



EBA Report on CVA

25 February 2015

EBA Report

On Credit Valuation Adjustment (CVA) under Article 456(2) of Regulation (EU) No 575/2013 (Capital Requirements Regulation — CRR)

and

EBA Review

On the application of CVA charges to non-financial counterparties established in a third country under Article 382(5) of Regulation (EU) No 575/2013 (Capital Requirements Regulation — CRR)

Contents

List of figures	5
Executive Summary	8
EBA Policy recommendations	11
1. Accounting and internal practices	16
1.1 Accounting requirements under IFRS	16
1.2 Industry practices for fair value credit-related adjustments	17
1.2.1 Credit-related adjustments in the financial jargon	17
1.2.2 Valuation techniques for CVA and DVA	18
1.2.3 Industry practices for accounting purposes	20
1.2.4 Industry practices for pricing and risk management purposes	20
1.2.5 CVA/DVA internal risk management	22
2. The Basel CVA risk charge	24
2.1 Why a CVA risk charge was introduced in Basel?	24
2.1.1 CVA and the Basel II framework	24
2.1.2 What happened during the crisis?	24
2.2 Overview of the Basel CVA risk charge	26
2.2.1 Advanced CVA risk capital charge	27
2.2.2 Standardised CVA risk capital charge	28
2.2.3 Treatment of incurred CVA	30
2.2.4 Treatment of DVA and FVA	30
2.2.5 Criticism of the Basel CVA framework	30
3. Implementation of the Basel CVA framework	32
3.1 EU CVA framework	32
3.1.1 Divergences with Basel	32
EU exemptions	32
Alternative treatment for banks using the Original Exposure Method (CRR Article 385)	35
3.1.2 EU implementation	36
EBA RTS on proxy spread and limited number of smaller portfolios	36
EBA Q&As on CVA	37
Application of EBA Prudent Valuation requirements	37
3.2 Divergences between the Basel framework and other jurisdictions	38
3.2.1 Implementation in the US	38
3.2.2 Implementation in Canada	39
3.2.3 Implementation in Switzerland	39
4. Consequences of the CVA risk charge on industry practice	41
4.1 Higher trading cost for clients	41
4.2 Increased use of collateral	42
4.3 Changes in modelling practices	42

4.4	Increased demand for credit derivatives to act as eligible hedges	43
4.5	Focus on hedging CVA risk charge instead of hedging CVA P&L	45
5.	Findings & policy recommendations	46
5.1	Scope of the CVA risk charge	46
5.1.1	General scope issues	46
	OTC derivatives and exchange traded derivatives (ETDs)	46
	Securities Financing Transactions (SFTs)	47
	Findings of the data collection exercise	48
	Policy recommendations	49
5.1.2	EU exemptions	49
	CVA data collection exercise - Main findings	49
	Misalignment of accounting and prudential scopes	49
	CVA risks of the transactions exempted from the CVA risk charge	52
	Impact for institutions of removing EU exemptions	54
	Operational issues related to exempted transactions	57
	Addressing EU exemptions	58
	Legal constraints for short-term action	58
	Rationale for redefining or removing EU exemptions in the medium-term	58
	Policy recommendations	59
	Clarifying the clients' trade exemption	62
5.2	Calculation of capital requirements of CVA risk	64
5.2.1	Conservatism of the calculation methods	64
5.2.2	Materiality of standardised method for A-CVA banks	65
5.2.3	EBA RTS on a limited number of smaller portfolios	66
5.2.4	Proxy spread methodology under the advanced method	69
	LGD_{MKT}	80
	Appropriateness of a unified proxy methodology for market risk and CVA risk	81
	Update of EBA RTS mandate	83
5.2.5	Selection of stress period for A-CVA banks	83
5.2.6	Specific permissions	85
	Permission to use $M=1$ for A-CVA banks	85
	Permission to use internal CVA model for estimating M	86
5.2.7	Calculation of M_i in the standardised method	86
5.2.8	Use of Original Exposure Method	87
5.3	Eligible hedges	88
5.3.1	Eligible hedges under the CRR	88
5.3.2	Other market risk hedges	88
5.3.3	Eligible hedges of exempted counterparties	89
5.3.4	Hedges for non-credit spread risks of CVA	90
5.3.5	Policy Recommendations on eligible hedges	91
5.4	CVA risk as a component of the market risk framework	92
5.4.1	CVA risk in the Fundamental Review of the Trading Book (FRTB)	92
5.4.2	CVA data collection exercise	92
5.4.3	Framing a revised CVA risk charge in a renewed context	93
5.4.4	Policy Recommendations on Basel FRTB	94

6. Review on the application of CVA charges to non-financial counterparties established in a third country	98
6.1 CVA Review - Background	98
6.2 Limitation of mandate to review the CRR regime	98
6.3 NFCs established in a third country in CVA data collection exercise	99
6.4 Shortcomings of basing NFCs exemption on EMIR clearing threshold	99
6.5 EBA recommendations for the application of CVA charges to Non-EU NFCs	100
7. Technical annexes	101
7.1 Data collection exercise	101
7.1.1 Objective of the data collection	101
7.1.2 Description of the data collected and main assumptions used	101
7.1.3 Process and timelines	102
7.1.4 Number of participating banks	103
7.2 Mathematical derivation of the CVA regulatory formula under the advanced method	104
7.2.1 Unilateral CVA	104
7.2.2 Bilateral CVA	108
7.3 Mathematical derivation of the calculation formula of the standardised method	108
7.4 Clients' trades exemption in EU official languages	109

List of figures

Figure 1: Accounting standards and credit-related adjustments for accounting purposes	20
Figure 2: Accounting standards of the respondents that do not compute a bilateral CVA	20
Figure 3: Credit-related adjustments for pricing/risk management purposes	21
Figure 4: Mismatches between credit-related adjustments calculated for accounting and pricing/risk management purposes	21
Figure 5: Use of historical PDs for pricing CVA	22
Figure 6: CVA desks and hedging of CVA risks	23
Figure 7: Breakdown of credit losses incurred on a sample of UK banks during financial crisis	25
Figure 8: 2006-2009 historical 5y CDS spreads of three large monoline insurers (Source MARKIT)	26
Figure 9: Comparative average CCR capital costs for a 3 year FX forward, a 5 year Interest Rate Swap and a 10 year Cross Currency Swap (Source: AFME)	41
Figure 10: Incentives to apply for IMM and SIR VaR	43
Figure 11: Global OTC credit derivatives market. Amounts outstanding, in billion USD (Source: BIS)	44
Figure 12: Inclusion of SFTs in CVA risk charge	49
Figure 13: Reason for mismatch between accounting and prudential scope	50
Figure 14: Misalignment of accounting and prudential scopes for respondents	51
Figure 15: Impact of calculating the CVA risk charge based on the Accounting scope	52
Figure 16: Distribution of number of counterparties subject to CVA risk charge per broad counterparty type	53
Figure 17: CVA risk of exempted counterparties as gauged by internal risk measures	54
Figure 18: Impact per bank of removing all EU exemptions from the CVA risk charge	55
Figure 19: Impact per bank of removing each EU exemption from the CVA risk charge	56
Figure 20: Type of exemption representing the highest CET1 ratio impact for each respondent	57
Figure 21: Difficulties experienced to identify and remove exempted transactions	57
Figure 22: Relationship between the (unilateral) CVA as computed internally and its potential extreme change as implied by the CVA risk charge (expressed in million EUR)	64
Figure 23: RWA and number of counterparties per calculation method	65
Figure 24: Percentage of number of non-IMM netting sets to total number of all netting sets	67
Figure 25: Percentage of size of largest non-IMM netting set to total size of all netting sets	67

Figure 26: Percentage of size of all non-IMM netting sets to total size of all netting sets	68
Figure 27: Impact of not meeting the three conditions of the EBA RTS to capitalise non-IMM portfolios under the advanced method	68
Figure 28: Number of counterparties subject to proxy spread and single-name proxy spread	69
Figure 29: Additional attributes to rating, industry and region	70
Figure 30: Proxy spread benchmarking of hypothetical counterparties - UK insurer, rated AA	71
Figure 31: Proxy spread benchmarking of hypothetical counterparties – Swiss municipality of more than 100,000 inhabitants, rated A	71
Figure 32: Proxy spread benchmarking of hypothetical counterparties - Japanese airline company, rated BB	72
Figure 33: Proxy spread benchmarking of real counterparties - Government of Turkey	72
Figure 34: Proxy spread benchmarking of real counterparties – Berkshire Hathaway Inc	73
Figure 35: Proxy spread benchmarking of real counterparties – Tata motors Ltd	73
Figure 36: Computation of 1-day regulatory CVA VaR 99% - Government of Turkey	74
Figure 37: Computation of 1-day regulatory CVA VaR 99% - Berkshire Hathaway Inc	75
Figure 38: Computation of 1-day regulatory CVA VaR 99% - Tata motors Ltd	75
Figure 39: Overview of proxy spread methodology of A-CVA banks	76
Figure 40: Availability of CDS data - October 2014 (Source MARKIT)	78
Figure 41: Availability of CDS data - August 2013 (Source ISDA-AFME and MARKIT)	79
Figure 42: Different proxy spread methodologies for market and CVA purposes	82
Figure 43: Impact of selection of historical period on conservativeness of Stressed CVA VaR	84
Figure 44: Stress period for CVA VaR and stressed EEPE	84
Figure 45: Permission to set M=1 and impact for banks	85
Figure 46: Use of internal CVA model for estimating M	86
Figure 47: Hedges that respondents would like to see recognised as eligible	89
Figure 48: Removal of eligible hedges of exempted counterparties from the market risk charge	90
Figure 49: Removal of non-credit spread risk CVA hedges from the market risk charge	91
Figure 50: Comparison of internal and regulatory CVA VaR measures	93
Figure 51: Data collection exercise – Key milestones	103
Figure 52: Data collection exercise – Number of participating banks	104

Abbreviations

IAS	International Accounting Standards
IFRS	International Financial Reporting Standards
GAAPs	Generally Accepted Accounting Principles
CVA	Credit Valuation Adjustment
DVA	Debit Valuation Adjustment
FVA	Funding Valuation Adjustment
P&L	Profit and loss
CET1	Common equity tier 1
CCR	Counterparty credit risk
EAD	Exposure at default
IMM	Internal Model Method
EE	Expected exposure
MPOR	Margin period of risk
SFTs	Securities Financing Transactions
CCP	Central counterparty
NFC+	Non-financial counterparties exceeding the EMIR clearing threshold
NFC-	Non-financial counterparties below the EMIR clearing threshold

Executive Summary

Article 456(2) of Regulation (EU) No 575/2013 ('Capital Requirements Regulation' – CRR), relating to the delegated acts that the Commission is empowered to adopt, mandates the EBA to 'monitor the own funds requirements for CVA risk and by 1 January 2015 submit a report to the Commission. In particular, the report shall assess:

- (a) the treatment of CVA risk as a stand-alone charge versus an integrated component of the market risk framework;
- (b) the scope of the CVA risk charge including the exemption in Article 482;
- (c) eligible hedges;
- (d) calculation of capital requirements of CVA risk.

On the basis of that report and where the findings are that such action is necessary the Commission shall also be empowered to adopt a delegated act in accordance with Article 462 to amend Article 381, Article 382(1) to (3) and Articles 383 to 386 concerning those items.'

Whereas the EBA mandate includes all aspects of the CVA framework (in particular, the scope of the charge including EU exemptions), the articles that the Commission is empowered to amend based on the CVA Report consist of all articles of Title VI of CRR ('Own funds requirements for CVA risk' - Articles 381 to 386) except for Article 382(4). Article 382(4) is the legal basis for EU exemptions.

Alongside the CVA Report, the EBA has also produced a Review on the application of CVA charges to non-financial counterparties (NFCs) established in a third country, as mandated under CRR Article 382(5). Based on this review, the EBA will develop, in cooperation with ESMA, Regulatory Technical Standards (RTS) to specify the procedures for excluding transactions with NFCs established in a third country from CVA risk.

In order to provide supporting evidence for the recommendations made in this CVA report, the EBA launched a data collection exercise with European banks in Q2-Q3 2014. The data requested covered a large number of issues related to the CVA capital charge for the EBA to meet its given mandate.

European banks with sizeable OTC derivative portfolios and material capital requirements for CVA risks were invited to participate in the data collection exercise on a voluntary basis, regardless of whether they use the advanced method (A-CVA banks) or the standardised method (S-CVA banks) for calculating the CVA capital charge. In total, 32 banks from 11 jurisdictions participated in the data collection exercise.

The CVA data collection exercise has highlighted increased convergence in banks' practices in relation to CVA. Banks seem to have progressively converged in reflecting the cost of the credit risk of their counterparties in the fair value of derivatives using market implied data based on CDS spreads and proxy spreads in the vast majority of cases. This convergence is the result of industry practice, as well as a consequence of the implementation in the EU of IFRS 13 and the Basel CVA framework.

In contrast, accounting practices were much more diverse when the Basel Committee, in reaction to CVA losses observed during the crisis, initiated discussions on the implementation of a prudential framework for CVA. Accounting for CVA was not universally fair valued through P&L and, in many instances, relied almost exclusively on the use of historical default probabilities. Confronted with this diversity, the Basel Committee defined a prudential framework independent of accounting requirements, prescribing the use of a regulatory formula for CVA, with dynamics relying on market-implied inputs rather than historical estimates (for both advanced and standardised methods). Concerns around shortcomings and unintended effects of the Basel CVA framework contributed to the introduction of exemptions in the EU, while they also lead in some cases other Basel jurisdictions to divert from the Basel framework, albeit on a more limited scale.

Most importantly, the CVA data collection exercise has highlighted the materiality of the CVA risks that are currently not covered by EU legislation due to CRR exemptions. Moving to a sounder framework, therefore, constitutes a key objective to better aligning regulatory capital with actual risks. Acknowledging the legal impossibility to amend EU exemptions via the delegated act foreseen in CRR Article 456(2) and the shortcomings of the current Basel framework, the EBA recommends that all EU exemptions should be reconsidered and possibly removed upon completion of a review of the CVA risk charge in Basel as part of the fundamental review of the trading book.

In accordance with the findings of the CVA data collection exercise, the EBA is proposing policy recommendations that can be implemented in the short-term and will provide clarification and convergence in the implementation of the current CVA framework in the EU. In addition, the EBA will carry on investigating potential distortions that a removal of EU exemptions under the current CVA framework could generate.

In addition, in order to partially address the risks generated by EU exemptions in the short-term, the EBA recommends monitoring the impact on the CVA risk charge of the transactions exempted from the CVA risk charge, as well as defining potential situations of excessive CVA risks to be considered as part of the Supervisory Review and Evaluation Process (SREP) of institutions. The EBA will issue a guidance specifying criteria of what may constitute a situation of excessive CVA risks for the purpose of SREP. Based on this guidance, competent authorities will decide whether or not to take supervisory measures having regard to the specific situation of each institution. The process and timeline, as well as the potential thresholds indicating a presumption of situation of excessive CVA risks, will be further specified in the course of 2015.

On 5 December 2014, the Basel Committee on Banking Supervision (BCBS) published its Regulatory Consistency Assessment Programme (RCAP) for the European Union¹, whereby the prudential regulatory framework in the EU and the nine EU Member States that are BCBS members was evaluated to be ‘materially non-compliant’ with the minimum standards prescribed under the Basel framework. In particular, this overall grade can be attributed largely to the CVA framework, which was assessed to be ‘non-compliant’ i.e. the lowest grade in the four-grade scale used in RCAP assessments.

