	Expected Shortfall (aggregated)	The aggregated stressed expected shortfall calculated as weighted average of rows 31 and 38 assuming equal weights. See paragraph 88.

3.4 Panel B.3: IMA-CVA approach Option B: IMM based exposures and Annex 4 based netting

This panel provides information relating to the proposed IMA Approach CVA Risk charge using the IMM-based exposure measure (ie Option B; see paragraphs 21-24) and Annex 4 based netting. Alternative 2 for MPoR should be used for margined netting sets (see paragraph 13). All reporting banks that intend to use the FRTB-CVA framework should complete this section for their entire CVA book.

Row	Column	Heading	Description
45-53	B-D	Liquidity Horizon Option 1	Use liquidity horizons as specified in paragraph 85, Option 1.
45-53	E-G	Liquidity Horizon Option 2	Use liquidity horizons as specified in paragraph 85, Option 2.
45-53	B, E	Without hedges	Expected shortfall in the absence of hedges.
45-53	C, F	With eligible counterparty spread hedges	Expected shortfall in the presence of counterparty credit spread hedges only (exposure hedges are excluded). See paragraphs 28-31.
45-53	D, G	With all eligible hedges	Expected shortfall in the presence of all eligible hedges (both counterparty credit spread and exposure). If an instrument hedges bilateral CVA, the bank may remove the component that hedges DVA. See paragraphs 28-31.
45	B-G	Expected Shortfall (net)	The fully diversified, stressed expected shortfall with no supervisory constraints on cross risk type correlations. See paragraph 86.
46	B-G	Expected Shortfall for Counterparty credit spread risk	The partial stressed expected shortfall value for counterparty credit spread risk. See paragraph 87.
47	B-G	Expected Shortfall for Interest rate risk	The partial stressed expected shortfall value for interest rate risk. See paragraph 87.
48	B-G	Expected Shortfall for Equity risk	The partial stressed expected shortfall value for equity risk. See paragraph 87.
49	B-G	Expected Shortfall for Commodity risk	The partial stressed expected shortfall value for commodity risk. See paragraph 87.
50	B-G	Expected Shortfall for Reference Credit spread risk	The partial stressed expected shortfall value for credit spread risk of the reference entity. See paragraph 87.
51	B-G	Expected Shortfall for FX risk	The partial stressed expected shortfall value for FX risk. See paragraph 87.
52	B-G	Expected Shortfall (gross)	The sum of partial stressed expected shortfall values across risk types (from rows 46-51). See paragraph 87.
53	B-G	Expected Shortfall (aggregated)	The aggregated stressed expected shortfall calculated as weighted average of rows 45 and 52 assuming equal weights. See paragraph 88.

3.5 Panel C.1: SA-CVA approach Option A1: accounting based exposures and accounting based netting

This panel provides information relating to the proposed standardised approach CVA risk charge using the accounting-based exposure measure (ie Option A; see paragraphs 15-20) and accounting based netting (see paragraph 17). All reporting banks that intend to use the FRTB-CVA framework should complete this section for their entire CVA book.

Row	Column	Heading	Description
61-68	B-E	Liquidity Horizon Option 1	Use risk weights from the Option 1 table in paragraph 58.
61-68	F-I	Liquidity Horizon Option 2	Use risk weights from the Option 2 table in paragraph 58.
61-68	B-C, F-G	Without hedges	Capital charges in the absence of hedges.
61-68	D-E, H-I	With all eligible hedges	Capital charges in the presence of all eligible hedges (both counterparty credit spread and exposure). If an instrument hedges bilateral CVA, the bank may remove the component that hedges DVA. See paragraphs 28-31.
61-68	B, D, F, H	Delta risks	Capital charges for delta risk. See paragraph 38.
61-68	C, E, G, I	Vega risks	Capital charges for vega risk. See paragraph 39.
61	B-I	Interest rate	Capital charges for interest rate risk.
62	B-I	Foreign exchange	Capital charges for FX risk.
63	B-I	Counterparty credit spread	Capital charges for counterparty credit spread risk (delta risk only).
64	B-I	Reference credit spread	Capital charges for reference credit spread risk.
65	B-I	Equity	Capital charges for equity risk.
66	B-I	Commodity	Capital charges for commodity risk.
67	B-I	Total risks	The sum of capital charges for all risk types (rows 61 – 66). See paragraphs 38-39.
68	B-C, F-G	Capital charge (delta +vega)	Capital charges for CVA without hedges are sum of column B and C, or column F and G. See paragraph 37.
68	D-E, H-I	Capital charge (delta +vega)	Capital charges of CVA with all eligible hedges are sum of column D and column E, or column H and I. See paragraph 37.

3.6 Panel C.2: SA-CVA approach Option A2: accounting based exposures and Annex 4 based netting

This panel provides information relating to the proposed standardised approach CVA risk charge using the accounting-based exposure measure (ie Option A; see paragraphs 15-20) and Annex 4 based netting (see paragraph 17). All reporting banks that intend to use the FRTB-CVA framework should complete this section for their entire CVA book.

Row	Column	Heading	Description
74-81	B-E	Liquidity Horizon Option 1	Use risk weights from the Option 1 table in paragraph 58.
74-81	F-I	Liquidity Horizon Option 2	Use risk weights from the Option 2 table in paragraph 58.
74-81	B-C, F-G	Without hedges	Capital charges in the absence of hedges.
74-81	D-E, H-I	With all eligible hedges	Capital charges in the presence of all eligible hedges (both counterparty credit spread and exposure). If an instrument hedges bilateral CVA, the bank may remove the component that hedges DVA. See paragraphs 28-31.
74-81	B, D, F, H	Delta risks	Capital charges for delta risk. See paragraph 38.
74-81	C, E, G, I	Vega risks	Capital charges for vega risk. See paragraph 39.
74	B-I	Interest rate	Capital charges for interest rate risk.
75	B-I	Foreign exchange	Capital charges for FX risk.
76	B-I	Counterparty credit spread	Capital charges for counterparty credit spread risk (delta risk only).
77	B-I	Reference credit spread	Capital charges for reference credit spread risk.
78	B-I	Equity	Capital charges for equity risk.
79	B-I	Commodity	Capital charges for commodity risk.
80	B-I	Total risks	The sum of capital charges for all risk types (rows 78 – 83). See paragraphs 38-39.
81	B-C, F-G	Capital charge (delta +vega)	Capital charges for CVA without hedges are sum of column B and C from row 84. See paragraph 37.
81	D-E, H-I	Capital charge (delta +vega)	Capital charges of CVA with all eligible hedges are sum of column D and column E from row 84. See paragraph 37.

3.7 Panel C.3: SA-CVA approach Option B: IMM based exposures and Annex 4 based netting

This panel provides information relating to the proposed standardised approach CVA risk charge using the IMM-based exposure measure (ie Option B; see paragraphs 21-24) and Annex 4 based netting. All reporting banks that intend to use the FRTB-CVA framework should complete this section for their entire CVA book.

Row	Column	Heading	Description
87-94	B-E	Liquidity Horizon Option 1	Use risk weights from the Option 1 table in paragraph 58.
87-94	F-I	Liquidity Horizon Option 2	Use risk weights from the Option 2 table in paragraph 58.
87-94	B-C, F-G	Without hedges	Capital charges in the absence of hedges.
87-94	D-E, H-I	With all eligible hedges	Capital charges in the presence of all eligible hedges (both counterparty credit spread and exposure). If an instrument hedges bilateral CVA, the bank may remove the component that hedges DVA. See paragraphs 28-31.
87-94	B, D, F, H	Delta risks	Capital charges for delta risk. See paragraph 38.
87-94	C, E, G, I	Vega risks	Capital charges for vega risk. See paragraph 39.
87	B-E	Interest rate	Capital charges for interest rate risk.
88	B-E	Foreign exchange	Capital charges for FX risk.
89	B-E	Counterparty credit spread	Capital charges for counterparty credit spread risk (delta risk only).
90	B-E	Reference credit spread	Capital charges for reference credit spread risk.
91	B-E	Equity	Capital charges for equity risk.
92	B-E	Commodity	Capital charges for commodity risk.
93	B-E	Total risks	The sum of capital charges for all risk types (rows 91 – 96). See paragraphs 38-39.
94	B-C	Capital charge (delta +vega)	Capital charges for CVA without hedges are sum of column B and C from row 97. See paragraph 37.
94	D-E	Capital charge (delta +vega)	Capital charges of CVA with all eligible hedges are sum of column D and column E from row 97. See paragraph 37.