As a result and with a view to re-establishing international consistency in the implementation of the Basel CVA framework, the EBA is making policy recommendations on the ongoing fundamental review of the trading book in Basel. These policy recommendations aim at addressing the inconsistencies of the current standards by moving CVA to the market risk framework, as well as allowing advanced banks to use their internal CVA pricing models for the purposes of computing the own funds requirement for CVA risks. The EBA, however, recommends that this revised advanced approach should be subject to the setting of strict conditions (approval by competent authorities, backtesting requirements, P&L attribution process, benchmarking). Finally, the EBA recommends that the CVA risk charge should be re-aligned with actual CVA risk. As a result, the calibration of the CVA risk charge would be reviewed so as to effectively reflect actual CVA risk and ensure that the appropriate, conservative capture of CVA risks does not generate unintended market distortions or wrong incentives for institutions.

¹ <http://www.bis.org/press/p141205.htm>

EBA Policy recommendations

Policy recommendation 1: The EBA recommends clarifying via amendment of CRR Article 382 that exchange-traded derivatives are included in the scope of the CVA risk charge.

Policy recommendation 2: The EBA recommends harmonising the treatment of securities financing transactions in the EU, upon completion of a review of the CVA risk charge in Basel as part of the Fundamental Review of the Trading Book.

Policy recommendation 3: The EBA considers that the CVA risk generated by EU exempted counterparties can be substantial and should be captured prudentially. Acknowledging the legal impossibility to amend EU exemptions via the delegated act foreseen in CRR Article 456(2) and bearing in mind ongoing discussions in Basel, the EBA recommends that all EU exemptions should be reconsidered and possibly removed in the context of legislative amendments to the CRR, upon completion of a review of the CVA risk charge in Basel as part of the Fundamental Review of the Trading Book.

Policy recommendation 4: Considering that the CVA risk generated by EU exempted counterparties can be substantial and acknowledging the legal impossibility to amend EU exemptions via the delegated act foreseen in CRR Article 456(2), the EBA recommends defining an EBA coordinated approach for yearly monitoring of the impact of transactions exempted from the CVA risk charge and for defining situations constituting a presumption of excessive CVA risks to be considered under SREP.

This approach will be further specified in a guidance on assessing excessive CVA risks under SREP, which will be submitted for public consultation in the course of 2015.

Policy recommendation 5: The EBA recommends moving the definitions of 'clearing member' and 'client' from CRR Article 300 to Article 4, so that these definitions apply without ambiguity to the whole of the CRR and not only to the articles dedicated to the own funds requirements for exposures to a central counterparty.

Policy recommendation 6: The EBA views that, in the context of indirect clearing, CRR Article 382(3) currently exempts from the CVA risk charge centrally cleared clients' trades from the perspective of both the clearing member and the client, when the client is subject to the CRR. The EBA, however, recommends reconsidering this treatment in the light of international regulatory developments and based on an appropriate review of the incentives structure ensuring that indirect clearing remains incentivised vis-à-vis bilateral trading.

Policy recommendation 7: The current proxy spread methodology relies on credit spread data from peers of the counterparty for which a proxy spread has to be generated (considering the attributes of rating, region and industry). Acknowledging some limits of such methodology, the EBA recommends allowing institutions to use alternative approaches based on a more fundamental analysis of credit risk to proxy the spread of those counterparties for which no time series of credit spreads are available, nor for any of their peers, due to their very nature.

The EBA recommends that institutions justify and document all the instances where proxy spreads are based on an alternative approach other than using the three attributes of rating, region and industry. The use of alternative approaches shall also be justified by the use of similar approaches to proxy the spreads of the same counterparty for accounting CVA purposes. The EBA should monitor the range of practices in this area and could issue guidelines on such practices.

In addition, the EBA recommends extending the possibility of use of single name proxy spreads to the case of a parent and a subsidiary, which share at least either the same industry or the same region.

Policy recommendation 8: The EBA recommends amending the Regulatory formula for the Advanced method in order to allow institutions to reflect the seniority of the netting set in LGD_{MKT}^* .

The EBA recommends that institutions justify and document all the instances when LGD_{MKT}^* differs from LGD_{MKT} or when LGD_{MKT}^* is based on an alternative approach where no CDS are available as proposed under policy recommendation 7.

Policy recommendation 9: The EBA recommends the following amendment to CRR Article 383(6) in order to clarify that a unified proxy methodology for both market risk and CVA risk purposes does not constitute a CRR requirement:

'For exposures to a counterparty, for which the institution's ~~approved internal model for the specific risk of debt instruments~~ proxy spread methodology does not produce a proxy spread that is appropriate with respect to the criteria of rating, industry and region of the counterparty, the institution shall use the method set out in Article 384 to calculate the own funds requirement for CVA risk.'

Policy recommendation 10: Consistently with policy recommendations 8 and 9, the EBA recommends the following amendment to CRR Article 383(7):

'EBA shall develop draft regulatory technical standards to specify in greater detail:

(a) how a proxy spread is to be determined ~~by the institution's approved internal model for the specific risk of debt instruments~~ for the purposes of identifying s_{i^*} , LGD_{MKT}^* and LGD_{MKT} referred to in paragraph 1;

(b) the number and size of portfolios that fulfil the criterion of a limited number of smaller portfolios referred to in paragraph 4.

EBA shall submit those draft regulatory technical standards to the Commission by 1 January 2014.

Power is delegated to the Commission to adopt the regulatory technical standards referred to in the first subparagraph in accordance with Articles 10 to 14 of Regulation (EU) No 1093/2010.'

Policy recommendation 11: The EBA recommends that, when the stress period used for the stressed CVA VaR does not contain any data from Q2 2008 to Q2 2009, competent authorities should assess the relevance of setting a multiplier higher than 3 for the Stressed Value-at-Risk input to the CVA risk charge in order to address potential underestimation of own funds requirements for CVA risk.

Policy recommendation 12: The EBA recommends clarifying the standardised method for CVA, in particular the way the term $M_i \times EAD_i^{Total}$ is to be computed.

Policy recommendation 13: The EBA recommends removing the alternative approach of CRR Article 385 (institutions using the Original Exposure Method) as the approach is applied by very few institutions across the EU and its outputs do not reflect CVA risks in a sufficiently risk-

sensitive way. Institutions using the OEM for counterparty credit risk purposes should use the EAD computed under the OEM in the standardised method for CVA, as provided for under CRR Article 384(1). A transitional period could be set for institutions to move towards the standardised method.

Policy recommendation 14: The EBA recommends amending CRR Article 386 via EC delegated act to clarify, separately for the advanced and the standardised methods, which instruments can be considered as eligible hedges.

Policy recommendation 15: The EBA recommends amending the Basel CVA framework along the following lines:

- CVA should be moved to the market risk framework and treated as a fair value adjustment subject to prudent valuation requirements
- CVA should constitute a desk as defined in the Fundamental Review of the Trading Book and remain a standalone risk-charge in the market risk framework
- CVA advanced and standardised methods should be adjusted to reflect outcome of Fundamental Review of the Trading Book, in particular the sum of the VaR and the stressed VaR should be removed
- Market risk hedges of CVA (interest rate, FX hedges...) should be recognised as eligible hedges
- Subject to definition of specific conditions (e.g. capture of basis risk), proxy hedging should be allowed
- Subject to conditions, advanced institutions should be allowed to use their internal CVA pricing models (without reference to the regulatory formula) for the purposes of computing the own funds requirement for CVA risks
- The CVA framework should be re-dimensioned for the regulatory CVA risk charge to better reflect institutions' internal practices.

The EBA suggests that the European Commission should consider possible action in this respect upon completion of the Fundamental Review of the Trading Book in Basel.

Policy recommendation 16: In line with CRR provisions and until EU exemptions are reconsidered, the EBA recommends applying the same approach for exempting NFCs for CVA purposes, regardless of whether they are established in the EU or outside the EU.

1. Accounting and internal practices

This section provides a brief overview of the accounting requirements for credit valuation adjustments (CVA) and how institutions have implemented them in practice. The data collection exercise highlighted current practices on a representative sample of large EU banks.

1.1 Accounting requirements under IFRS

Institutions applying International Financial Reporting Standards (IFRS) are required to reflect in the fair value measurement of derivative instruments the credit risk of their counterparty as well as their own credit risk².

In contrast, institutions applying national Generally Accepted Accounting Principles (national GAAPs) may use different fair value measurement principles under which these adjustments are not required. This section focuses on the description of the credit-related adjustment requirements under IFRS since the majority of large European banks active in the derivative markets apply these accounting standards. European banks that are not required to compute credit valuation adjustment requirements under their national GAAPs are still subject to the CVA risk charge under the CRR. As such, these banks are required to hold capital for a risk which is not reflected in their accounting P&L. This specific situation is not taken into account in the Basel CVA framework, which is supposed to apply worldwide regardless of local accounting standards. This 'one-size-fits-all' approach incentivises firms, to some extent, to calculate a credit valuation adjustment for accounting purposes even if they are not required to do so under their national GAAPs.

IAS 39 requires derivative instruments to be measured at fair value, with changes in fair value being recognised in profit or loss³. The adoption of IFRS 13, which became effective in 2013, specifies more explicitly the principles of fair value measurement, including credit-related adjustments. IFRS 13 defines fair value as an 'exit' price, i.e. 'the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date'⁴. The notion of 'transfer' price constitutes a key difference from the notion of 'settlement' price formerly prevailing under IAS 39.

IFRS 13 explicitly requires institutions to reflect the risk of non-performance in the fair value of a liability, including the entity's own credit risk⁵. The credit-related adjustment capturing the credit

² Paragraphs 11, 42, 43 and 56 of IFRS 13

³ Paragraphs 9 and 43 of IAS 39

⁴ Paragraph 9 and 57 of IFRS 13

⁵ Paragraph 42 of IFRS 13

risk of the counterparty is commonly referred to in the industry as Credit Valuation Adjustment (CVA); the one capturing the entity's own credit risk as Debit Valuation Adjustment (DVA)⁶.

IFRS 13 does not prescribe a specific valuation method that shall be used for the calculation of CVA and DVA. However, it requires the use of valuation methods that maximise the use of observable inputs and minimise the use of unobservable inputs⁷.

The latter are not precluded to the extent that relevant observable inputs are not available. Such unobservable inputs shall be generated using the best information available in the circumstances, which might include the entity's own data. When a pricing model or valuation input⁸ is used to generate them, the uncertainty related to the pricing model or valuation input needs to be taken into account in the fair value measurement.

Finally, IFRS 13 includes an optional exception when certain criteria are met, under which a group of financial assets and liabilities is permitted to be measured on the basis of the price that would be received to sell a net asset position or paid to transfer a net liability position for a particular risk exposure, such as credit risk, that is managed on a net basis. Therefore, when measuring the net exposure within a portfolio of offsetting individual exposures, the counterparty's and issuer's credit valuation adjustments from the individual instruments may cancel each other to some extent. Accordingly, the entity shall measure the fair value of the group of financial assets and liabilities consistently with how market participants would price the net risk exposure at the measurement date⁹.

1.2 Industry practices for fair value credit-related adjustments

1.2.1 Credit-related adjustments in the financial jargon

CVA or 'unilateral CVA' is usually understood as the price of counterparty credit risk that firms are required to reflect in the price of their derivative transactions¹⁰. In theory, it should reflect today's best estimate (from a risk-neutral point of view) of the potential loss incurred on derivative transactions due to the default of the counterparty. Essentially, if the counterparty owes the entity money on its derivative portfolios when it defaults, the entity may not receive this amount in full, leading to a loss for the entity.

CVA's natural counterpart is DVA, which is the price component of the entity's own credit risk that firms are also required to reflect in the price of their fair-value instruments, mainly derivative transactions. In theory, it should reflect today's best estimate (from a risk-neutral point of view)

⁶ In Section 1.2, a more comprehensive overview of the terminology of credit-related adjustments is provided

⁷ Paragraph 61 of IFRS 13

⁸ Paragraph 87 and 88 of IFRS 13

⁹ Paragraph 48-49 of IFRS 13

¹⁰ In theory, a CVA should be calculated on all fair-valued financial instruments. This report focuses on CVA for bilateral financial instruments, mainly derivatives, since the scope of the CVA risk charge mainly include derivatives and since discussing CVA in a broader context would not be relevant

of the potential gain incurred on derivative transactions due to the entity's own default. Essentially, if the entity owes the counterparty money on its derivative portfolios when it defaults, the entity may not post this amount in full, leading to a gain for the entity.

The combination of CVA and DVA is usually referred to as 'bilateral CVA'. When firms compute CVA and DVA separately (i.e. assuming independency between the counterparty's and the entity's credit risks), bilateral CVA is equal to unilateral CVA minus DVA. When firms compute CVA and DVA jointly (i.e. assuming dependency between the counterparty's and the entity's credit risks), bilateral CVA is still equal to unilateral CVA minus DVA but their calculations in this case integrate the joint default probabilities of both the counterparty and the entity. Only the most sophisticated banks can compute jointly CVA and DVA.

Over the last couple of years, an additional, related fair-value adjustment has become increasingly popular, the Funding Valuation Adjustment ('FVA'). A clear explanation of the concept of FVA is given in Risk Magazine¹¹: 'FVA [...] reflects the cost or benefit of funding a trade with a counterparty that does not post collateral. On trades where the bank is in-the-money, FVA is a cost – [the bank] is not receiving collateral from its counterparty, but has to post it to support any hedge executed under the terms of the two-way credit support annex (CSA) that is standard for interdealer trades. When the bank is out-of-the money, FVA becomes a benefit, because [the bank] is receiving collateral it does not have to post.'

Rather than a credit-related adjustment, FVA is considered as a funding-related adjustment (although there is a clear link between credit and funding). IFRS standards do not require explicitly the calculation of FVAs and there is no consensus within the industry on whether this adjustment should be reflected in the price of derivative transactions. Some banks compute FVAs, some others do not. However, firms argue that some overlap may exist between the concepts of FVA and CVA/DVA.

1.2.2 Valuation techniques for CVA and DVA

Calculating accurately CVA (resp. DVA) tends to be very complex since firms have to quantify the following three components:

- How much the market value of the derivatives portfolio will be worth in the future: this is the market risk component of CVA/DVA

The estimate of the value of the derivatives portfolio in the future is usually called an exposure profile (the term profile refers to the time dimension, i.e. the fact that an estimate is needed for each future date until the contract matures). Each exposure profile always starts from the current market data and will take into account, for each future date, several scenarios for the evolution of the market conditions.

¹¹ Risk Magazine 'Introducing the XVA desk', August 2013

CVA is based on the ‘positive’ exposure profiles, i.e. scenarios for which the derivatives portfolio has a positive market value whereas DVA is based on the ‘negative’ exposure profiles, i.e. scenarios for which the derivatives portfolio has a negative market value.

Most sophisticated banks use simulation models (e.g. Monte-Carlo) to generate scenarios for the evolution of the market conditions in the future, and then combine these future market conditions with different types of pricing models to generate an estimate of the value of their derivative portfolios in the future (sometimes referred to as ‘Mark-to-future’). Less sophisticated banks use simpler approaches, under which the market conditions evolve along only one or two possible predefined scenarios from which they infer, using simplified assumptions, the estimate of the value of their derivative portfolios in the future.