Annex 1

Draft minimum capital requirements for Credit Valuation Adjustments

A. General provisions

1. In the context of this document, CVA stands for credit valuation adjustment specified at a counterparty level. CVA reflects the adjustment of default risk-free prices of derivatives and securities financing transactions (SFT)[2] due to a potential default of the counterparty. This CVA may differ from CVA used for accounting purposes: (i) it excludes the effect of the bank's own default; (ii) potentially, a more conservative approach in exposure modelling (especially, for margined netting sets) must be used. Therefore, unless explicitly specified otherwise, the term "CVA" in this document means "regulatory CVA".

2. CVA risk is defined as the risk of losses arising from changing CVA values in response to changes in counterparty credit spreads and market risk factors that drive market prices of derivative transactions and, if applicable, SFTs.

3. The capital requirement for CVA risk must be calculated by all banks involved in covered transactions. Covered transactions include all derivatives except those cleared through a qualified central counterparty. Furthermore, covered transactions also include SFTs that are fair-valued by a bank for accounting purposes. In the remainder of this document, the terms "derivative transactions" or "derivatives" should be understood as "covered transactions".

4. The CVA capital requirement is calculated for a bank's "CVA book" on a standalone basis. The CVA book includes CVA for a bank's entire portfolio of ~~**derivative**~~ **covered** transactions and eligible CVA hedges. All derivative CVA hedges (whether eligible or not) must be included in the CVA calculation for the ~~**relevant**~~ counterparty **to the hedge**.

5. Eligible CVA hedging instruments must be removed from a bank's market risk capital charge calculations in the trading book. CVA hedges must not be split between the trading book and the CVA book: the entire hedging instrument must belong to one of the books.

6. Two frameworks are available for calculating CVA capital:

- FRTB-CVA: an adaptation of the market risk framework specified in the Fundamental Review of the Trading Book (FRTB) to the CVA book;
- BA-CVA: the basic CVA framework.

7. Banks must use the B**A**-CVA framework unless they receive approval from the bank's supervisory authority to use the FRTB-CVA framework.

[2] See Basel Committee on Banking Supervision, *Basel II: International Convergence of Capital Measurement and Capital Standards – Comprehensive Version*, June 2006, Annex 4, paragraphs 4 and 5, www.bis.org/publ/bcbs128.htm.

B. FRTB-CVA framework

1. General provisions

(a) Framework eligibility criteria

8. The minimum criteria for the FRTB-CVA framework eligibility include the following:

- A bank must be able to model exposure and regularly calculate (at least monthly) CVA and CVA sensitivities to a minimum set of market risk factors specified in Section 2(c). This is a fundamental requirement for the application of the FRTB-CVA framework.
- A bank must have a methodology for calculating the credit spreads of illiquid counterparties that satisfies the requirements of Section 1(f). This requirement is also fundamental to the FRTB-CVA framework because the framework capitalises CVA risk across all counterparties, including illiquid ones.
- A bank must have a CVA desk (or a similar dedicated function) responsible for risk management and hedging of CVA. CVA sensitivities that are not used by a bank in its risk management processes are not expected to be reliable.

(b) Hierarchy of approaches for FRTB-CVA

9. As in the FRTB framework for market risk, two approaches are available: (i) the Internal Model Approach (IMA-CVA) and (ii) the Standardised Approach (SA-CVA).

10. Both the IMA-CVA and SA-CVA rely on a bank's ability to calculate regulatory CVA and its sensitivities to market risk factors.

11. Regardless of whether a bank is currently allowed to use the IMA-CVA for the purposes of regulatory capital determination, the bank must calculate CVA capital charge according to the SA-CVA at least monthly.

(c) Regulatory CVA calculations

12. Regulatory CVA is the base for the calculation of the CVA capital requirement under both SA-CVA and IMA-CVA. Calculations of regulatory CVA must be performed for each counterparty with which a bank has at least one derivative transaction.

13. Regulatory CVA at a counterparty level must be calculated according to the following principles:

- Regulatory CVA must be calculated as the expectation of future losses resulting from default of the counterparty under the assumption that the bank itself is default risk-free.
- The calculation must be based on at least the following inputs: (i) term structure of market-implied probability of default (PD); (ii) market-implied expected loss given default (ELGD); (3) simulated paths of discounted future exposure.
- The term structure of market-implied PD must be estimated from credit spreads observed in the markets. For counterparties whose credit is not actively traded (ie illiquid counterparties), the market-implied PD must be estimated from proxy credit spreads estimated for these counterparties (see Section 1(f)).

- The market-implied ELGD value used for regulatory CVA calculation must be the same as the one used to calculate the risk-neutral PD from credit spreads unless it can be demonstrated that the seniority of the derivative exposure differs from the seniority of senior unsecured bonds.
- The paths of discounted future exposure are produced via pricing of all derivative transactions with the counterparty on simulated paths of relevant market risk factors and discounting the prices to today using risk-free interest rates along the path.
- All market risk factors material for the transactions with a counterparty must be simulated as stochastic processes for an appropriate number of paths defined on an appropriate set of future time points extending to the maturity of the longest transaction.
- For transactions that give rise to a significant level of dependence between exposure and the counterparty's credit quality, this dependence should be taken into account. Banks that fail to account for this dependence must use a higher value of multiplier m_{CVA}, as provided in Section 1(h).
- For transactions that are covered by a legally enforceable margin agreement, the simulation must capture the effects of margining collateral along each exposure path. All the relevant contractual features such as the nature of the margin agreement (unilateral vs bilateral), the frequency of margin calls, the type of collateral, thresholds, independent amounts, initial margins and minimum transfer amounts must be appropriately captured by the exposure model. To determine collateral available to a bank at a given exposure measurement time point, the exposure model must assume that the counterparty will not post or return any collateral within a certain time period immediately prior to that time point. The assumed value of this time period, known as the margin period of risk (MPoR), cannot be less than a supervisory floor.

  [Two alternatives are proposed for the floor value:

  Alternative 1: The supervisory floor is equal to 9 + N business days, where N is the re-margining period specified in the margin agreement (in particular, for margin agreements with daily exchange of margin, the minimum MPoR is 10 business days). **Alternative 1 should be used with the accounting-based CVA (Option A).**

  Alternative 2: The supervisory floor is specified in paragraph 41(i)–(iii) of Annex 4 of the Basel framework. **Alternative 2 should be used for IMM-based CVA (Option B).**]

14. [Two options for generating scenarios for discounted exposure are proposed: accounting-based (Option A) and IMM-based (Option B).]

(d) [Option A]: Accounting-based CVA

15. The paths of discounted exposure are obtained via exposure models used by a bank for calculating front office/accounting CVA. Model implementation (ie the software), model calibration process (with the exception of the MPoR), market and transaction data used for regulatory CVA calculation must be the same as the ones used for accounting CVA calculation.

16. The generation of market risk factor paths underlying the exposure models must satisfy the following requirements: Drifts of risk factors must be consistent with a risk-neutral probability measure, so that discounted derivative values are approximately driftless. Historical calibration of drifts is not allowed.

- The volatilities and correlations of market risk factors must be calibrated to market data whenever sufficient data exists in a given market. Otherwise, historical calibration is permissible.

- The distribution of modelled risk factors must account for the possible non-normality of the distribution of exposures, including the existence of leptokurtosis ("fat tails"), where appropriate.

17. **Two options for netting recognition are proposed:**

- **Option A.1: Netting recognition is the same as in the accounting CVA calculations. In particular, netting uncertainty can be modelled.**

- **Option A.2:** Offsetting between simulated positive and negative market values is permissible only within legally enforceable netting agreements. The requirements of paragraph 67 of Annex 4 of the Basel framework apply.

18. The current requirements in the Basel market risk framework on the treatment for illiquid positions, which are accounted for at fair value, are retained in the [revised market risk framework] and extend to accounting-based CVA calculations. In particular, all components of accounting-based exposure models must be independently validated.

19. The following requirements apply:

- Exposure models used for calculating regulatory CVA must be part of a CVA risk management framework that includes the identification, measurement, management, approval and internal reporting of CVA market risk. A bank must have a credible track record in using these exposure models for calculating CVA and CVA sensitivities to market risk factors.

- The board of directors and senior management should be actively involved in the risk control process and must regard CVA risk control as an essential aspect of the business to which significant resources need to be devoted.

- Banks must have a process in place for ensuring compliance with a documented set of internal policies, controls and procedures concerning the operation of the exposure system used for accounting CVA calculations.

- Banks must have an independent control unit that is responsible for the initial and ongoing validation of the exposure models. This unit must be independent from business credit and trading units (including the CVA desk), it must be adequately staffed and it must report directly to senior management of the firm.

- Banks must document the process for initial and ongoing validation of their exposure models to a level of detail that would enable a third party to recreate the analysis. This documentation must set out the frequency with which ongoing validation will be conducted, how the validation is conducted with respect to data flows and portfolios, what analyses are used and how representative counterparty portfolios are constructed.

- The pricing models used to calculate exposure for a given path of market risk factors must be tested against appropriate independent benchmarks for a wide range of market states as part of the initial and ongoing model validation process. Pricing models for options must account for the non-linearity of option value with respect to market risk factors.

- An independent review of the overall CVA risk management process should be carried out regularly in the bank's own internal auditing process. This review should include both the activities of the CVA desk and of the independent risk control unit.

- Banks must define criteria on which to assess the exposure models and their inputs and have a written policy in place to describe the process by which unacceptable performance will be determined and remedied.

- An exposure model must capture transaction-specific information in order to aggregate exposures at the level of the netting set. Banks must verify that transactions are assigned to the appropriate netting set within the model.
- The exposure models must reflect transaction terms and specifications in a timely, complete, and conservative fashion. The terms and specifications must reside in a secure database that is subject to formal and periodic audit. The process for recognising netting arrangements must require sign-off by legal staff to verify the legal enforceability of netting and be input into the database by an independent unit. The transmission of transaction terms and specifications data to the exposure model must also be subject to internal audit, and formal reconciliation processes must be in place between the internal model and source data systems to verify on an ongoing basis that transaction terms and specifications are being reflected in the exposure system correctly or at least conservatively.
- The current and historical market data must be acquired independently of the lines of business and be compliant with accounting. They must be fed into the exposure model in a timely and complete fashion, and maintained in a secure database subject to formal and periodic audit. Banks must also have a well-developed data integrity process to scrub the data of erroneous and/or anomalous observations. To the extent that the exposure model relies on proxy market data, internal policies must identify suitable proxies and the bank must demonstrate empirically that the proxy provides a conservative representation of the underlying risk under adverse market conditions.

20. For margined counterparties, collateral can be recognised and modelled along a path under the following conditions:

- Collateral management requirements outlined in paragraph 51(i)–(ii) of Annex 4 of the Basel **II** framework are satisfied.
- All documentation used in collateralised transactions must be binding on all parties and legally enforceable in all relevant jurisdictions. Banks must have conducted sufficient legal review to verify this and have a well-founded legal basis to reach this conclusion, and undertake such further review as necessary to ensure continuing enforceability.
- A bank's exposure models used for accounting CVA calculations must be able to accommodate a non-zero value for the margin period of risk (MPoR).

(e) [Option B]: IMM-based CVA

21. A bank must be approved by its supervisory authority to use the IMM for CCR capital calculations to use this option. The following paragraph of Annex 4 **of the Basel II framework** does not apply in the CVA context:

- Paragraph 25(i): Stress calibration of exposure models is not used for calculating regulatory CVA.

22. Non-discounted exposure paths are obtained via the same exposure models used by a bank for calculating EAD under the IMM, as set out under Section V, Annex 4 of the Accord text. Discounted exposure paths are obtained via application of today's values of risk-free discount factors to all non-discounted exposure paths.

23. Alternatively, a bank may extend the capability of the approved IMM exposure models to apply stochastic discounting along the path, thus generating discounted exposure paths directly. A bank may also

account for dependence between exposure and the counterparty's credit quality. Such extensions of IMM exposure models would require approval by the bank's supervisory authority.

24. To reduce the computational burden of calculating CVA sensitivities, a bank may reduce the granularity of the grid of future time points used for exposure calculations, subject to approval by the bank's supervisory authority.

(f) Credit spreads of illiquid counterparties

25. A bank should estimate the credit spread curves of illiquid counterparties from credit spreads observed in the markets of its liquid peers via an algorithm that discriminates on at least three variables: a measure of credit quality (eg rating), industry, and region.

26. In certain cases, mapping an illiquid counterparty to a single liquid reference name can be allowed. A typical example would be mapping a municipality to its home country (ie setting the municipality credit spread equal to the sovereign credit spread plus a premium). A bank must justify every case of mapping to single names.

27. When no time series of credit spreads is observed in the markets of any of the counterparty's peers due to its very nature (eg project finance, funds), a bank is allowed to use a more fundamental analysis of credit risk to proxy the spread of an illiquid counterparty. However, where historical PDs are used as part of this assessment, the resulting spread cannot be based on historical PD only – it must relate to credit markets.

(g) Eligible hedges

28. Only transactions used for the purpose of mitigating CVA risk, and managed as such, can be eligible hedges.

29. Hedges of both counterparty credit spread and exposure components of CVA risk can be eligible.

30. Instruments that cannot be included in the Internal Model Approach for market risk (IMA-TB) cannot be eligible CVA hedges. Such instruments belong to those types that are not allowed by the FRTB framework (eg tranched credit derivatives).

31. Non-eligible CVA hedges are treated as trading book instruments and are capitalised via market risk rules for the trading book.

(h) Multiplier

32. To compensate for a higher level of model risk in calculation of CVA and CVA sensitivities (in comparison to market value of trading book instruments and its sensitivities), the expected shortfall measure used in the FRTB is scaled up via a multiplier m_{CVA}.

33. Multiplier m_{CVA} has a default value of [1.5]. However, the default value of the multiplier can be increased by the bank's supervisory authority if it determines that the bank's CVA model risk is higher than its peer's. In particular, the default value will be increased if the bank does not account for the dependence between exposure and counterparty credit quality in its CVA calculations.

2. Standardised Approach for CVA Book (SA-CVA)

(a) General provisions

34. The standardised approach for CVA (SA-CVA) is an adaptation of the standardised approach for market risk under the FRTB (SA-TB) to the CVA book. The primary difference of the SA-CVA from the SA-TB include: (i) reduced granularity of market risk factors; (ii) absence of default risk and ~~**gamma**~~ **curvature** risk; (iii) use of more conservative risk aggregation; (iv) use of multiplier m_{CVA}.

35. The SA-CVA must be calculated by all banks under the FRTB-CVA framework and reported to supervisors at the same frequency as SA-TB (currently, monthly). In addition, all FRTB-CVA banks must calculate, and have the ability to produce to their supervisors, the SA-CVA calculations on demand.

36. The SA-CVA uses the sensitivities of regulatory CVA to counterparty credit spreads and market risk factors driving derivatives' values as inputs. Risk factors and sensitivities must meet the definition provided in the [proposed standardised approach for market risk]. Sensitivities must also be computed by banks in accordance with the sensitivity validation standards described in [the proposed standardised approach for market risk].

(b) Calculations

37. The SA-CVA capital requirement is calculated as the simple sum of the capital requirements for delta and vega risks calculated for the entire CVA book (including eligible hedges).

38. The capital requirement for delta risk is calculated as the simple sum of delta capital requirements calculated independently for the following six risk types: (i) counterparty credit spreads; (ii) interest rate (IR); (iii) foreign exchange (FX); (iv) reference credit spreads (ie credit spreads that drive exposure); (v) equity; (vi) commodity.

39. The capital requirement for vega risk is calculated as the simple sum of vega capital requirements calculated independently for the following five risk types: (i) interest rates (IR); (ii) foreign exchange (FX); (iii) reference credit spreads (ie credit spreads that drive exposure); (iv) equity; (v) commodity. There is no vega capital requirement for counterparty credit spread risk.