- When the derivatives’ counterparties (resp. the firm itself) are most likely to default before the maturity of the contracts: this is the credit risk component of CVA/DVA

Market implied default probabilities are preferred than historical estimates for the calculation of CVA/DVA (especially because the accounting standards have favoured the use of observable market inputs). It is commonly accepted that credit default swaps (CDS), when available, represent the most relevant instruments from which market implied default probabilities can be extracted (using bootstrapping algorithms). However, the CDS market is not sufficiently deep to cover all the counterparties for which CVA/DVA is calculated; its functioning has also been called into question over the last few years due to liquidity and enforceability issues. Market credit spreads based on other instruments than CDS are also used.

For entities that do not have market CDS available, proxy spread methodologies are commonly used to generate hypothetical market spreads from which market implied default probabilities are extracted. These methodologies generally rely on combining information from the market credit spreads of peers of the counterparty.

Finally, some banks manage their counterparty credit risk under an ‘originate to warehouse’ type of business model and do not use market credit spreads to calculate their CVA, but rather indicators of credit quality such as internal ratings.

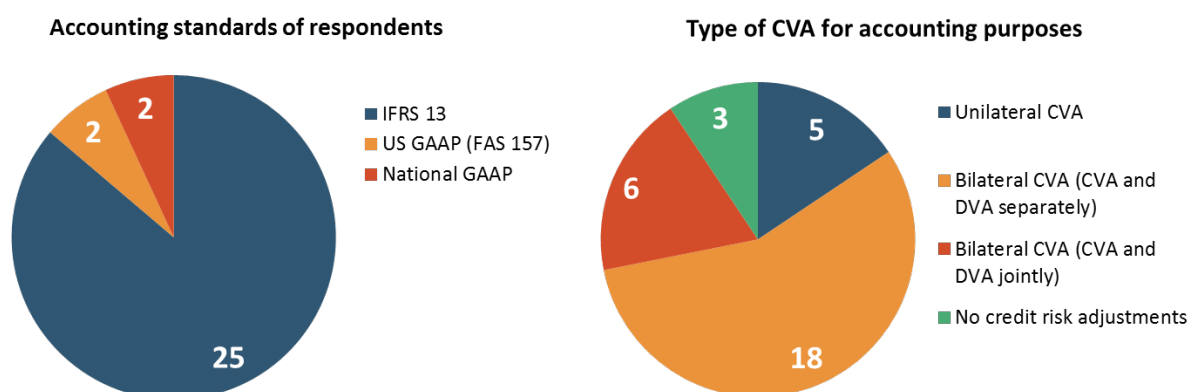
- How much can be lost (resp. gained) upon default of the counterparties: this is the recovery risk component of CVA/DVA

Recovery rates are very challenging to model accurately but they have a big impact on CVA/DVA. Since observable data are favoured for CVA/DVA, banks tend to use market implied recovery rates which depend on the seniority of the derivative portfolios and the type of counterparty (this practice also simplifies significantly the calculation of CVA/DVA). Recovery rate modelling becomes more relevant, potentially actively managed, between the date at which the counterparty is deemed in default and the date at which the actual recovery rate is known (between these two dates, there is no need to model credit risk since the counterparty has defaulted).

1.2.3 Industry practices for accounting purposes

An overview of the credit-related adjustments calculated for accounting purposes is provided below based on data from EU banks that participated in the EBA data collection exercise (banks were not asked to provide information on FVAs).

Figure 1: Accounting standards and credit-related adjustments for accounting purposes



As expected, banks' practices for credit-related adjustments have converged towards IFRS requirements: the vast majority of banks in the sample (24 respondents) calculates a bilateral CVA for accounting purposes. Most of these banks calculate CVA and DVA separately (18 respondents) whereas a minority (six respondents) calculates CVA and DVA jointly.

Figure 1 also shows that five respondents only calculate a unilateral CVA (i.e. no DVA) whereas three do not compute any CVA or DVA. Most of these banks are however in principle subject to IFRS 13.

Figure 2: Accounting standards of the respondents that do not compute a bilateral CVA

	IFRS 13	US GAAP	National GAAP
No credit risk adjustments	3	0	0
Unilateral CVA	4	0	1

1.2.4 Industry practices for pricing and risk management purposes

Figure 3 below provides the credit-related adjustments computed by respondents for pricing/risk management purposes. Figure 4 further specifies this information for accounting purposes. As shown by Figures 3 and 4, most of the respondents apply the same credit-related adjustments for pricing/risk management and accounting purposes, although some differences of calculation exist. In fact, the application of credit-related adjustments for pricing and risk management

purposes depends much less on prescribed standards than on two important conflicting interests: how much of the credit-related adjustments can be reflected in the price while remaining competitive (this should drive the price down) and how much of the credit-related adjustments can be reflected in the price to ensure that the bank can absorb or hedge counterparty credit losses during the life of the transaction (this should drive the price up).

These two figures highlight a noticeable difference between the credit-related adjustments used for pricing/risk management and for accounting purposes: the computation of DVA. Some banks do not compute any DVA for pricing and risk management purposes but do so to meet the accounting requirements; some others use different calculation methods for the two purposes. This could be explained by the fact that DVA is still a controversial concept which cannot be easily hedged in practice (it would imply to take hedging positions with wrong way risk). Therefore, these banks prefer to only reflect (and hedge) a unilateral CVA in the transaction costs, to their advantage (reflecting DVA would normally reduce the transaction costs for the clients).

Figure 3: Credit-related adjustments for pricing/risk management purposes

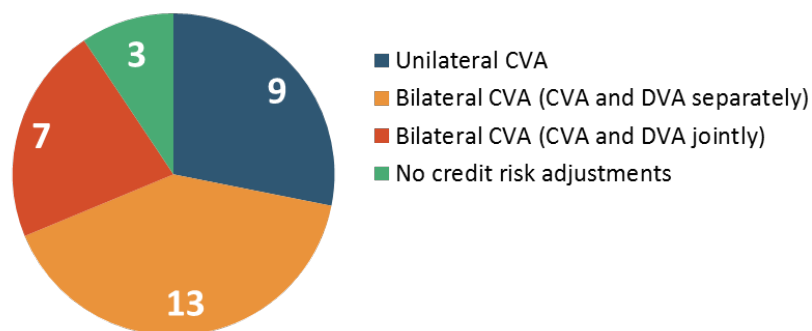
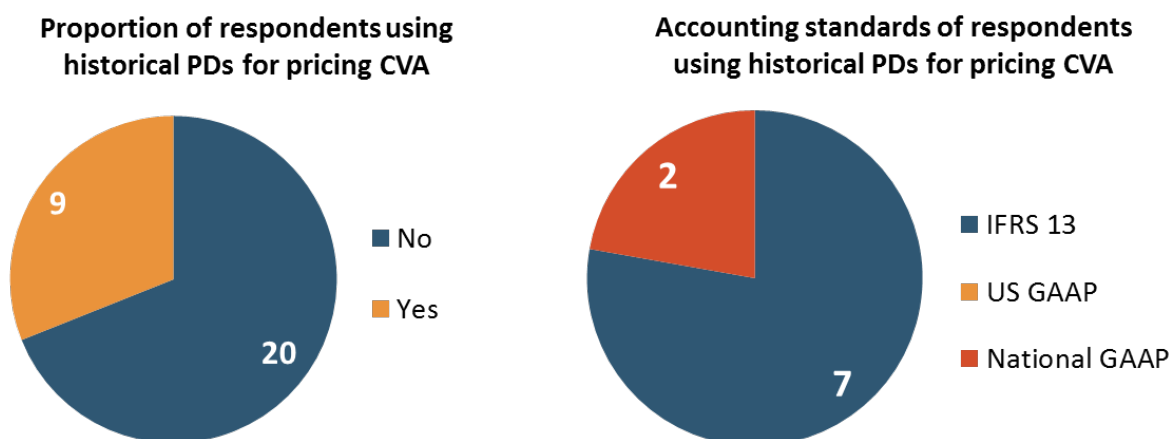


Figure 4: Mismatches between credit-related adjustments calculated for accounting and pricing/risk management purposes

		Accounting CVA			
		Unilateral CVA	Bilateral CVA (CVA and DVA separately)	Bilateral CVA (CVA and DVA jointly)	No credit risk adjustments
Pricing and Risk Management CVA	Unilateral CVA	5	4	0	0
	Bilateral CVA (CVA and DVA separately)	0	12	1	0
	Bilateral CVA (CVA and DVA jointly)	0	2	5	0
	No credit risk adjustments	0	0	0	3

In addition, some banks subject to IFRS13 continue to use historical default probabilities for pricing/risk management (see Figure 5 below) where their use for accounting purposes is not favoured by the accounting requirements.

Figure 5: Use of historical PDs for pricing CVA



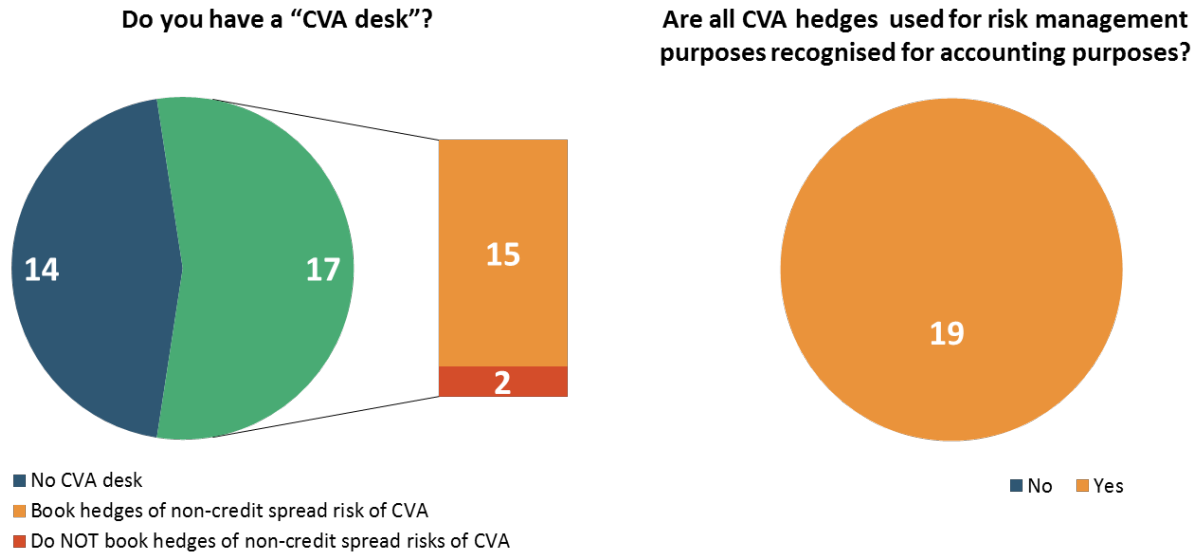
1.2.5 CVA/DVA internal risk management

Whenever possible, firms mitigate the P&L coming from CVA/DVA on OTC derivatives by using margins and collateral since it significantly reduces the CVA/DVA amounts. The most sophisticated firms centralise CVA (and potentially DVA) risks across different business units into dedicated desks (often called 'CVA desks') in charge of hedging the aggregated residual risk directly with the market. More than half of the respondents in the panel have a CVA desk according to Figure 6 below.

Unilateral CVA corresponds to a long credit risk position, which can therefore be hedged by purchasing credit protection using derivative instruments. Typically, it involves buying collateralised credit default swaps referencing either the counterparty directly or any other counterparty considered closely related to it. Other credit derivatives can also be put in place.

CVA desks are also in charge of hedging other CVA risk factors than the credit risk of the counterparty, i.e. the market risk factors of the underlying derivative contracts. For example, it implies to enter into interest rates swaps to mitigate the dependency of CVA to interest rates. Most respondents do hedge non-credit spread risks of CVA as illustrated by Figure 6. The accounting requirements do not limit the recognition of CVA hedges as demonstrated by Figure 6.

Figure 6: CVA desks and hedging of CVA risks



2. The Basel CVA risk charge

2.1 Why a CVA risk charge was introduced in Basel?

2.1.1 CVA and the Basel II framework

In the Basel II market risk framework, firms were required to hold capital against the volatility of their derivatives in the trading book. This was limited to the volatility of the default-free market value of derivatives, i.e. irrespective of any counterparty. There was no requirement to capitalise the risk due to changes in the CVA which, because at fair-value, bear the same risks. Instead, the Basel II framework addressed counterparty credit risk via a combination of default risk and credit migration risk using the CCR default risk charge. This was not sufficient to capture the market risk nature of CVA risks.

Furthermore, the recognition of CVA gains and losses in the regulatory capital resources lacked clarity. Whereas no specific treatment applied to firms subject to the standardised approach of the credit risk framework (i.e. CVA gains and losses were reflected in the regulatory capital resources), some jurisdictions interpreted the Basel II rules as allowing IRB firms to recognise 'incurred CVA' (i.e. the current value of CVA, i.e. losses already reflected or incurred in the derivative receivables) as a provision against the regulatory Expected Losses (EL) computed for the same transactions at counterparty level. In fact, CVA and Expected Losses try to quantify approximately the same risk using different inputs (historical data for EL and current market-implied data for CVA) or computation methods (the computation of CVA is generally more sophisticated than EL). In order to avoid a potential double-counting between incurred CVA and EL, incurred CVA was considered as a provision and deducted from the corresponding EL before EL was itself deducted from the firm's actual capital resources to form its regulatory capital. As a consequence, firm's regulatory capital resources were insensitive to the changes of CVA whereas their actual capital resources were.

Finally, DVA was completely ignored by the Basel II framework.

2.1.2 What happened during the crisis?

While the Basel II standards covered the risk of a counterparty defaulting before meeting its contractual obligation (and to some extent, migration risk), it did not address risks related to potential CVA losses, i.e. increase in bilateral CVA leading to P&L losses. CVA losses can occur in the following circumstances:

- An increase in unilateral CVA explained by either: (i) an increase in the institution's counterparties credit spreads; or (ii) an increase in the institution's exposures to its counterparties

- A decrease in DVA explained by either: (i) a decrease in the own institution's credit spreads; or (ii) a decrease in the institution's exposures to its counterparties.

During the crisis, CVA losses increased dramatically. A loss-attribution exercise conducted by the UK Financial Service Authority¹² on the losses incurred on their market operations by large UK banks during the period 2007-2009 concluded that CVA losses were five times the amounts of actual default losses (see Figure 7).

Figure 7: Breakdown of credit losses incurred on a sample of UK banks during financial crisis

Categorisation by product type/asset class	TB (\$bn)	BB (\$bn)	Total (\$bn)
Super Senior CDOs with ABS underliers	53	34	87
CVA counterparty losses on monoline insurers	28	9	37
ABS assets (failed securitisations, SIVs, conduits etc)	16	35	51
Leveraged loans	4	14	18
Corporate credit derivatives (index and bespoke)	11		11
Counterparty defaults	6	2	8
Other CVA losses (incl. Credit Derivative Product Companies)	6		6
Equity derivatives	4	1	5
Hedge Fund derivatives and financing	3		3
IR derivatives	3		3
Vanilla credit derivatives	3		3
Emerging markets	2		2
Corporate bond trading	2		2
FX trading	1		1
Government bond trading	0.5	0.5	1
Commodities trading	0.5		0.5
Total	144	96	240

During the crisis, CVA losses occurred from the global deterioration of credit quality of most participants in the derivative markets. However, as shown in Figure 7, CVA losses were highly concentrated on banks' exposures to monoline insurers and Credit Derivative Product Companies (CDPC) that were providing credit protection on asset backed securities and structured credit derivative instruments (especially senior and super-senior CDO tranches).