40. Delta and vega capital requirements are calculated via the same procedure.

41. For a given risk type, calculate the sensitivity of the aggregate CVA, s_k^{CVA}, and the sensitivity of all eligible hedges in the CVA book, s_k^{Hdg}, to each risk factor k in the risk type. The sensitivities are defined as the ratio of the change of the quantity in question (aggregate CVA or market value of all CVA hedges) caused by a small change of the risk factor current value to the size of the change. The CVA calculation with the shifted value of a risk factor must be performed using the same seed for the random number generator as the calculation without the shift.

42. When CVA sensitivities for vega risk are calculated, the volatility shift must apply to both generating risk factor paths and pricing options in exposure models. CVA always has material sensitivity to volatilities of the risk factors – even if there are no options in the portfolio.

43. Obtain the weighted sensitivities WS_k^{CVA} and WS_k^{Hdg} for each risk factor k by multiplying the net sensitivities s_k^{CVA} and s_k^{Hdg}, respectively, by the corresponding risk weight RW_k (the risk weights applicable to each risk type are specified in Section 2(c).

$$\mathrm{WS}_k^{\mathrm{CVA}} = \mathrm{RW}_k \cdot s_k^{\mathrm{CVA}} \qquad \mathrm{WS}_k^{\mathrm{Hdg}} = \mathrm{RW}_k \cdot s_k^{\mathrm{Hdg}}$$

44. The net weighted sensitivity of the CVA book s_k to risk factor k is obtained via: $\mathrm{WS}_k = \mathrm{WS}_k^{\mathrm{CVA}} + \mathrm{WS}_k^{\mathrm{Hdg}}$

45. Weighted sensitivities must be aggregated into a capital charge K_b within each bucket b (the buckets and correlation parameters ρ_{kl} applicable to each risk type are specified in Section 2(c).

$$K_b = \sqrt{\left[\sum_{k\in b} \mathrm{WS}_k^2 + \sum_{k\in b}\sum_{l\in b; l\neq k} \rho_{kl} \cdot \mathrm{WS}_k \cdot \mathrm{WS}_l\right] + R \cdot \sum_{k\in b}\left[(\mathrm{WS}_k^{\mathrm{Hdg}})^2\right]}$$

where R is the hedging disallowance parameter, set at [0.01], that prevents the possibility of perfect hedging of CVA risk.

46. Bucket-level capital charges must then be aggregated across buckets within each risk type (the correlation parameters γ_{bc} applicable to each risk type are specified in Section 2(c).

$$K = m_{\mathrm{CVA}} \cdot \sqrt{\sum_b K_b^2 + \sum_b \sum_{c\neq b} \gamma_{bc} \cdot K_b \cdot K_c}$$

Note that this equation differs from the corresponding FRTB equation by the absence of a residual value and of quantities S_b and the presence of multiplier m_{CVA}. **For the purposes of this QIS, the multiplier should not be applied when calculating the SA-CVA capital.**

(c) Buckets, risk factors, sensitivities, risk weights and correlations[3]

Interest rates

47. For interest rate delta and vega risks, buckets are individual currencies.

48. For interest rate delta and vega risks, cross-bucket correlation is $\gamma_{bc} = 0.5$ for all currency pairs.

49. Interest rate delta risk factors for a bank's domestic currency, USD, EUR, GBP**, AUD, CAD, SEK** or JPY:

- Interest rate delta risk factors are the absolute change of the inflation rate and the parallel shift of three pieces of the risk-free yield curve: up to one year, one to five years and greater than five years.
- Sensitivities to pieces of the yield curve are measured by shifting the relevant piece of all yield curves in a given currency by 1 basis point and dividing the resulting change in the aggregate CVA

[3] See Basel Committee on Banking Supervision, ***Fundamental review of the trading book: outstanding* issues, December 2014, www.bis.org/bcbs/publ/d305.htm.** ***Minimum capital requirements for market risk,* January 2016, www.bis.org/bcbs/publ/d352.htm**.

The risk weights and correlations match the ones in the SA-TB **as set forth in the CP published in December 2014**, except for interest rate cross-tenor correlations that match the ones in the SA-CCR. The numbers in the tables are subject to change if calibration of the SA-TB changes.

(or the value of CVA hedges) by 1 basis point. Sensitivity to the inflation rate is obtained by changing the inflation rate by 1 basis point and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1 basis point.

- Risk weights RW_k are given by:

Risk factor	0–1 years	1–5 years	> 5 years	Inflation
Risk weight	~~**1.5**~~ **1.70**%	~~**1.2**~~ **1.27**%	~~**1.0**~~ **1.06**%	~~**1.5**~~ **1.59**%

- Correlations ρ_{kl} between pairs of risk factors are:

	0–1 years	**1–5 years**	**> 5 years**	**Inflation**
0–1 years	100%	70%	30%	40%
1–5 years		100%	70%	40%
> 5 years			100%	40%
Inflation				100%

50. Interest rate delta risk factors for any of the other currencies:

- Interest rate risk factors are the absolute change of the inflation rate and the parallel shift of the entire risk-free yield curve for a given currency.
- Sensitivity to the yield curve is measured by shifting all yield curves in a given currency by 1 basis point and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1 basis point. Sensitivity to the inflation rate is obtained by changing the inflation rate by 1 basis point and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1 basis point.
- Risk weights for both yield curve and inflation rate are set at $\mathrm{RW}_k = 2.25\%$.
- Correlations between yield curve and inflation rate are set at $\rho_{kl} = 40\%$.

51. Interest rate vega risk factors for any currency:

- Interest rate vega risk factors are a simultaneous relative change of all implied volatilities for the inflation rate and a simultaneous relative change of all implied interest rate volatilities for a given currency.
- Sensitivity to the interest rate (or inflation rate) volatilities is measured by simultaneously shifting all interest rate- (or inflation rate-) implied volatilities by 1% relative to their current values value and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1%.
- Risk weights for both interest rate and inflation volatilities are set to $\mathrm{RW}_k = \mathrm{RW}_\sigma \cdot \sqrt{6}$, where RW_σ is set at [55%].
- Correlations between interest rate volatilities and inflation volatilities are set at $\rho_{kl} = 40\%$.

Foreign exchange (FX)

52. For FX delta and vega risks, buckets are individual currencies except a bank's domestic currency.

53. For FX delta and vega risks, cross-bucket correlation is $\gamma_{bc} = 0.6$ for all currency pairs.

54. FX delta risk factors for any foreign currency:

- The single FX delta risk factor is the relative change of the FX spot rate between a given foreign currency and a bank's domestic currency (ie only foreign-domestic rates are risk factors).
- Sensitivities to the FX spot rate are measured by shifting a given foreign-domestic rate by 1% relative to its current value and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1%. All foreign-foreign rates involving the currency of the shifted foreign-domestic rate are shifted accordingly via the representation of the foreign-foreign rate via the ratio of two foreign-domestic rates.
- Risk weights for all foreign-domestic rates are set at $\mathrm{RW}_k = 21\%$.

55. FX vega risk factors for any foreign currency:

- The single FX vega risk factor is a simultaneous relative change of all implied volatilities for a given foreign-domestic rate.
- Sensitivities to the FX volatilities are measured by simultaneously shifting all market-implied volatilities for a given foreign-domestic rate by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1%. Volatilities of all foreign-foreign rates involving the shifted currency are shifted accordingly via the representation of two foreign-domestic rate volatilities and the relevant implied correlation (the latter is assumed to be fixed).
- Risk weights for FX volatilities are set to $\mathrm{RW}_k = \mathrm{RW}_\sigma \cdot \sqrt{4}$, where RW_σ is set at [55%].