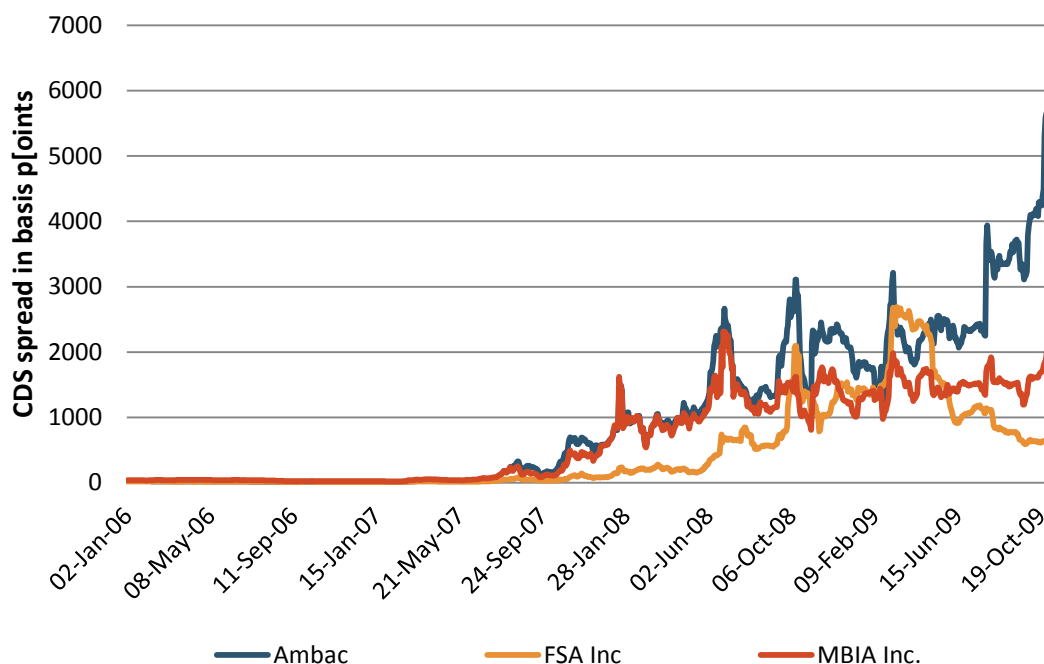
During the crisis, CVA losses on this type of exposures were severe due to the fact that these exposures were generally un-collateralised and directional (all of these counterparties were net

¹² See http://www.fsa.gov.uk/pubs/discussion/dp10_04.pdf

provider of credit protection). When the asset backed securities and structured credit derivative instruments started to underperform, increasing banks' exposures to the providers of credit protection, it became clear that the monoline insurers and the CDPCs would have to make large payments in the future to compensate their clients and, as a consequence, their credit spreads widen swiftly (see Figure 8 below).

The fact that some large banks recognised billions in CVA losses in some instances led the Basel Committee to consider CVA risks as a potential source of financial instability against which capital should be held. In response, the Basel III standards introduced a capital charge against CVA risk in 2010¹³.

Figure 8: 2006-2009 historical 5y CDS spreads of three large monoline insurers (Source MARKIT)



2.2 Overview of the Basel CVA risk charge

The Basel CVA risk charge allows two calculation methods: advanced and standardised. The standardised method is the default approach while the advanced method must be applied by banks with an approved Internal Models Method (IMM) and an approved Specific Interest Risk Value-at-Risk (SIR VaR). The Basel rules stipulate that firms cannot choose between the two approaches and that the application of the approaches is restricted by the existing use of

¹³ Basel Committee for Banking Supervision, "Basel III: A global regulatory framework for more resilient banks and banking systems", December 2010 (rev June 2010)

approved internal models: if a firm has been permitted to use both SIR VaR and IMM models, it has to use the advanced CVA charge.

Both the advanced and the standardised approaches seek to capitalise against the volatility of the credit risk component of unilateral CVA (i.e. changes in the CVA due to changes in the counterparty's credit quality). The volatility of CVA attributed to other factors, such as changes in the market value of the derivatives, is not capitalised, neither is the volatility of DVA.

Due to a lack of consensus in firms' accounting practices, the Basel Committee developed prescriptive assumptions for the CVA volatility charges. In the standardised approach, the capital charge depends on a regulatory formula that approximates the dynamics of CVA risks in a simple manner. In the advanced approach, the unilateral CVA has been prescribed with a single formula in order to measure CVA risks consistently across the industry.

This prescriptive approach does not allow the use of firms' own internal CVA models used for accounting or risk management purposes.

Some credit instruments, called 'eligible hedges', are permitted to mitigate CVA risk within the regulatory capital charge. These instruments are a subset of instruments used to hedge CVA internally and include purchased single-name CDS, contingent single-name CDS, index CDS and other equivalent hedging instruments referencing the counterparty directly. Other credit instruments, such as CDS referencing correlated counterparties, tranching and n-th-to-default credit derivatives, have been excluded from the scope of eligible hedges due to the difficulty to model appropriately their risk within SIR VaR models and, consequently, the potential benefit offered to firms to include them as risk mitigants.

2.2.1 Advanced CVA risk capital charge

Under the advanced approach, banks must simulate the credit spreads of all their counterparties over a 10-day horizon, calculate the resulting changes of the regulatory CVA formula for each counterparty and its eligible hedges and compute the VaR and Stressed VaR at a 99% confidence level of the resulting distribution of CVA losses. The CVA risk charge is calculated as the sum of the VaR and Stressed VaR multiplied by a coefficient of three.

A key assumption of the advanced approach is the use of a single regulatory formula for the calculation of unilateral CVA¹⁴ regardless of firms' internal practices. The formula is:

$$CVA = LGD_{MKT} \sum_{i=1}^T \max \left\{ 0, \exp \left(\frac{-s_{i-1} t_{i-1}}{LGD_{MKT}} \right) - \exp \left(\frac{-s_i t_i}{LGD_{MKT}} \right) \right\} \frac{EE_{i-1} D_{i-1} + EE_i D_i}{2}$$

Where:

¹⁴ See Annex 7.2 for details on the specification of the CVA formula

- s_i is the credit spread of the counterparty or, where relevant, the proxy spread at tenor t_i
- t_i is the time of the i -th revaluation, starting from $t_0 = 0$
- t_T is the longest contractual maturity across the netting sets with the counterparty
- LGD_{MKT} is the market implied LGD of the counterparty
- D_i is the default risk-free discount factor at time t_i
- EE_i is the expected exposure to the counterparty at revaluation time t_i , where exposures of different netting sets for such counterparty are added, and where the longest maturity of each netting set is given by the longest contractual maturity inside the netting set.

This formula has to be applied either directly via full revaluation or via partial revaluation by using one of the regulatory formulas available for the computation of credit spread sensitivities ('Regulatory CS01'). According to the CVA data collection exercise, 6 out of 14 A-CVA banks use a model based on full revaluation pursuant to CRR Article 383(2)(a), whereas 8 A-CVA banks use a model based on credit spread sensitivities for specific tenors as set out in CRR Article 383(2)(b).

As noted above the CVA volatility charge only capitalises against the credit spread risk component of CVA. Therefore, only one type of risk factor - the credit spreads of counterparties - is shifted during the VaR and stressed VaR computation. Those credit spreads are inferred from CDS data, if available, or derived from a proxy methodology having regard to industry, rating and region of the counterparties. In addition, only eligible hedges for credit spread risk are allowed to be included when computing the CVA risk charge.

If the IMM model does not cover all transactions subject to the CVA risk charge and non-IMM transactions consist of a limited number of smaller portfolios, an institution can also be allowed to use the advanced approach for these portfolios.

2.2.2 Standardised CVA risk capital charge

The standardised approach is the default method used to compute the CVA risk charge. It must be used by all institutions that do not apply the advanced approach. It may also be used by institutions using the advanced approach when: they are calculating the CVA risk charge for non-IMM transactions; or their proxy spread methodology does not provide an appropriate result for a counterparty without quoted CDS spreads.

The Basel framework specifies a regulatory formula that approximates a one-year VaR-based approach. It uses a one-factor credit risk model for the credit spread dynamics of each counterparty¹⁵. The main assumptions are as follows:

¹⁵ For more details see Michael Pykhtin, AsiaRisk 'Model foundations of Basel III standardised CVA charge', August 2012

- CVA is defined by formula 5 of Annex 7.2.1
- The term structure of default probabilities of each counterparty is constant over one year
- The credit spread dynamics of each counterparty is lognormally distributed
- Inter-dependency between all the counterparties is modelled via a one-factor Gaussian model with a single correlation factor of 50%
- The exposure profiles of each counterparty are approximated by the product of the effective maturity and the one-year exposure at default
- Single-name CDSs are allowed to hedge both the systematic and idiosyncratic component of the resulting VaR whereas CDS indices only hedge the systematic component.

The resulting capital requirements formula is:

$$K = 2.33\sqrt{h} \sqrt{\left(\sum_i 0.5w_i(M_i EAD_i^{total} - M_i^{hedge} B_i) - \sum_{ind} w_{ind} M_{ind} B_{ind} \right)^2 + \sum_i 0.75w_i^2 (M_i EAD_i^{total} - M_i^{hedge} B_i)^2}$$

Where:

- h is the time horizon equal to one year
- w_i is the risk weight of the counterparty depending on the rating of the counterparty
- EAD_i^{total} is the counterparty credit risk exposure value of counterparty i summed across all its netting sets
- M_i is the effective maturity of the transactions with counterparty i
- B_i is the notional of single name CDSs referencing counterparty i and used to hedge CVA risk
- M_i^{hedge} is the maturity of the single name hedges referring to counterparty i
- B_{ind} is the notional of index CDS protection used to hedge CVA risk
- M_{ind} is the maturity of index CDS protection used to hedge CVA risk
- w_{ind} is the average risk weight of index CDS used to hedge CVA risk.

2.2.3 Treatment of incurred CVA

The Basel III rules also clarified the treatment of 'incurred CVA', i.e. the CVA of a given counterparty which has already been recognised by the bank as an incurred write-down.

Incurred CVA represents a write-down in anticipation of a realised loss and should be recognised from a regulatory perspective as being risk-reducing. A failure to adequately reflect CVA losses could overstate firms counterparty credit risk requirements. This was taken into account by simply deducting incurred CVA from the total EAD at counterparty level for the calculation of the CCR default risk capital charge (the resulting 'outstanding EAD' being floored at zero to avoid negative exposure amounts). However, this deduction does not apply in the EE profiles or the EAD that enter into the calculation method of the CVA risk charge.

2.2.4 Treatment of DVA and FVA

DVA allows banks to report profits as their credit quality deteriorates, therefore boosting their equity and, in the absence of capital filters, their regulatory equivalents. However, in the Basel framework: DVA volatility is not captured under the CVA risk charge and the full amount of DVA is de-recognised from banks' equity. This is because the Basel Committee was not persuaded that this source of capital could be loss absorbing nor could be monetised. There was also some ambiguity in the past on whether IFRS required the effect of DVA to be taken into account in fair value, but this ambiguity has disappeared with the introduction of IFRS 13. Now both IFRS and US GAAP require a DVA calculation.

FVA is not considered within the Basel framework.

2.2.5 Criticism of the Basel CVA framework

The Basel CVA risk charge has been widely criticised by industry for conceptual and operational reasons. In particular, the industry argued that the Basel CVA framework was too conservatively designed and did not reflect banks' internal CVA risks. Some of these conceptual drawbacks have been acknowledged by some jurisdictions which, in reaction, deviated from the Basel CVA framework when implementing the CVA risk charge (see Section 3).

The main industry criticisms are:

- Inconsistency with banks' internal CVA models and assumptions

The prescriptive regulatory assumptions used to define CVA and its dynamics under the Basel CVA risk charge result in differences between the risk sensitivities implied by the regulatory CVA (under both the advanced and standardised methods) and those produced by the actual CVA models used by banks. In most cases this means that regulatory CVA risks are measured inconsistently with the risk metrics used internally to mark CVA, measure its risks and hedge it. The key differences between the regulatory and internal CVA models are:

- LGD inferred from CDS spreads: LGD_{MKT} used in the regulatory formula is based on the recovery as implied by CDS quotes. While using the market convention for LGD_{MKT} may be a reasonable assumption to infer default probabilities (when they are inferred from CDS spreads), it does not reflect the actual recovery rate of netting sets of derivative contracts, which constitutes an important driver of the CVA
 - Dependency on the IMM: the exposure profiles used under the advanced approach are based on the IMM, which is an internal model developed for prudential purposes. Some of the requirements of the IMM are designed to provide a conservative assessment of risks (e.g. long margin period of risk, regulatory netting sets, stressed calibration), which banks do not use for the exposure profiles of CVA calculated for pricing and risk management
 - Inappropriate capitalisation of rating-based CVAs: the advanced method applies a ‘one size fits all’ approach based on market implied inputs. This does not seem to be appropriate for banks that originate and manage their counterparty credit risk under an ‘originate to warehouse’ type of business model and do not use market credit spreads to calculate their CVA, but rather indicators of credit quality such as internal ratings. In this case, the Basel CVA risk charge capitalises a risk that those banks do not have, which results in artificial volatility either of capital requirements (if banks decide not to hedge those variations) or P&L (if banks decide to purchase protection via CDS to hedge the counterparty credit risk and smooth the volatility of the CVA risk charge).
- Non-recognition of non-credit spread risks (and their hedges)

The Basel CVA risk charge focuses exclusively on CVA risk due to the variability of the counterparty credit spreads (i.e. credit spread risk of CVA). However, CVA risks are much broader and complex than credit spread risk. They include all market risk factors that drive the value of derivative contracts with counterparties (the ‘market risks’ of CVA). By focusing on credit spread risk, the Basel CVA risk charge does not reflect the real risks that drive banks’ P&Ls. Moreover, banks sometimes hedge the market risks of CVA, i.e. they trade derivative contracts (e.g. IR swaps, FX forwards) to reduce the volatility in the CVA arising from the change in value of the derivatives. The Basel CVA risk charge does not include these hedges, leaving them naked in the general market risk VaR. The capital framework thus potentially penalises banks for hedging their CVA risks which turns out to be an undesirable outcome.

- Non-recognition of DVA

The CVA volatility charge only captures the volatility of unilateral CVA and does not include the capture of DVA volatility. Firms claim that there is a natural offsetting effect between the volatility of CVA and DVA. This usually happens when the bank’s creditworthiness and its counterparty’s creditworthiness are of similar quality. Therefore, the CVA volatility charge would overestimate the real volatility of the bilateral CVA for firms calculating it. Furthermore, banks may hedge the market risk of DVA for risk management purposes, leaving – as in the case of CVA – these hedges naked in the general market risk VaR.

3. Implementation of the Basel CVA framework

3.1 EU CVA framework

The Basel CVA risk charge was transposed in European law in the articles 381 to 386 of the CRR¹⁶. While most of Basel CVA risk charge has been transposed in the CRR without changes, there are a number of divergences in the scope and calculation method. Some of the national discretions offered under the Basel framework have been addressed by the EBA via Regulatory Technical Standards.