Counterparty credit spread

56. For counterparty credit spread, vega risk is not calculated. Buckets for delta risk are:

Bucket number	Credit quality	Sector
1	Investment grade (IG)	Sovereigns including central banks, multilateral development banks
2		**Local government, government-backed non-financials, education and public administration**
~~**2**~~ **3**		Financials including government-backed financials
~~**3**~~ **4**		Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying
~~**4**~~ **5**		Consumer goods and services, transportation and storage, administrative and support service activities
~~**5**~~ **6**		Technology, telecommunications
~~**6**~~ **7**		Health care, utilities, ~~**local government, government-backed non-financials, education, public administration,**~~ professional and technical activities
~~**7**~~ **8**	High yield (HY) & non-rated (NR)	Sovereigns including central banks, multilateral development banks
9		**Local government, government-backed non-financials, education and public administration**
~~**8**~~ **10**		Financials including government-backed financials
~~**9**~~ **11**		Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying
~~**10**~~ **12**		Consumer goods and services, transportation and storage, administrative and support service activities
~~**11**~~ **13**		Technology, telecommunications
~~**12**~~ **14**		Health care, utilities, ~~**local government, government-backed non-financials, education, public administration,**~~ professional and technical activities
~~**13**~~ **15**	(Not applicable)	Other sector

57. For counterparty credit spread delta risk, cross-bucket correlations γ_{bc} applying within the same credit quality category (ie either IG or HY&NR) are given by

~~**Bucket**~~	~~**1**~~	~~**2**~~	~~**3**~~	~~**4**~~	~~**5**~~	~~**6**~~
~~**1**~~	~~**100%**~~	~~**10%**~~	~~**20%**~~	~~**25%**~~	~~**20%**~~	~~**15%**~~
~~**2**~~		~~**100%**~~	~~**5%**~~	~~**15%**~~	~~**20%**~~	~~**5%**~~
~~**3**~~			~~**100%**~~	~~**20%**~~	~~**25%**~~	~~**5%**~~
~~**4**~~				~~**100%**~~	~~**25%**~~	~~**5%**~~
~~**5**~~					~~**100%**~~	~~**5%**~~
~~**6**~~						~~**100%**~~

Bucket	1/8	2/9	3/10	4/11	5/12	6/13	7/14
1/8	100%	75%	10%	20%	25%	20%	15%
2/9		100%	5%	15%	20%	15%	10%
3/10			100%	5%	15%	20%	5%
4/11				100%	20%	25%	5%
5/12					100%	25%	5%
6/13						100%	5%
7/14							100%

- For cross-bucket correlations γ_{bc} applying across IG and HY&NR categories, these correlations are divided by 2.
- For cross-bucket correlations γ_{bc} applying across bucket ~~13~~ **15** and another bucket, γ_{bc} = 0%.

58. Counterparty credit spread delta risk factors for a given bucket:

- Counterparty credit spread delta risk factors are absolute shifts of credit spreads of individual counterparties at the following tenors: 0.5 years, one year, three years, five years and 10 years.
- For a given counterparty and tenor point, the sensitivities are measured by shifting the relevant credit spread by 1 basis point and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1 basis point.
- For the IMA-CVA, two options for liquidity horizons are proposed in paragraph 85. To maintain consistency with the IMA-CVA, two sets of risk weights scaled to the liquidity horizons are proposed for the SA-CVA. Risk weights RW_k are the same for all tenors and depend on the counterparty's bucket according to:

  [Option 1 for liquidity horizons:]

~~IG bucket~~	~~1~~		~~2~~	~~3~~	~~4~~	~~5~~	~~6~~
~~Risk weight~~	~~2.5%~~		~~5.0%~~	~~3.5%~~	~~3.0%~~	~~2.5%~~	~~2.0%~~

IG bucket	1	2	3	4	5	6	7
Risk weight	0.5%	1.0%	5.0%	3.0%	3.0%	2.0%	1.5%

~~HY/NR bucket~~	~~7~~	~~8~~	~~9~~	~~10~~	~~11~~	~~12~~	~~13~~
~~Risk weight~~	~~10%~~	~~12%~~	~~9%~~	~~10%~~	~~9%~~	~~6%~~	~~12%~~

HY/NR bucket	8	9	10	11	12	13	14	15
Risk weight	3.0%	4.0%	12.0%	7.0%	8.5%	5.5%	5.0%	12.0%

[Option 2 for liquidity horizons:]

~~IG bucket~~	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~
~~Risk weight~~	~~4.3%~~	~~5.0%~~	~~3.5%~~	~~3.0%~~	~~2.5%~~	~~2.0%~~

IG bucket	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Risk weight	**0.9%**	**1.2%**	**6.1%**	**3.7%**	**3.7%**	**2.4%**	**1.8%**

~~HY/NR bucket~~	~~7~~	~~8~~	~~9~~	~~10~~	~~11~~	~~12~~	~~13~~
~~Risk weight~~	~~10%~~	~~8.5%~~	~~6.4%~~	~~7.1%~~	~~6.4%~~	~~4.2%~~	~~8.5%~~

HY/NR bucket	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Risk weight	**3.7%**	**4.0%**	**12.0%**	**7.0%**	**8.5%**	**5.5%**	**5.0%**	**12.0%**

- Correlations ρ_{kl} between different tenors for the same counterparty are set to 65%.
- Correlations ρ_{kl} between ~~any~~ **the same** tenors of different counterparties are set to 35%.
- **Correlations ρ_{kl} between different tenors of different counterparties are set to 23%.**

Reference credit spread

59. For reference credit spreads, both delta and vega risks are calculated. Buckets for delta and vega risks are:

Bucket number	Credit quality	Sector
1	Investment grade (IG)	Sovereigns including central banks, multilateral development banks
2		**Local government, government-backed non-financials, education and public administration**
~~**2**~~ **3**		Financials including government-backed financials
~~**3**~~ **4**		Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying
~~**4**~~ **5**		Consumer goods and services, transportation and storage, administrative and support service activities
~~**5**~~ **6**		Technology, telecommunications
~~**6**~~ **7**		Health care, utilities, ~~**local government, government-backed non-financials, education, public administration,**~~ professional and technical activities
~~**7**~~ **8**	High yield (HY) & non-rated (NR)	Sovereigns including central banks, multilateral development banks
9		**Local government, government-backed non-financials, education and public administration**
~~**8**~~ **10**		Financials including government-backed financials
~~**9**~~ **11**		Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying
~~**10**~~ **12**		Consumer goods and services, transportation and storage, administrative and support service activities
~~**11**~~ **13**		Technology, telecommunications
~~**12**~~ **14**		Health care, utilities, ~~**local government, government-backed non-financials, education, public administration,**~~ professional and technical activities
~~**13**~~ **15**	(Not applicable)	Other sector

60. For reference credit spread delta and vega risks, cross-bucket correlations γ_{bc} within the same credit quality category (ie either IG or HY&NR) are given by

~~**Bucket**~~	~~**1**~~	~~**2**~~	~~**3**~~	~~**4**~~	~~**5**~~	~~**6**~~
~~**1**~~	~~**100%**~~	~~**10%**~~	~~**20%**~~	~~**25%**~~	~~**20%**~~	~~**15%**~~
~~**2**~~		~~**100%**~~	~~**5%**~~	~~**15%**~~	~~**20%**~~	~~**5%**~~
~~**3**~~			~~**100%**~~	~~**20%**~~	~~**25%**~~	~~**5%**~~
~~**4**~~				~~**100%**~~	~~**25%**~~	~~**5%**~~
~~**5**~~					~~**100%**~~	~~**5%**~~
~~**6**~~						~~**100%**~~

Bucket	1/8	2/9	3/10	4/11	5/12	6/13	7/14
1/8	100%	75%	10%	20%	25%	20%	15%
2/9		100%	5%	15%	20%	15%	10%
3/10			100%	5%	15%	20%	5%
4/11				100%	20%	25%	5%
5/12					100%	25%	5%
6/13						100%	5%
7/14							100%

- For cross-bucket correlations γ_{bc} applying across IG and HY&NR categories, these correlations are divided by 2.
- For cross-bucket correlations γ_{bc} applying across bucket ~~13~~ **15** and another bucket, γ_{bc} is set to 0%.

61. Reference credit spread delta risk factors for a given bucket:

- The single reference credit spread delta risk factor is a simultaneous absolute shift of credit spreads of all tenors for all reference names in the bucket.
- Sensitivity to reference credit spreads is measured by shifting the credit spreads of all reference names in the bucket by 1 basis point and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1 basis point.
- Risk weights RW_k depend on the reference name's bucket according to:

~~IG bucket~~	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~
~~Risk weight~~	~~2.5%~~	~~5.0%~~	~~3.5%~~	~~3.0%~~	~~2.5%~~	~~2.0%~~

IG bucket	1	2	3	4	5	6	7
Risk weight	0.5%	1.0%	5.0%	3.0%	3.0%	2.0%	1.5%

~~HY/NR bucket~~	~~7~~	~~8~~	~~9~~	~~10~~	~~11~~	~~12~~	~~13~~
~~Risk weight~~	~~10%~~	~~12%~~	~~9%~~	~~10%~~	~~9%~~	~~6%~~	~~12%~~

HY/NR bucket	8	9	10	11	12	13	14	15
Risk weight	3.0%	4.0%	12.0%	7.0%	8.5%	5.5%	5.0%	12.0%

62. Reference credit spread vega risk factors for a given bucket:

- The single reference credit spread vega risk factor is a simultaneous relative shift of volatilities of credit spreads of all tenors for all reference names in the bucket.

- Sensitivity to volatility of reference credit spread is measured by shifting the volatilities of credit spreads of all reference names in the bucket by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1 basis point.
- Risk weights for reference credit spread volatilities are set to $\mathrm{RW}_k = \mathrm{RW}_\sigma \cdot \sqrt{12}$, where RW_σ is set at [55%].

Equity

63. For equity delta and vega risks, buckets are defined as:

Bucket number	Size	Region	Sector
1	Large	Emerging market economies	Consumer goods and services, transportation and storage, administrative and support service activities, healthcare, utilities
2			Telecommunications, industrials
3			Basic materials, energy, agriculture, manufacturing, mining and quarrying
4			Financials including gov't-backed financials, real estate activities, technology
5		Advanced economies	Consumer goods and services, transportation and storage, administrative and support service activities, healthcare, utilities
6			Telecommunications, industrials
7			Basic materials, energy, agriculture, manufacturing, mining and quarrying
8			Financials including gov't-backed financials, real estate activities, technology
9	Small	Emerging market economies	All sectors described under bucket numbers 1, 2, 3, and 4
10		Advanced economies	All sectors described under bucket numbers 5, 6, 7, and 8
11	(Not applicable)		Other sector

The terminology used in the equity bucket definition should be understood as follows:

- **Market capitalisation ("market cap") is defined as the sum of the market capitalisations of the same legal entity or group of legal entities across all stock markets globally.**
- **"Large market cap" is defined as a market capitalisation equal to or greater than USD 2 billion and "small market cap" is defined as a market capitalisation of less than USD 2 billion.**
- **The advanced economies are Canada, the United States, Mexico, the euro area, the non-euro area western European countries (the United Kingdom, Norway, Sweden, Denmark and Switzerland), Japan, Oceania (Australia and New Zealand), Singapore and Hong Kong SAR.**
- **To assign a risk exposure to a sector, banks must rely on a classification that is commonly used in the market for grouping issuers by industry sector. The bank must assign each issuer to one of the sector buckets in the table above and it must assign all issuers from the same industry to the same sector. Risk positions from any issuer that a bank cannot assign to a sector in this fashion must be assigned to the "other sector" (ie bucket 11). For multinational multi-sector equity issuers, the allocation to a particular bucket must be done according to the most material region and sector in which the issuer operates.**

64. For equity delta and vega risks, cross-bucket correlation γ_{bc} = 15% for all cross-bucket pairs that fall within bucket numbers 1 to 10. γ_{bc} = 0% for all cross-bucket pairs that include bucket 11.

65. Equity delta risk factors for a given bucket:

- The single equity delta risk factor is a simultaneous relative shift of equity spot prices for all reference names in the bucket.
- The sensitivities are measured by shifting the equity spot prices for all reference names in the bucket by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1%.
- Risk weights RW_k depend on the reference name's bucket according to the following table:

Bucket number	Risk weight
1	55%
2	60%
3	45%
4	55%
5	30%
6	35%
7	40%
8	50%
9	70%
10	50%
11	70%

66. Equity vega risk factors for a given bucket:

- The single equity vega risk factor is a simultaneous relative shift of market-implied volatilities for all reference names in the bucket.
- The sensitivities are measured by shifting the market-implied volatilities for all reference names in the bucket by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1%.
- Risk weights for equity volatilities are set to $\mathrm{RW}_k = \mathrm{RW}_\sigma \cdot \sqrt{2}$ for large capitalisation buckets and to $\mathrm{RW}_k = \mathrm{RW}_\sigma \cdot \sqrt{6}$ for small capitalisation buckets, where RW_σ is set at [55%].

Commodity

67. For commodity delta and vega risks, buckets are defined as:

Bucket	Commodity group	**Examples**
1	**~~Coal~~ Energy - Solid combustibles**	**coal, charcoal, wood pellets, nuclear fuel (such as uranium)**
2	**~~Crude oil~~ Energy - Liquid combustibles**	**crude oil (such as Light-sweet, heavy, WTI and Brent); biofuels (such as bioethanol and biodiesel); petrochemicals (such as propane, ethane, gasoline, methanol and butane); refined fuels (such as jet fuel, kerosene, gasoil, fuel oil, naptha, heating oil and diesel)**
3	**~~Electricity~~ Energy - Electricity and carbon trading**	**electricity (such as spot, day-ahead, peak and off-peak); carbon emissions trading (such as certified emissions reductions, in-delivery month EUA, RGGI CO2 allowance and renewable energy certificates)**
4	Freight	**dry-bulk route (such as capesize, panamex, handysize and supramax); liquid-bulk/gas shipping route (such as suezmax, aframax and very large crude carriers)**
5	Metals **– non-precious**	**base metal (such as aluminium, copper, lead, nickel, tin and zinc); steel raw materials (such as steel billet, steel wire, steel coil, steel scrap and steel rebar, iron ore, tungsten, vanadium, titanium and tantalum); minor metals (such as cobalt, manganese, molybdenum)**
6	**~~Natural gas~~ Gaseous combustibles**	**natural gas; liquefied natural gas**
7	Precious metals (including gold)	**gold; silver; platinum; palladium**
8	Grains & oilseed	**corn; wheat; soybean (such as soybean seed, soybean oil and soybean meal); oats; palm oil; canola; barley; rapeseed (such as rapeseed seed, rapeseed oil, and rapeseed meal); red bean, sorghum; coconut oil; olive oil; peanut oil; sunflower oil; rice**
9	Livestock & dairy	**cattle (such live and feeder); hog; poultry; lamb; fish; shrimp; dairy (such as milk, whey, eggs, butter and cheese)**
10	Softs and other agriculturals	**cocoa; coffee (such as arabica and robusta); tea; citrus and orange juice; potatoes; sugar; cotton; wool; lumber and pulp; rubber**
11	Other commodity **~~group~~**	**industrial minerals (such as potash, fertiliser and phosphate rocks), rare earths; terephthalic acid; flat glass**

68. For commodity delta and vega risks, cross-bucket correlation γ_{bc} = 20% for all cross-bucket pairs that fall within bucket numbers 1 to 10. γ_{bc} = 0% for all cross-bucket pairs that include bucket 11.

69. Commodity delta risk factors for a given bucket:

- The single commodity delta risk factor is a simultaneous relative shift of commodity spot prices for all commodities in the bucket.
- The sensitivities are measured by shifting the spot prices of all commodities in the bucket by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1%.
- Risk weights RW_k depend on the reference name's bucket according to the following table:

Bucket	1	2	3	4	5	6	7	8	9	10	11
RW	30%	35%	60%	80%	40%	45%	20%	35%	25%	35%	50%

70. Commodity vega risk factors for a given bucket:

- The single commodity vega risk factor is a simultaneous relative shift of market-implied volatilities for all commodities in the bucket.
- The sensitivities are measured by shifting the market-implied volatilities for all commodities in the bucket by 1% relative to their current values and dividing the resulting change in the aggregate CVA (or the value of CVA hedges) by 1%.
- Risk weights for commodity volatilities are set to $\mathrm{RW}_k = \mathrm{RW}_\sigma \cdot \sqrt{12}$, where RW_σ is set at [55%].