3.1.1 Divergences with Basel

EU exemptions

In the Basel framework, the CVA risk charge applies to all OTC derivatives but exempts transactions with central counterparties (CCPs). Securities financing transactions are generally exempt, but a national discretion allows competent authorities to impose a CVA risk charge when firms' CVA risks are material.

The scope of the CVA risk charge in the CRR is defined under CRR Article 382. In line with Basel, it includes all OTC derivative instruments in respect of all business activities, as well as SFTs if the competent authority determines that the institution's CVA risk exposures arising from SFTs are material. Transactions with central counterparties are also exempted, although the exemption applies only when the CCP is deemed 'qualifying' according to the definition set out under CRR Article 4(88).

The main divergence with the Basel framework regarding the scope comes from a series of transactions exempted from the calculation of the CVA risk charge introduced under CRR Article 382(3) and 382(4).

These exemptions were defined in response to concerns that the Basel CVA risk charge was too punitive (see Section 2.2.5) and that some end-users of derivatives would stop using OTC derivatives to hedge their risks because of this additional cost. Concerns were particularly important among counterparties without collateral agreement or CDS available on the market – the main risk-mitigant recognised under the CVA risk charge. Therefore, some of these exemptions draw on the EMIR exemptions to centrally clear (or bilaterally collateralise) OTC derivatives.

¹⁶ The treatment of incurred CVA is set out under CRR article 273(6). However, as abovementioned, it applies to the CRR default risk charge and not to the CVA risk charge

The transactions exempted from the calculation of a CVA risk charge include:

- Transactions between clearing members and clients in the context of indirect clearing when the clearing member is acting as an intermediary between the client and a qualifying central counterparty - CRR Article 382(3)

In the absence of an exemption these transactions would be subject to the bilateral counterparty credit risk charges (i.e. CCR default risk charge and CVA risk charge) with a reduced margined period of risk from the perspective of the clearing member. The CRR exempts them from the calculation of a CVA risk charge but the CCR default risk charge remains. This exemption was introduced under the CRR as a means of maintaining incentives for central clearing, in particular indirect clearing, due to concerns that an ill-fitted interaction between the CVA risk charge and the own funds requirements for banks' exposures to CCPs resulted in higher capital requirements for centrally cleared clients' transactions than in the bilateral case.

- Transactions with non-financial counterparties below the EMIR clearing threshold - CRR Article 382(4)(a)

The exemption of transactions with EU non-financials from the CVA risk charge relates directly to the EMIR exemption to centrally clear OTC derivatives. Under EMIR, a non-financial firm is not required to centrally clear OTC derivative contracts when its total notional position of 'non-hedging'¹⁷ derivative contracts in a given asset class does not exceed a threshold¹⁸. When the total notional position of 'non-hedging' derivative contracts exceeds one of the clearing thresholds, all future derivative contracts - for 'hedging' purposes or not – have to be cleared.

CRR article 382(4)(a) exempts from the calculation of the CVA risk charge those 'non-hedging' derivative contracts of EU non-financial counterparties which fall below the clearing threshold. All the existing 'hedging' derivative contracts are also implicitly exempted since they are not included in the calculation of the total notional positions, which the thresholds are compared to.

In line with the usual terminology, non-financial counterparties exceeding the clearing threshold are referred to as 'NFC+' and non-financial counterparties below the clearing threshold as 'NFC-'. In short, all the OTC derivative transactions with NFC- are exempted from the calculation of the CVA charge, whereas only a portion of OTC derivative transactions with NFC+ are included in the scope.

The non-financial counterparty exemption set out under CRR Article 382(4a) also applies to non-financial entities outside the EU. However, the EMIR clearing thresholds do not apply to them directly since the central clearing exemption in EMIR only applies to EU non-financial

¹⁷ That is those contracts which are not objectively measurable as reducing risks directly relating to the commercial activity or treasury financing activity of the non-financial counterparty or of that group

¹⁸ EMIR defines five broad asset classes with the following thresholds: Credit derivative EUR 1 billion; Equity derivative EUR 1 billion; Interest rate derivative EUR 3 billion; Foreign exchange derivative EUR 3 billion; Commodity derivative EUR 3 billion

counterparties. As a result, the CRR mandated¹⁹ the EBA, in cooperation with ESMA, to produce RTS to specify how to apply the exemption for non-financial counterparties outside the EU.

The qualification as NFC under EMIR is subject to the counterparty qualifying as 'undertaking'. As a result, non-undertaking counterparties (e.g. some retail counterparties) seem to be mechanically included in the scope of the regulatory CVA risk charge, which was probably an unintended consequence of the cross-reference to EMIR. However, it is expected that, in the context of the exemption of NFC, derivative transactions with retail counterparties should also be excluded from the regulatory CVA risk charge.

- Intragroup transactions - CRR Article 382(4)(b)

CRR Article 382(4)(b) exempts intragroup transactions defined under EMIR Article 3, unless Member States adopt national laws requiring the structural separation within a banking group, in which case competent authorities may require those intragroup transactions between the structurally separated institutions to be included in the own funds requirements.

Despite the CRR defining a prudential treatment of intragroup transactions in relation with credit risk²⁰, the exemption of intragroup transactions for CVA risk purposes is based on the EMIR definition of intragroup transactions (EMIR Article 3). Intragroup transactions can be entered into with an entity of the same group established in the EU or in a third-country jurisdiction for which the European Commission has adopted an implementing act as referred to in Article 13(2) in respect of that third country. Third-country equivalence decisions are made by implementing act after having considered technical advice from the ESMA.

The exemption of intragroup transactions does not constitute per se a divergence from Basel since the Basel standards are applicable on a consolidated basis to internationally active banks. Nonetheless, the treatment of intragroup transactions is clarified in the CRR, with a view to not harming banks' internal risk management of counterparty credit risk, which is often performed centrally.

- Transactions with pension funds - CRR Article 382(4)(c) and CRR Article 482

CRR Article 382(4)(c) exempts from the CVA risk charge transactions with pension scheme arrangements defined under EMIR Article 2(10) that are subject to the transitional provisions set out in EMIR Article 89(1). CRR Article 482 reiterates this exemption, but without a time limit.

The transitional provisions set out in EMIR Article 89(1) state that for three years after the entry into force of EMIR, the clearing obligation set out in Article 4 shall not apply to OTC derivative contracts that are objectively measurable as reducing investment risks directly relating to the financial solvency of pension scheme arrangements. This temporary exemption of central clearing was motivated by the central role of cash collateral in the exchange of variation margins with

¹⁹ See CRR Article 382(5)

²⁰ See in particular CRR Article 113(6)

CCPs, which would force pension funds to divest a significant proportion of their assets for cash. Therefore, the clearing obligation does not apply to pension schemes until a suitable technical solution for the transfer of non-cash collateral as variation margins is developed by CCPs.

- Transactions with sovereign counterparties - CRR Article 382(4)(d)

CRR Article 382(4)(d) exempts from the CVA risk charge transactions with counterparties referred to in:

- EMIR Article 1(4): Members of the ESCB, other Member States' bodies performing similar functions, other Union public bodies charged with or intervening in the management of the public debt and the Bank for International Settlements.
- EMIR Article 1(5): Multilateral development banks²¹, public sector entities²² where they are owned by central governments and have explicit guarantee arrangements provided by central governments, the European Financial Stability Facility and the European Stability Mechanism.
- CRR Article 114(4) (i.e. central governments and central banks) and Article 115(2) (i.e. regional governments and local authorities) when exposures to those counterparties are subject to 0% risk weight.

Alternative treatment for banks using the Original Exposure Method (CRR Article 385)

Under Article 385, the CRR offers an alternative option for the calculation of the CVA risk charge for those institutions which use the Original Exposure Method (OEM) as laid down in Article 275. For their OTC derivative transactions under OEM, those institutions may multiply the risk-weighted amount resulting from the CCR default risk charge by 10 instead of calculating the CVA risk charge, subject to the prior consent of the competent authority.

The OEM is only permitted for institutions with 'small trading book businesses'²³ and is not part of the Basel framework. The alternative treatment offered under article 385 was introduced due to some concerns that those institutions may experience some difficulty in understanding and implementing the standardised method set out under article 384.

²¹ As listed under Section 4.2 of Part 1 of Annex VI to Directive 2006/48/EC

²² Within the meaning of point (18) of Article 4 of Directive 2006/48/EC

²³ As set out under CRR Article 94, institutions with small trading book businesses shall meet both the following conditions: the size of their on- and off-balance sheet trading-book business is (i) normally less than 5 % of the total assets and EUR 15 million; (ii) never exceeds 6 % of total assets and EUR 20 million

3.1.2 EU implementation

EBA RTS²⁴ on proxy spread and limited number of smaller portfolios

Pursuant to CRR Article 383(7), the EBA was mandated to issue RTS to specify in more detail some provisions related to the use of the advanced method. The EBA final draft RTS were published on the EBA website on 20 December 2013 and, following adoption by the European Commission, published on the Official Journal of the EU on 20 May 2014. The RTS is now directly applicable to all EU institutions using the advanced method for CVA risks.

The first part of the RTS provides further guidance on the proxy spread methodology for the CVA risk charge. According to CRR Article 383(1), for counterparties for which a time series of liquid CDS spreads is not available, institutions have to determine proxy spreads in order to generate the full time series of credit spreads for these counterparties. These proxy spreads are usually based on a combination of CDS spreads or spreads of other liquid traded credit risk instruments from peers of the counterparty. The CRR requires that the proxy spread should be appropriate with respect to the criteria of rating, industry and region of the counterparty. When the proxy spread methodology cannot produce an appropriate proxy spread, the standardised method should be used for the counterparty as set out in CRR Article 383(6). In the RTS, the EBA specifies in more detail how a proxy spread is to be determined for the purposes of identifying inputs to the regulatory formula of the advanced method: the credit spread inputs (s_i), as well as the loss given default input (LGD_{MKT}). As part of these RTS, the EBA acknowledges that rules on the determination of proxy spread for CVA risk should allow institutions the necessary flexibility to determine the most appropriate proxy spread based on their expert judgment²⁵. In particular, following consideration of the attributes of rating, industry and region (and potentially other attributes), institutions are allowed to use single-name proxies for regional governments or local authorities based on the market spreads of the sovereign issuer²⁶.

The second part of the RTS sets out conditions for the inclusion of non-IMM netting sets in the EE profiles under the advanced method. According to CRR Article 383(4), an institution with IMM permission for the majority of its business, but which uses another approach for calculating the exposure value for counterparty credit risk of a limited number of smaller portfolios, may, subject to permission from the competent authorities, calculate the CVA risk charge using the advanced method for these non-IMM netting sets. The EBA RTS defines three conditions, based on the number and size of the non-IMM netting sets that institutions have to fulfill to include non-IMM portfolios under the advanced method (see Section 5.2.3 for a full description of the conditions). When at least one of these conditions is not fulfilled for two consecutive quarters, institutions have to use the standardised method for the CVA risk charge of the non-IMM netting sets with the relevant counterparty.

²⁴ COMMISSION DELEGATED REGULATION (EU) No 526/2014 of 12 March 2014 supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to regulatory technical standards for determining proxy spread and limited smaller portfolios for credit valuation adjustment risk

²⁵ Recital 2 of COMMISSION DELEGATED REGULATION (EU) No 526/2014

²⁶ Recital 4 and Article 1(2) of COMMISSION DELEGATED REGULATION (EU) No 526/2014

EBA Q&As on CVA

The EBA Single Rulebook Q&A tool²⁷ aims at ensuring a consistent and effective application of the regulatory framework across the EU.

Below is a list of the Q&As that have been published in relation to the CVA framework:

- CVA risk charge of derivative contracts with a defaulted counterparty²⁸
- Materiality of SFTs²⁹
- Deduction of incurred CVA from exposure value³⁰
- Treatment of incurred CVA³¹
- Eligibility of index CDS hedges in Advanced CVA charge³²
- Calculation of own funds requirements for CVA risk on a consolidated basis³³
- Hedges of exempted counterparties³⁴
- Determination of clearing threshold of non-financial counterparties³⁵
- Standardised method and integration of collateral³⁶
- Treatment of ETDs³⁷

Application of EBA Prudent Valuation requirements

The EBA published on 31 March 2014 detailed requirements related to prudent valuation adjustments of fair valued positions. The accounting CVA will, as any adjustment to fair-valued instruments, be subject to EBA Prudent valuation requirements (in particular for banks using the Core approach). Therefore, the formula used for accounting purposes will be placed under the review of supervisors, with the possibility for supervisors to require Additional Valuation Adjustments (AVA), in particular to account for model risk.

²⁷ <http://www.eba.europa.eu/single-rule-book-qa>

²⁸ EBA Q&A 2013_99

²⁹ EBA Q&A 2013_130

³⁰ EBA Q&A 2013_134

³¹ EBA Q&A 2013_245

³² EBA Q&A 2013_360

³³ EBA Q&A 2013_402

³⁴ EBA Q&A 2013_471

³⁵ EBA Q&A 2013_472

³⁶ EBA Q&A 2013_616

³⁷ EBA Q&A 2013_692

3.2 Divergences between the Basel framework and other jurisdictions

This section gives a broad overview of the divergences between the Basel CVA risk charge and other jurisdictions than the EU, in which banks are active in the derivative markets: United States (US), Canada and Switzerland.

3.2.1 Implementation in the US³⁸

The Basel CVA risk charge was transposed into US law under paragraph 132(e) of the joint Regulatory Capital rules delivered by the FRB/OCC/FDIC in June 2012.

The main divergences between the Basel CVA risk charge and its US implementation include:

- The US rules allow firms to choose between the advanced and the standardised methods whereas it is not optional in the Basel framework. US authorities may allow a bank using the advanced method to revert to the standardised method if a reasonable justification is provided by the bank. In addition, banks have to be permitted to use the advanced method while it is automatic under the Basel rules when the IMM and the SIR VaR models have been previously permitted
- The US rule indicates that non-credit hedges of CVA may be excluded from the application of the market risk rule to the extent that they are not themselves considered as trading positions. For interest rate hedges, this does not represent a deviation as non-trading positions would not be in scope of the market risk rule under the Basel framework, However, where non-credit hedges of CVA risk include FX or commodity hedges of CVA their exclusion from market risk capital requirements is a deviation³⁹
- To comply with the Dodd-Frank act ban on relying on credit ratings in the prudential regulation, the credit quality of the counterparties in the CVA standardised method are mapped to broad classes of default probabilities instead of broad credit ratings (however, the corresponding weights are similar to the Basel framework). The assessment of default probabilities of each counterparty is left to the bank
- The US rules only allow the CEM (the Mark-to-Market method under CRR terminology) as an alternative to the IMM for the computation of the EAD under the standardised method of the CVA risk charge. The other non-IMM approach offered in the Basel framework – also called the Standardised Method - is not available in the US
- The national discretion to include SFTs in the scope of the CVA risk charge is not exercised.

³⁸ See also Regulatory Consistency Assessment Programme (RCAP) - Assessment of Basel III regulations – United States of America - December 2014

³⁹ Regulatory Consistency Assessment Programme (RCAP) - Assessment of Basel III regulations – United States of America - December 2014 – p.53

3.2.2 Implementation in Canada⁴⁰

The Basel CVA risk charge is a part of the amended Capital Adequacy Requirements Guidelines issued by the Canadian Office of the Superintendent of the Financial Institutions (OSFI) in April 2014. The Guidelines are supplemented by a letter titled 'CVA Grandfathering and Market Risk Hedges' sent in August 2013 by the OSFI to relevant institutions clarifying the application of the CVA risk charge.

The main divergences between the Basel CVA risk charge and the Canadian implementation include:

- Canadian rules exempt the hedges for the 'market risk' component of CVA from market risk capital requirements. These market risk hedges of CVA risks are not recognised as eligible hedges in the Basel CVA risk charge. To be subject to this exemption, market risk hedges of CVA risks have to be objectively used to mitigate CVA risk for risk management purposes and managed as such
- Canadian rules have introduced a 2% risk weight for exposures to unrated counterparties in the standardised method for banks that do not have an approved rating system. Basel does not specify the weight of unrated counterparties under the standardised method
- Canadian rules allow a phase-in of the capital requirements for CVA risks until 2019 for deposit taking institutions (DTI). Two options are provided to Canadian DTIs under which the Risk Weighted Assets (RWA) for CVA risks are weighted by different scalars lower than 100% for the purposes of total capital requirements and capital ratio calculations
- Canadian banks cannot use the Standardised Method for CCR exposure calculation in the CVA risk charge since Canada did not implement it.

3.2.3 Implementation in Switzerland⁴¹

The Basel CVA risk charge has been implemented in Switzerland via FINMA Circular 08/19, points 392-407, pursuant to Article 7 Para 1 of the Financial Market Supervision Act (FINMASA) passed by Federal Act on 22 June 2007.

The main divergences between the Basel CVA risk charge and the Swiss implementation include:

- The Swiss rules introduced an alternative simplified version of the standardised CVA risk charge for those banks for which the CVA risk charge is immaterial (FINMA Circular 08/19, points 397-401). The main differences with the Basel standardised method are :

⁴⁰ See also Regulatory Consistency Assessment Programme (RCAP) - Assessment of Basel III regulations – Canada - June 2014

⁴¹ See also Regulatory Consistency Assessment Programme (RCAP) - Assessment of Basel III regulations – Switzerland - June 2013

- The aggregate EAD is obtained by adding the discounted maturity weighted EAD for each netting set. Under Basel, the EAD for all netting sets is summed up and then multiplied by the notional weighted average maturity and discounted according to the average maturity
 - When calculating the total effective hedge position on the same credit index, each notional is multiplied and discounted by its own maturity and then added up. Under Basel, the notionals are summed up, and the aggregate notional multiplied by, and then discounted through the notional weighted average maturity
 - For banks that do not have approved internal ratings, a 2% risk-weight is assigned to unrated counterparties. Basel does not specify any risk-weight for unrated counterparties under the standardised method
- The Swiss rules exempt the client – clearing member leg of exchange traded derivatives from the CVA risk charge until December 31, 2015. This exemption is from the perspective of both the client and the clearing member
 - The Swiss rules deviate from Basel in the computation of the Current Exposure Method for calculating CCR exposures. This then impacts the calculation of the CVA risk charge when firms use this approach under the advanced or the standardised method.

4. Consequences of the CVA risk charge on industry practice

This section highlights some of the consequences of the introduction of the CVA risk charge on financial markets and banks' practices, including controversial strategies undertaken to optimise capital requirements.

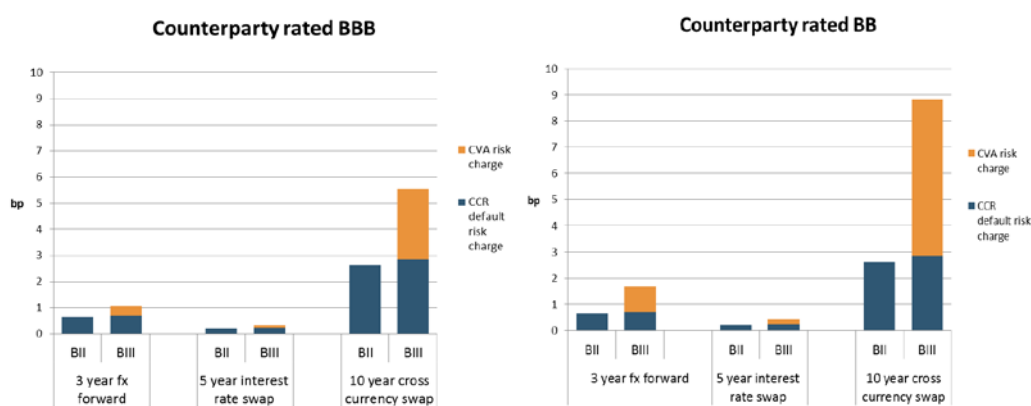
4.1 Higher trading cost for clients

Since Basel started quantifying the impact of the Basel III standards⁴², it was clear that the increase in total RWA stemming from the CVA risk charge would be significant.

As accounting CVA is usually reflected in the price of derivative contracts to account for the counterparty's credit risk (and potentially finance the related hedging strategy), a majority of banks decided to also pass on the capital cost associated with the regulatory CVA risk charge to their counterparties. Banks claimed, however, that the resulting increase in the trading costs of derivative transactions would be too punitive for those counterparties with long-term exposures, for which no credit default swap are available or that do not have the operational capability to enter into a collateral agreement. Clients confirmed that higher costs would undermine their ability to enter into new derivative contracts.

Figure 9 below illustrates the significant increase in the trading cost of commonly traded derivative contracts due to the introduction of the CVA risk charge, as shown by a comparative study coordinated by AFME on the average capital costs related to counterparty credit risk across the industry under Basel II and Basel III.

Figure 9: Comparative average CCR capital costs for a 3 year FX forward, a 5 year Interest Rate Swap and a 10 year Cross Currency Swap (Source: AFME)



⁴² The first Basel III monitoring exercise studied the impact as of Mid-June 2011 <http://www.bis.org/bcbis/qis/index.htm>

4.2 Increased use of collateral

Posting collateral is an efficient way to mitigate CVA risks. In order to increase the efficiency of collateral agreements, and therefore recognise more mitigating effects in the regulatory exposure measures, banks can re-negotiate and change the terms of existing collateral agreements (i.e. introducing/increasing independent amounts, reducing/removing threshold amounts).

It is however more difficult to convince counterparties without collateral agreements to operate on a collateralised basis because most of them do not have the treasury function to exchange collateral on a frequent basis. Nevertheless, some banks have convinced their uncollateralised counterparties to enter into a new collateral agreement by funding their collateral needs with short-term loans. This practice is essentially motivated by an arbitrage between the CVA risk charge and the credit risk framework. From the point of view of the bank, there is a transformation of counterparty risk (coming from the derivatives) into credit risk (coming from the loan). But assuming the loan will roll over until the maturity of the derivative contracts, the overall level of risk has not changed. However, the net level of capital has. This is because the increase in the credit risk charge arising from the short-term loan is offset by the decrease in the counterparty credit risk exposure produced by the collateral posted and, simultaneously, there is a sharp decrease in the CVA volatility charge due to the recognition of the collateral.

Even more controversially, some banks are trying to optimise the CVA framework using complex collateral arrangements aiming at minimising capital requirements.

A recent example is the use of a guarantee between the counterparty and a third-party, under which the third party is posting collateral to the bank instead of the counterparty. Banks assume that this guarantee can be recognised as an eligible hedge for the CVA risk charge of the counterparty, which would reduce most of the capital requirements against counterparty credit risk with the counterparty.

Finally, under all the methods used to compute the regulatory exposure measures, collateral in excess of the current required amount under the collateral agreement may reduce the exposure to almost zero, leading to immaterial CVA volatility charges. For this reason, some banks have started to apply - before their actual entry into force - the global standards for non-centrally cleared OTC derivatives (implemented in the EU via RTS under EMIR), which generalise the concept of initial margins, leading to over-collateralisation of most exposures.

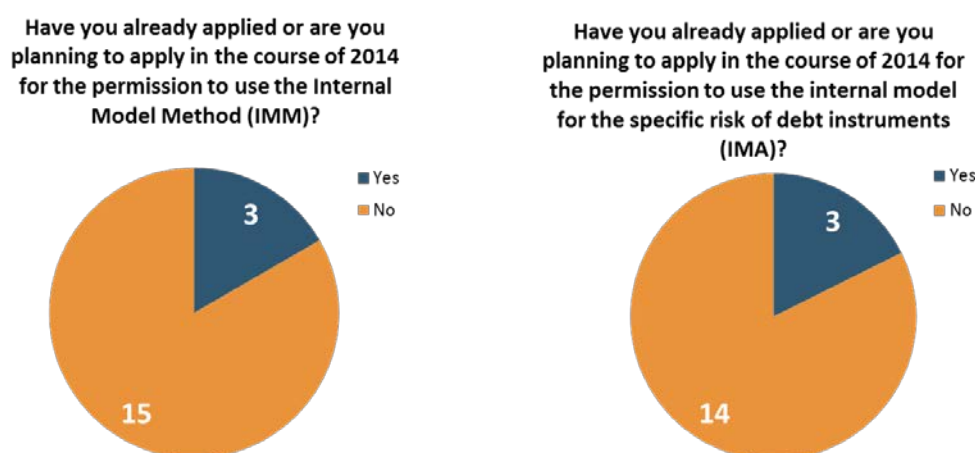
4.3 Changes in modelling practices

Many banks have been applying for IMM permission since the introduction of the CVA risk charge. The capital benefit of using the IMM as compared to non-IMM methods is important, especially

for collateralised transactions⁴³. In addition, this capital relief is not only available under the advanced method (which would require both SIR VaR and IMM permissions), but also under the standardised method, where the IMM can be used to compute EAD inputs.

Figure 10 below highlights how many S-CVA banks in the panel have sought to apply for IMM and SIR VaR model permissions in the course of 2014. These numbers may increase when considering all European banks currently applying the standardised method for capitalising CVA risks.

Figure 10: Incentives to apply for IMM and SIR VaR



Another noticeable change in modelling practices due to the introduction of the CVA risk charge results from the permission to set $M=1$ in a bank's CCR default risk charge in case its SIR VaR model can capture migration risk⁴⁴. Many firms changed their SIR VaR model in order to be granted this permission, which could generate a significant capital relief. However, only few jurisdictions have granted this permission due to the challenge of reflecting migration risk over a short horizon (also justified by the introduction of the IRC under Basel 2.5).

4.4 Increased demand for credit derivatives to act as eligible hedges

Banks commonly use single-name CDS, CDS indices or other credit derivatives to hedge the credit spread risk of their accounting CVA. Recognising the risk-mitigant effect of certain of these instruments under the Basel CVA risk charge, with a potential significant capital relief, creates incentives for their use. Therefore when the Basel CVA framework was introduced in 2010, some

⁴³ The potential future exposure component of the most widely used non-IMM method, the Mark-to-Market method set out under CRR Article 274, treats all transactions as uncollateralised transactions, thus leading to conservative outcomes for collateralised transactions

⁴⁴ This permission was introduced due to some concern that if a SIR VaR model captured migration risk, there would be a double-counting with the maturity adjustment M which is a proxy supposed to capture the same risk under the CCR default risk charge; setting $M=1$ would simply cancel out this effect

feared that its implementation would increase the demand for credit derivatives (in particular single-name CDS) and, ultimately, increase the pro-cyclicality of the CVA risk charge capital in periods of financial stress (since banks need to purchase more CDS when the counterparties' spreads go up, sparking off an increase in their CDS spreads).

According to the 2013 BIS triennial survey on OTC derivatives⁴⁵, the amount of credit derivatives has continued to decrease since the onset of the financial crisis, particularly single-name instruments (see Figure 11 below). However, this decline was mitigated by the increase in index products and credit derivative options (e.g. CDS swaptions) which can be cheaper alternatives to mitigate the CVA risk charge.

Figure 11: Global OTC credit derivatives market. Amounts outstanding, in billion USD (Source: BIS)

	Notional amounts outstanding			Gross Market Value		
	Jun-07	Jun-10	Jun-13	Jun-07	Jun-10	Jun-13
Credit derivatives	51,095	31,416	24,845	906	1,708	732
1. Forwards and swaps	49,974	31,331	24,497	NA	NA	NA
Of which CDS	45,179	31,057	24,470	768	1,694	728
CDS Single-name instruments	25,104	18,806	13,211	430	1,012	432
CDS Multi-name instruments	20,075	12,251	11,259	338	682	296
Of which Index products	-	7,614	10,170	NA	NA	NA
2. Options	1,121	85	348	NA	NA	NA

In addition, more complex, innovative products appeared after the introduction of the CVA risk charge with the intention to recognise more significant hedging effect under the CVA risk charge (but also for risk management purposes). Among them, CVA securitisation products help banks transfer their counterparty credit risk arising from derivative businesses to third parties. CVA securitisation was never taken up due to the aversion of investors for this type of risk but also because the Basel rules only recognise CVA hedges when they are not tranching.

⁴⁵ http://www.bis.org/pub/otc_hy1311.pdf

4.5 Focus on hedging CVA risk charge instead of hedging CVA P&L

The misalignment between regulatory and accounting measures of CVA leads to conflicting hedging strategies for CVA, as, in particular, the amount of CDS notional used to delta-hedge the credit spread risk of CVA is not similar under the two different measures. If a bank chooses to hedge the accounting CVA, it may not receive optimal hedging benefit in the CVA risk charge. In contrast, if it chooses to hedge the regulatory CVA, it will decrease the overall accuracy of the hedging strategy for accounting and risk management purposes, thus increasing the volatility of its accounting P&L. In addition, banks are dis-incentivised to hedge the non-credit spread risks of CVA which are not recognised under the Basel CVA risk charge. These conflicting hedging strategies led some banks to choose the hedging strategy producing the overall highest benefits.

5. Findings & policy recommendations

5.1 Scope of the CVA risk charge

5.1.1 General scope issues

The scope of the CVA risk charge is currently set out in CRR Article 382. It includes all OTC derivative instruments in respect of all business activities and SFTs where the competent authority determines that the institution's CVA risk exposures arising from SFTs are material. Only credit derivatives recognised to reduce risk-weighted exposure amounts for credit risk are explicitly out of the scope of the CVA risk charge.

The scope of the CVA risk charge, in particular the scope of exempted transactions under CRR Article 382(4), is defined with reference to EMIR Regulation (EU) No 648/2012, thus requiring a combined reading of relevant provisions. The use of EMIR definitions in the CVA framework has introduced a number of interpretational issues, resulting in potentially important divergences in implementation.

OTC derivatives and exchange traded derivatives (ETDs)

According to CRR Article 382, the CVA risk charge applies to 'all OTC derivative instruments in respect of all business activities'. However, the CRR does not explicitly define what constitutes an OTC derivative instrument. In fact, Annex II of the CRR only provides a classification of 'types of derivatives'.

A definition of 'OTC derivative' is provided for under EMIR Article 2(7)⁴⁶. In addition, an ESMA Q&A⁴⁷ specifies that should be considered as OTC derivatives in the context of EMIR:

- derivative contracts traded on Multilateral Trading Facilities (MTFs) and
- all derivative contracts executed on non-EU exchanges, in the absence of any publicly available EU list of non-EU exchange equivalent to a regulated market.

However, derivatives transactions, which are executed outside the trading platform of the regulated market, but are subject to the rules of the regulated market and are executed in compliance with those rules, including the immediate processing by the regulated market after execution and the clearing by a CCP, should not be regarded as OTC derivatives transactions, but as ETDs.