3. Internal Model Approach for CVA Book (IMA-CVA)

(a) General provisions

71. The IMA-CVA is an adaptation of the Internal Model Approach for market risk under the FRTB (IMA-TB) to the CVA book. The primary differences of the IMA-CVA from the **~~SA~~ IMA**-TB include: (i) reduced granularity of market risk factors; (ii) simplified expected shortfall (ES) calculations; (iii) absence of default risk; and (iv) use of multiplier m_{CVA}.

72. The use of the IMA-CVA by an FRTB-CVA bank for the purposes of regulatory capital determination will be conditional upon the explicit approval of the bank's supervisory authority. **If a bank has multiple CVA desks, each CVA desk is considered for approval separately.** The approval conditions outlined ~~:~~in paragraph 177 in **~~Annex 1 of the second CP of the FRTB~~ the revised market risk standard~~]~~**[4] should apply to the IMA-CVA. Only banks that have received a general approval[5] from their supervisory authority to use the IMA-TB to calculate market risk capital for the trading book can be considered for the IMA-CVA approval.

73. Supervisory authorities will be able to insist on a period of initial monitoring and live testing of a bank's internal model of CVA risk before it is used for supervisory capital purposes.

[4] Basel Committee on Banking Supervision, ***~~Fundamental review of the trading book – second consultative~~*** **~~document, October 2013~~, ~~www.bis.org/publ/bcbs265.htm~~** ***Minimum capital requirements for market risk,*** **January 2016, www.bis.org/bcbs/publ/d352.htm**.

[5] IMA-TB approval of specific trading desks is not required.

74. Banks using the IMA-CVA for the purposes of regulatory capital determination must satisfy the qualitative standards described in ~~[~~paragraph 180 in the ~~second CP of the FRTB~~ **revised market risk standard**~~]~~.

75. Banks using the IMA-CVA for the purposes of regulatory capital determination must satisfy model validation standards described in ~~[~~paragraph 182 in the ~~second CP of the FRTB~~ **revised market risk standard**~~]~~.

76. At any given time, a bank can use the IMA-CVA for the purposes of regulatory capital determination only if the internal models of CVA risk satisfy the backtesting and P&L attribution requirements described in ~~[~~paragraph 183 ~~second CP of the FRTB~~ **in the revised market risk standard**~~]~~. If one of the requirements is not satisfied, the bank must use the SA-CVA to determine CVA capital.

(b) Quantitative standards

77. Banks will have flexibility in devising the precise nature of their models, but the following minimum standards will apply for the purpose of calculating their capital charge. Individual banks or their supervisory authorities will have discretion to apply stricter standards.

78. Expected shortfall for CVA risk must be computed on a daily basis.

79. In calculating the expected shortfall for CVA risk, a 97.5th percentile, one-tailed confidence interval is to be used.

80. A bank must model at least all risk factors corresponding to the regulatory risk factors specified under the SA-CVA or prove to its supervisory authority the immateriality of these risk factors for its CVA book.

81. A bank's internal models must capture at least delta risk and vega risk for all modelled risk factors. Vega risk for credit spreads of individual counterparties can be ignored – unless these spreads drive CVA exposure component.

82. When modelling the risk of credit spreads of illiquid counterparties, banks must include both systematic and idiosyncratic components of their credit spreads. The idiosyncratic component is a random variable independent from all other random variables in the model. The size of the idiosyncratic component must be chosen so that volatilities and correlations of credit spreads of illiquid counterparties match the ones of liquid counterparties.

83. The dynamics of market risk factors must be calibrated to a period of stress. Specifically, the expected shortfall measure produced by an internal model should be representative of the expected shortfall charge that would be generated on the bank's current portfolio if the relevant risk factors were experiencing a period of stress.

84. The stress period is defined as a 12-month time period that maximises the target measure over the observation horizon, which should go back to at least 2005. The target measure is defined as the standard deviation of daily changes of the *unhedged* bank-wide CVA calculated with EE profiles fixed at their today's levels. Banks must update their 12-month stressed periods at least monthly.

(c) Time horizons for simulation

85. ~~**[Two options for simulation time horizons are proposed. Under both options, t**~~ The risk factors driving exposure are simulated for time horizons ~~**set equal to the liquidity horizons specified in paragraph 181 of the FRTB.**~~ **shown in business days in the following table:**

Risk factor category	Horizon	Risk factor category	Horizon
Interest rate: EUR, USD, GBP, AUD, JPY, SEK, CAD and domestic currency of a bank	**10**	**Equity price (large cap): volatility**	**20**
Interest rate: other currencies	**20**	**Equity price (small cap): volatility**	**60**
Interest rate: volatility	**60**	**FX rate**	**10**
Credit spread: sovereign (IG)	**20**	**FX rate: volatility**	**40**
Credit spread: sovereign (HY)	**40**	**Energy and carbon emissions trading price**	**20**
Credit spread: corporate (IG)	**40**	**Precious metals and non-ferrous metals price**	**20**
Credit spread: corporate (HY)	**60**	**Other commodities price**	**60**
Credit spread: volatility	**120**	**Energy and carbon emissions trading price: volatility**	**60**
Equity price (large cap)	**10**	**Precious metals and non-ferrous metals price: volatility**	**60**
Equity price (small cap)	**20**	**Other commodities price: volatility**	**120**

For counterparty credit spreads, ~~The~~ two options **~~differ in simulation horizon values for counterparty credit spreads~~ for simulation time horizons are proposed**:

- Option 1: **~~Use the FRTB liquidity horizons f F~~**or credit spreads of liquid counterparties and the systematic components of credit spreads of illiquid counterparties**, the simulation horizons from the table above must be used**. **~~Use a single one-year horizon f F~~**or idiosyncratic components of credit spreads of illiquid counterparties**, a single one-year horizon must be used**.
- Option 2: **~~Use a single 60-day liquidity horizon f F~~**or credit spreads of liquid counterparties and the systematic components of credit spreads of illiquid counterparties**, a single liquidity horizon of 60 business days must be used**. **~~Use a single one-year horizon f F~~**or idiosyncratic components of credit spreads of illiquid counterparties**, a single one-year horizon must be used**.

(d) Capital calculations

86. A bank must calculate its internally modelled CVA expected shortfall charge with no supervisory constraints on cross risk factor correlations, denoted by $\mathrm{ES}_{\mathrm{net}}$.

87. A bank must also calculate six partial expected shortfall values for each of the following risk types: (i) counterparty credit spread; (ii) interest rate; (iii) FX; (iv) reference credit spread; (v) equity; and (vi) commodity. When a partial expected shortfall is calculated for a given risk type, all other risk factors should be held constant. These partial expected shortfall values will then be summed to provide the gross expected shortfall charge, $\mathrm{ES}_{\mathrm{gross}}$.

88. The aggregate expected shortfall measure is calculated via

$$\mathrm{ES} = w \cdot \mathrm{ES}_{\mathrm{net}} + (1-w) \cdot \mathrm{ES}_{\mathrm{gross}}$$

where $[w = 0.5]$ is the parameter quantifying the allowed degree of diversification benefits across risk types.

89. The capital requirement *K* on a given date is determined via

$$K = m_{\text{CVA}} \cdot \max\left\{\text{ES}_{\text{yesterday}};\ m_{\text{TB}} \cdot \text{ES}_{\text{average}}\right\}$$

where

- $\text{ES}_{\text{yesterday}}$ is the most recent ES measure produced by the internal model;
- $\text{ES}_{\text{average}}$ is the average ES measure over the previous ~~**12 weeks**~~ **60 business days**;
- m_{TB} is the multiplier described in paragraph 189 of the revised market risk standard;
- m_{CVA} is the multiplier addressing CVA model risk.

C. Basic CVA framework

1. General provisions

(a) Framework eligibility criteria

90. All banks that do not have approval from their supervisory authority to use the FRTB-CVA framework must use the Basic CVA framework.

(b) Eligible hedges

91. Only transactions used for the purpose of mitigating the counterparty credit spread component of CVA risk, and managed as such, can be eligible hedges.

92. Only single-name CDS, single-name contingent CDS, and index CDS can be eligible.

93. Eligible single-name credit instruments must (i) reference the counterparty directly; or (ii) reference an entity legally related to the counterparty; or (iii) reference an entity that belongs to the same sector and region as the counterparty.