⁴⁶ EMIR Article 2(7) defines an OTC derivative as a derivative contract the execution of which does not take place on a regulated market as within the meaning of Article 4(1)(14) of Directive 2004/39/EC ('MiFID') or on a third-country market considered as equivalent to a regulated market in accordance with Article 19(6) of Directive 2004/39/EC

⁴⁷ OTC answer 1 in <http://www.esma.europa.eu/content/EMIR-QA>

On this basis, EBA Q&A 2013_692⁴⁸ concluded that ETDs are excluded from the scope of the CVA risk charge.

By nature, all ETDs are cleared centrally (either the exchange has an agreement with a CCP to clear the transactions traded on its platform or it can act as a CCP itself). Therefore, ETDs are subject to the capital requirements for banks' exposures to CCPs defined under CRR Articles 300 to 311. Under this framework, transactions with non-qualifying CCP shall be subject to bilateral counterparty charges (CCR default risk charge and CVA risk charge).

A blanket exemption of ETDs from the scope of the CVA risk charge, as suggested originally under EBA Q&A 2013_692 in line with CRR Article 382, does not seem to take into consideration the treatment of transactions with non-qualifying CCP.

Therefore, the EBA suggests clarifying that ETDs are, in principle, in the scope of the CVA risk charge.

Policy recommendation 1: The EBA recommends clarifying via amendment of CRR Article 382 that exchange-traded derivatives are included in the scope of the CVA risk charge.

Securities Financing Transactions (SFTs)

Securities financing transaction (SFTs), though not defined in the CRR, are commonly referred to as 'repurchase transactions, securities or commodities lending or borrowing transactions or other capital market-driven transactions'. The Basel definition of SFTs also includes margin lending transactions, which in the CRR are separately defined in CRR Article 272.

The inclusion of SFTs in the scope of the CVA risk charge is subject to national discretion when competent authority determines that an institution's CVA risks arising from those transactions are material (the Basel framework offers this discretion).

Most competent authorities that sought to exercise this discretion established a judgment-based approach using quantitative criteria to assess the materiality of CVA risks for SFTs.

One competent authority established a more rule-based approach⁴⁹ according to which a SFT would automatically fall within the scope of the CVA risk charge if it meets three criteria which may indicate that it bears potential high CVA risks.

SFTs are typically not fair-valued but accounted based on their substance as securities lending arrangements and therefore measured at amortised cost. As a result, firms do not calculate a CVA

⁴⁸ See <http://www.eba.europa.eu/single-rule-book-ga>

⁴⁹ <http://www.bankofengland.co.uk/pru/Pages/publications/counterparty.aspx>

for their SFTs for accounting purposes and consequently do not face potential CVA risks. However, firms could potentially be exposed to CVA risk as a result of undertaking a SFT when the accounting treatment of the SFT changes. For example, in the event of a significant deterioration in the creditworthiness of the counterparty to a SFT, the underlying forward sale which underpins the SFT would be recognised as a fair-valued forward contract, which would attract an accounting CVA.

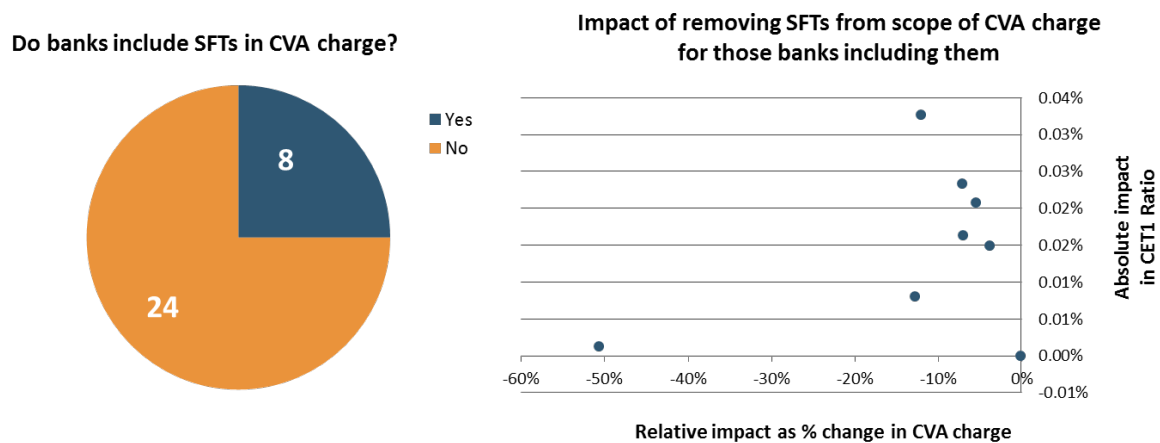
Findings of the data collection exercise

ISDA/AFME confirmed that, in most cases, SFTs are not accounted at fair-value. If some banks report securities financing transactions at fair value, it is generally because they form part of their trading activities or because they have elected to apply the fair value option. In these cases, a CVA adjustment may be reported for accounting purposes where the credit risk arising is material. However, for the vast majority of securities financing transactions, the haircut applied to the value of securities used for collateralisation, coupled with the frequency and reliability of collateral management processes, is deemed to be sufficient to ensure that the credit risk is not considered material so that no CVA is accounted for. Nonetheless, a CVA may be calculated for a minority of securities financing transactions, e.g. for transactions that are distressed, bespoke in nature or otherwise structured, for example where the counterparty has posted their own bonds as collateral, or there is wrong way or gap risk present.

The below left figure shows that out of 32 participating banks, only 8 banks from 5 different Member States include some SFTs in their CVA risk charge. Two of these Member States did not report exercising the discretion to include SFTs in the scope of the CVA charge. It implies that some banks in these jurisdictions include SFTs in the scope without being required to do so.

The right figure quantifies the impact of including SFTs in the scope of the CVA risk charge for those banks that do include some (or all) of them. These banks were asked to remove them from the scope and re-calculate the CVA risk charge. Impacts are provided in both relative changes in the CVA risk charge and in absolute changes in the CET1 capital ratio. The figure shows that removing SFTs from the scope would not lead to a material change in the CVA risk charge or in the CET1 ratio.

Figure 12: Inclusion of SFTs in CVA risk charge



Policy recommendations

The CVA data collection exercise has shown divergences across competent authorities in the application of the CVA risk charge to SFTs.

Understanding the accounting treatment of SFT is important to assess whether and when SFT could generate CVA risks and would therefore help justify the application of a CVA risk charge. The EBA acknowledges that the treatment of SFTs should be discussed as part of the Basel FRTB, in order to assess whether or not the discretion should be kept.

Policy recommendation 2: The EBA recommends harmonising the treatment of securities financing transactions in the EU, upon completion of a review of the CVA risk charge in Basel as part of the Fundamental Review of the Trading Book.

5.1.2 EU exemptions

CVA data collection exercise - Main findings

Misalignment of accounting and prudential scopes

In principle, banks are exposed to CVA risks for those transactions which are subject to a CVA for accounting purposes. Therefore, the scope of the capital requirements for CVA risks should, in principle, be aligned with the scope of transactions for which a CVA is calculated for accounting purposes.

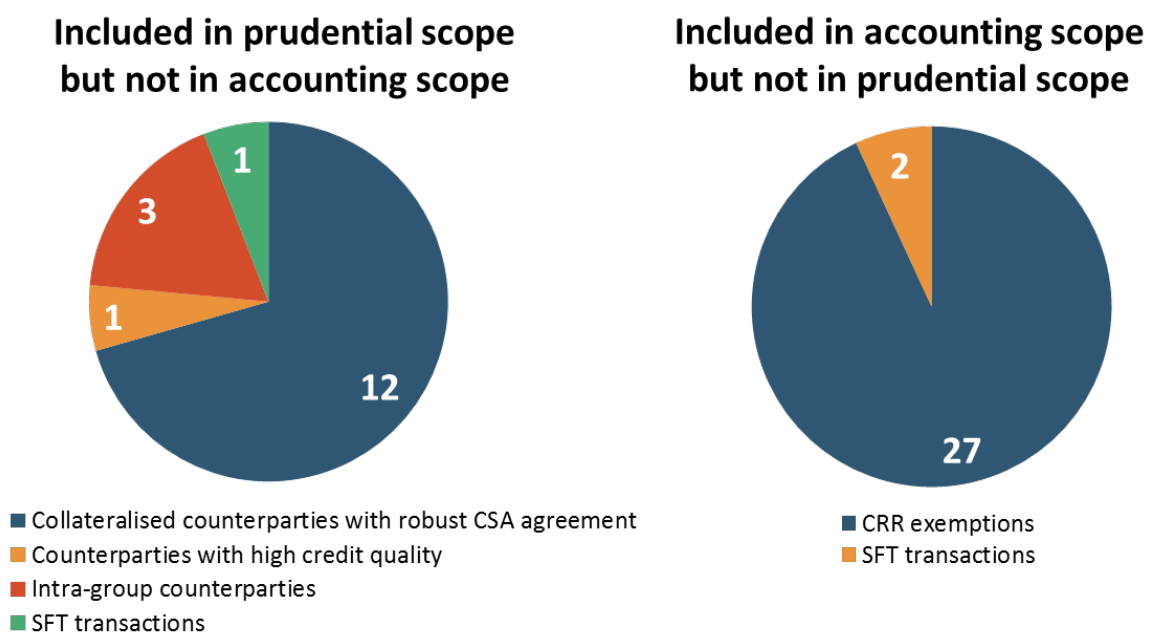
The scope of the Basel CVA risk charge does not explicitly refer to the scope of the accounting standards regarding the calculation of CVA. Consequently, some mismatches are likely to exist between the two scopes: some transactions may be subject to an accounting CVA but no prudential CVA risk charge; some others may be subject to a prudential CVA risk charge but no accounting CVA. The specific exemptions from the CVA risk charge in the EU may also increase the number of mismatches.

Figure 13 shows the major sources of misalignment according to participating banks:

- Transactions exempted from the CVA risk charge under CRR Article 382(4) are usually included in the accounting scope
- Strong CSA counterparties⁵⁰ are included in the CVA risk charge but many banks do not calculate an accounting CVA for them
- The national discretion to include or not SFTs in the scope of the CVA risk charge creates the two types of misalignments.

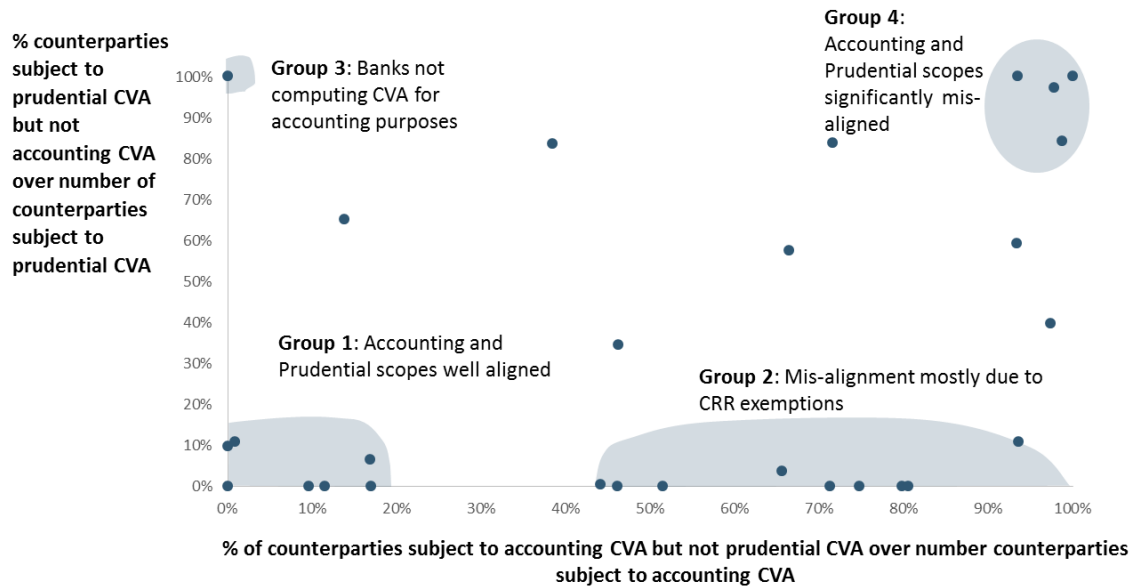
The proportion of scope mismatches for participating banks is important, as demonstrated by Figures 13 and 14. This significantly undermines the rationale behind the introduction of the CVA risk charge under the CRR.

Figure 13: Reason for mismatch between accounting and prudential scope



⁵⁰ Counterparties subject to daily exchange of collateral, zero threshold under the terms of a Credit Support Annex are sometimes referred to as strong CSA counterparties

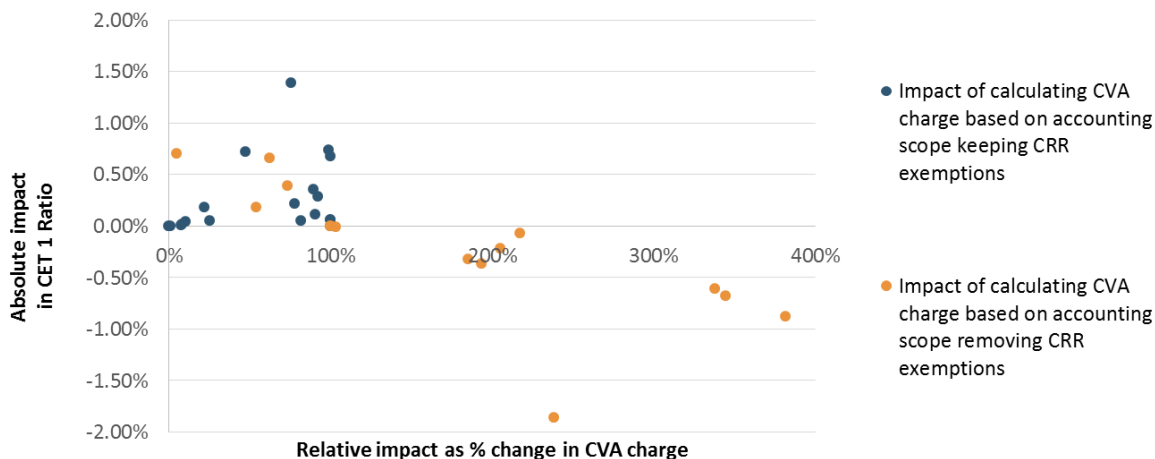
Figure 14: Misalignment of accounting and prudential scopes for respondents



Quantifying the impact of using the accounting scope for the CVA risk charge is not straightforward. It requires banks to identify the transactions which are not in the CVA risk charge but for which an accounting CVA is calculated, and then model these transactions in the CVA risk charge. In Figure 15 below, participating banks attempted to quantify this impact based on two scenarios: (i) using the accounting scope for the CVA risk charge while keeping the transactions exempted specifically under CRR Articles 382(3)⁵¹ and 382(4); and (ii) using the accounting scope for the CVA risk charge while removing the transactions exempted specifically under CRR Articles 382(3) and 382(4).