(c) Hierarchy of approaches

94. A single Basic Approach is available.

2. Basic Approach

(a) Calculations

95. The basic CVA capital charge is calculated according to

$$K = K_{\text{spread}} + K_{\text{EE}}$$

where K_{spread} is the contribution of credit spread variability and K_{EE} is the contribution of EE variability to CVA capital.

96. For banks that do not hedge CVA risk (which may be the case for many smaller banks), K_{spread} is calculated via

$$K_{\text{spread}}^{\text{unhedged}} = \sqrt{\left(\rho \cdot \sum_c S_c\right)^2 + (1-\rho^2) \cdot \sum_c S_c^2}$$

where

- $S_c = \frac{\text{RW}_{b(c)}}{\alpha} \cdot \sum_{\text{NS} \in c} M_{\text{NS}} \cdot \text{EAD}_{\text{NS}}$ is the supervisory ES of CVA of counterparty *c*, where the summation is performed over all netting sets with the counterparty.
- $b(c)$ is the supervisory risk bucket of counterparty *c* .
- RW_b is the supervisory weight for risk bucket b .
- **M_{NS} is the effective maturity for netting set NS. For IMM banks, M_{NS} is calculated as per Annex 4, paragraph 38 of the Basel II framework. For non-IMM banks, M_{NS} is the notional weighted average maturity as referred to in the third bullet point of paragraph 320 of the Basel II framework. In either case, M_{NS} should not be capped by 5 years.**
- EAD_{NS} is the EAD of netting set NS calculated according to the Annex 4 of the Basel **II** framework and used for default capital calculations for counterparty credit risk~~;~~. **For non-IMM banks, EAD_{NS} should be discounted by applying the factor $[1-\exp(-0.05 \cdot M_{\text{NS}})]/(0.05 \cdot M_{\text{NS}})$.**
- ~~M_{NS} is the effective maturity for netting set NS;~~
- α is multiplier used to convert EEPE to EAD (its SA-CCR and default IMM value is 1.4)**.**
- ρ is the supervisory correlation between the credit spread of a counterparty and the systematic factor~~;~~**.**

97. In the most general case, when direct and indirect single-name CDS as well as index hedges are present, K_{spread} is calculated according to

$$K_{\text{spread}} = \sqrt{\left(\rho \sum_c \left(S_c - \sum_{h \in c} r_{hc} S_h^{\text{SN}}\right) - \sum_i S_i^{\text{ind}}\right)^2 + (1-\rho^2) \sum_c \left(S_c - \sum_{h \in c} r_{hc} S_h^{\text{SN}}\right)^2 + \sum_c \sum_{h \in c} (1-r_{hc}^2)(S_h^{\text{SN}})^2}$$

where

- $S_h^{\text{SN}} = \text{RW}_{b(h)} M_h^{\text{SN}} B_h^{\text{SN}} [1-\exp(-0.05 \cdot M_h^{\text{SN}})]/(0.05 \cdot M_h^{\text{SN}})$ is the supervisory ES of price of *single-name* hedge h

- $S_i^{\text{ind}} = \text{RW}_{b(i)} M_i^{\text{ind}} B_i^{\text{ind}} [1 - \exp(-0.05 \cdot M_i^{\text{ind}})] / (0.05 \cdot M_i^{\text{ind}})$ is the supervisory ES of price of *index* hedge i
- $b(e)$ is the supervisory risk bucket of entity e (single-name or index)
- B_h^{SN} is the ~~**discounted**~~ notional[6] of *single-name* hedge h
- M_h^{SN} is the remaining maturity of *single-name* hedge h
- B_i^{ind} is ~~**discounted the**~~ notional of *index* hedge i
- M_i^{ind} is remaining maturity of *index* hedge i
- r_{hc} is the correlation between the credit spread of counterparty c and the credit spread of a single-name hedge h of counterparty c.

98. The three major terms under the square root in the general formula have the following interpretation:

- The first term aggregates the systematic components of CVA along with the systematic components of single-name hedges and index hedges. Note that only a part of indirect single-name hedges is allowed to offset counterparty-level CVA via $r_{hc} < 1$
- The second term aggregates the idiosyncratic components of CVA along with the idiosyncratic components of single-name hedges. Note that only a part of indirect single-name hedges is allowed to offset counterparty-level CVA via $r_{hc} < 1$.
- The third term aggregates the components of indirect hedges that are not aligned with counterparties' credit spreads. This term is non-zero only for indirect single-name hedges, for which $r_{hc} < 1$. The term ensures that perfect hedging is impossible: whenever indirect hedges are present, K_{spread} cannot reach zero value.

99. All banks must calculate EE variability component of the CVA capital by a simple scaling of $K_{\text{spread}}^{\text{unhedged}}$ ~~**. The EE variability multiplier β is set at [0.5]:**~~

~~$K_{\text{EE}} = \beta K_{\text{spread}}^{\text{unhedged}}$~~

$$K_{\text{EE}} = \beta K_{\text{spread}}^{\text{unhedged}}$$

The EE variability multiplier β is set at [0.5]

[6] For single-name contingent CDS, the notional is determined by the current market value of the reference portfolio or instrument.

(b) Parameter values

100. Supervisory risk weights RW_b are **mapped to the risk weights for counterparty credit spreads in the SA-CVA. These risk weights for both liquidity horizon options are** given in the table**s** below. ~~**Single-name risk weights are obtained by scaling the SA-CVA risk weights for counterparty credit spreads to a one-year horizon. Broad index risk weights are set equal to the minimum of the single-name risk weights across sectors.**~~

~~***[Note: The risk weights in the table below reflect the preliminary view of the Basel Committee and will be subject to further calibration after the quantitative impact assessment is conducted and as the proposed standardised approach for market risk is finalised.]***~~

[Option 1]

Risk bucket	Investment grade	Non-investment grade
Sovereigns including central banks, multilateral development banks	~~**8.8**~~ **0.5**%	~~**20.4**~~ **3.0**%
Local government, government-backed non-financials, education and public administration	**1.0%**	**4.0%**
Financials including government-backed financials	~~**10.2**~~ **5.0**%	~~**17.3**~~ **12.0**%
Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying	~~**7.1**~~ **3.0**%	~~**13.0**~~ **7.0**%
Consumer goods and services, transportation and storage, administrative and support service activities	~~**6.1**~~ **3.0**%	~~**14.4**~~ **8.5**%
Technology, telecommunications	~~**5.1**~~ **2.0**%	~~**13.0**~~ **5.5**%
Health care, utilities, ~~**local government, government-backed non-financials, education, public administration**~~ professional and technical activities	~~**4.1**~~ **1.5**%	~~**8.7**~~ **5.0**%
~~**Indices spanning multiple buckets**~~	~~**4.1%**~~	~~**8.7%**~~

[Option 2]

Risk bucket	Investment grade	Non-investment grade
Sovereigns including central banks, multilateral development banks	**0.9%**	**3.7%**
Local government, government-backed non-financials, education and public administration	**1.2%**	**4.0%**
Financials including government-backed financials	**6.1%**	**12.0%**
Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying	**3.7%**	**7.0%**
Consumer goods and services, transportation and storage, administrative and support service activities	**3.7%**	**8.5%**
Technology, telecommunications	**2.4%**	**5.5%**
Health care, utilities, professional and technical activities	**1.8%**	**5.0%**

101. For sector indices, RW_b for the appropriate risk bucket from the table above should be multiplied by 0.7 to account for diversification of idiosyncratic risk within the index. **For indices spanning multiple**

buckets, the name-weighted average of the bucket risk weights from the table above should be multiplied by 0.7.

102. The correlation ρ between a counterparty credit spread and the systematic factor that drives all indices is set to 50%. Therefore, the correlation between credit spreads of any two counterparties is $\rho^2 = 25\%$.

103. The correlation r_{hc} between the credit spread of counterparty c and the credit spread of its single-name hedge h are set as follows:

Single-name hedge *h* of counterparty *c*	**Value of r_{hc}**
references counterparty *c* directly	100%
has legal relation with counterparty *c*	80%
shares sector and region with counterparty *c*	50%