⁵¹ Banks were not required to include in the scope transactions with qualifying CCP since it is also a Basel exemption

Figure 15: Impact of calculating the CVA risk charge based on the Accounting scope



Aligning the CVA risk charge on the accounting scope while keeping CRR exemptions would mainly benefit – sometimes substantially - banks that exclude collateralised transactions from the accounting scope, but has a small or no impact on others. Aligning the CVA risk charge on the accounting scope while removing CRR exemptions has a mixed impact: it benefits half of the panel (typically the participating banks that benefit from the former scenario and that do not trade much with the counterparties exempted from the CVA risk charge) and is unfavourable to the other half (typically the participating banks that trade a lot with the counterparties exempted from the CVA risk charge).

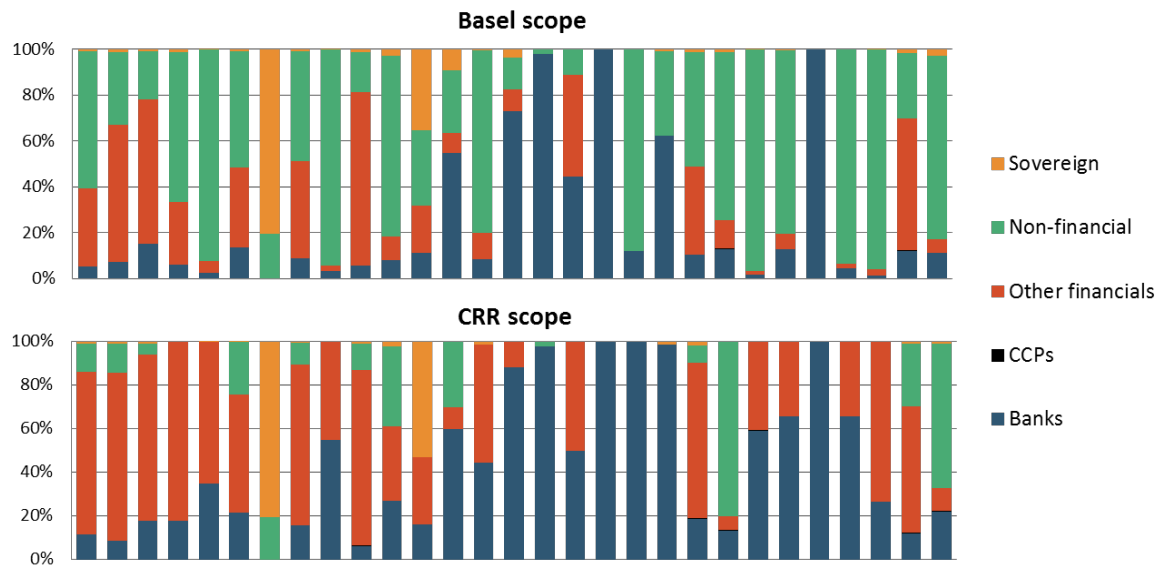
The CRR exemptions and collateralised counterparties with ‘strong’ CSA terms are the main two sources of misalignment between both scopes. In the short-term, it does not seem that a solution can be found to reduce these misalignments because (i) the CRR exemptions cannot be removed via delegated act; (ii) it is not acceptable to remove collateralised counterparties from a prudential perspective, especially in the context of the global introduction of margin requirements in the coming years.

CVA risks of the transactions exempted from the CVA risk charge

The transactions specifically exempted from the CVA risk charge under CRR Articles 382(3)⁵² and 382(4) have a significant impact on the distribution of counterparties included in banks’ CVA risk charge. As shown on Figure 16, the CVA risk charge of a majority of participating banks are noticeably dominated (in terms of number of counterparties) by non-financial and financial counterparties under the Basel scope. Each column represents the distribution of a participating bank. Under the CRR scope, most of the non-financial counterparties have disappeared and the vast majority of counterparties are financials or other financials.

⁵² Banks were not required to include in the scope transactions with qualifying CCP since it is also a Basel exemption

Figure 16: Distribution of number of counterparties subject to CVA risk charge per broad counterparty type

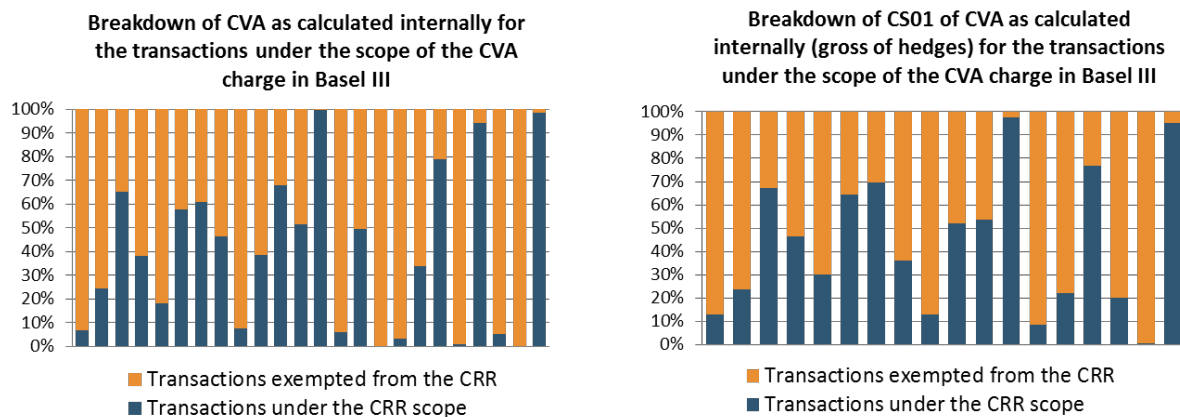


Most importantly, banks' accounting P&L is considerably exposed to the CVA risks of the transactions exempted from the CVA risk charge. As illustrated by Figure 17 below,

- the accounting CVA due to exempted transactions (sum of accounting CVA adjustments) represents more than 50% of total accounting CVA for 15 out 24 participating banks
- the CS01⁵³ of the accounting CVA (i.e. the CVA risk corresponding to this accounting CVA) due to exempted transactions represents more than 50% of total CS01 of CVA for 10 out 18 participating banks.

⁵³ CS01 of the accounting CVA is the sensitivity of the accounting CVA to credit spreads. In other words, it represents the change in accounting CVA following application of a shift of one basis point to counterparties' credit spreads

Figure 17: CVA risk of exempted counterparties as gauged by internal risk measures



Impact for institutions of removing EU exemptions

As part of the data collection exercise, banks were asked to quantify the impacts of disregarding the exemptions from the CVA risk charge set out under CRR Article 382(3) and 382(4). Specifically, for each of the six categories of exemptions, banks were asked to re-compute their total RWA for CVA risks including those transactions with the relevant exempted counterparties that would normally fall within the scope of the CVA risk charge if the counterparties were not exempted⁵⁴.

The total own funds requirements for CVA risks⁵⁵ of the 26 participating banks that provided the impacts were EUR 12.4 billion as of 31 March 2014. After removing the EU exemptions from the CVA risk charge (i.e. using the Basel scope), this figure would rise to EUR 31.1 billion (increase of more than 150%).

To give an order of magnitude of this impact, the total aggregated own funds requirements for CVA risks of 192 European banks, for which the EBA receives the COREP submissions⁵⁶, amounted to EUR 23.5 billion as of 31 March 2014. Assuming that the impact of removing the EU exemptions from the CVA risk charge would fall within the range of +100% to +200% (large extrapolation from the actual impacts calculated for 26 banks), the total aggregated own funds requirements for CVA risks after removing the EU exemptions would be comprised between EUR 47 billion and EUR 70 billion (in absolute values of additional own funds requirements, between EUR 23.5 billion and EUR 46.5 billion).

More granular impacts of removing all EU exemptions from the CVA risk charge at bank level (see Figure 18 below) show that:

⁵⁴ For all the participating banks, it also involved adding back in the scope of the CVA risk charge all the eligible hedges used to mitigate the exempted counterparties

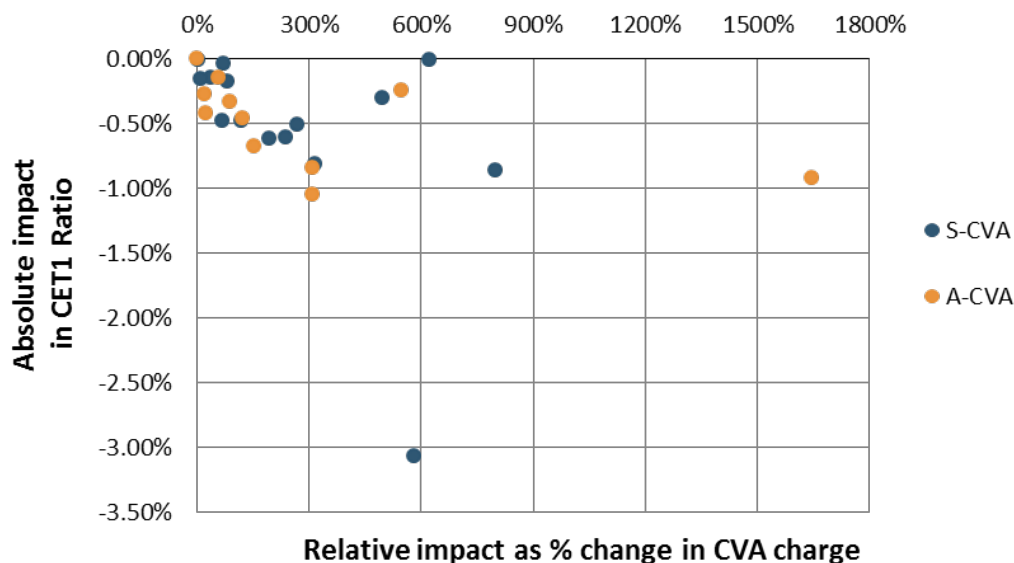
⁵⁵ RWA divided by 12.5

⁵⁶ <http://www.eba.europa.eu/documents/10180/15926/List-of-Reporting-Institutions.pdf>

- 18 out of 26 participating banks would experience a reduction of more than 20bps in their CET1 ratio; this reduction exceeds 50bps for 10 of these 18 banks
- There is no observable difference in the impacts of banks that use the advanced or the standardised methods. However, this panel is mainly composed of large banks relatively active in the derivative market (almost all the banks using the advanced method in the EU participated in this exercise) and other EU banks applying the standardised method may incur lesser impacts. In fact, smaller banks may only use derivatives to hedge their own risks and may not trade with exempted counterparties
- Three banks experience ‘extreme’ impacts: two banks with relative changes in their CVA risk charge of +800% and +1650% (for these two banks the absolute change in their CET1 ratio is less than 1%); one bank with absolute change in its CET1 ratio of more than -3% (for this bank the relative change in its CVA risk charge is +600%).

Figure 18 below provides the impact per bank, distinguishing between banks using the advanced method (A-CVA banks) and banks using the standardised method (S-CVA banks).

Figure 18: Impact per bank of removing all EU exemptions from the CVA risk charge



In order to compare the impact of each type of EU exemption, banks were also asked to re-compute their total RWA for CVA risks only including transactions from a given type. NFC established in the EU (EU NFC-) and Sovereigns are clearly the most material type of EU exemptions, as demonstrated by Figures 19 and 20. In contrast, Pensions Funds seem to be the least material. Finally, the materiality of the Client trades exemptions and Intra-group exemptions may have been underestimated in the data collection exercise due to two reasons:

- For the sake of consistency in the results of the entire data collection, participating banks were asked to exclude all their ETDs from the scope of the CVA risk charge (see Section 5.1.1

for the interpretational issue related to the inclusion of ETD in the scope). Therefore, banks only added back the OTC derivatives cleared on the behalf of their clients when calculating the impact of the client trades exemptions and omitted ETDs

- Most respondents reported at consolidated level whereas the intra-group exemption is only relevant at solo level.

Figure 19 provides the impact of removing EU exemptions. Each point represents a particular impact for a given respondent, without distinction between banks using the advanced or the standardised method.

Figure 19: Impact per bank of removing each EU exemption from the CVA risk charge

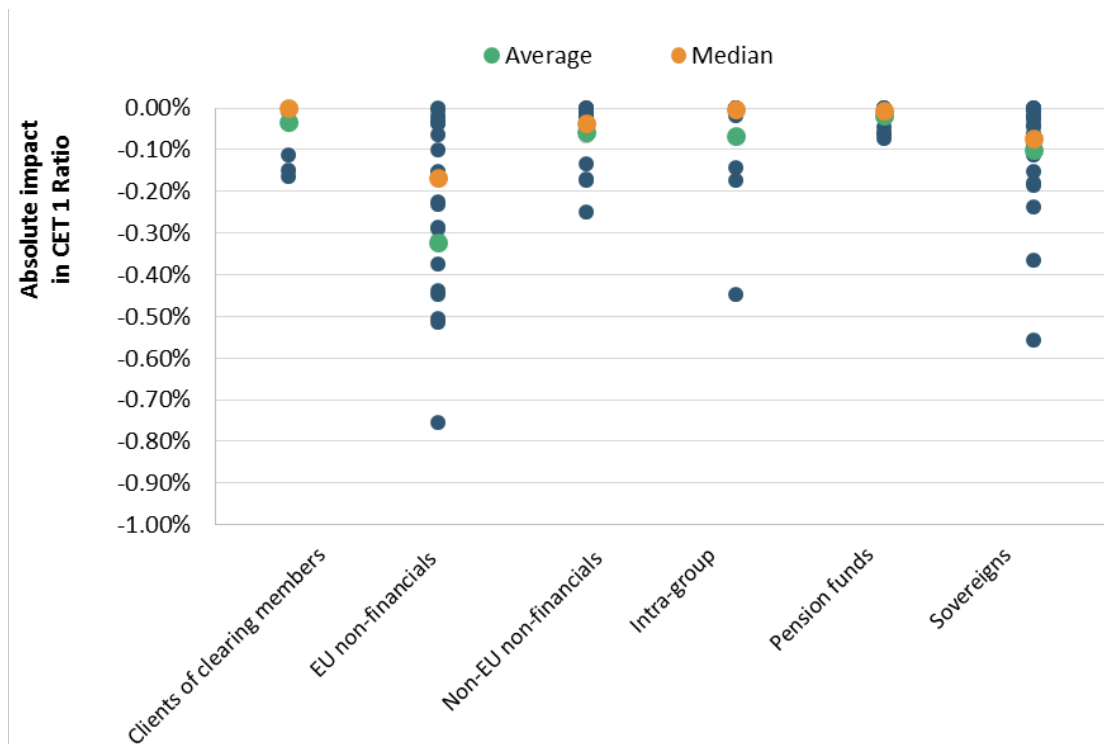
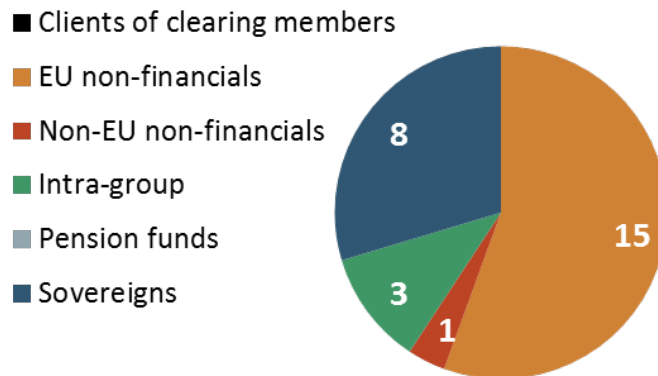


Figure 20: Type of exemption representing the highest CET1 ratio impact for each respondent



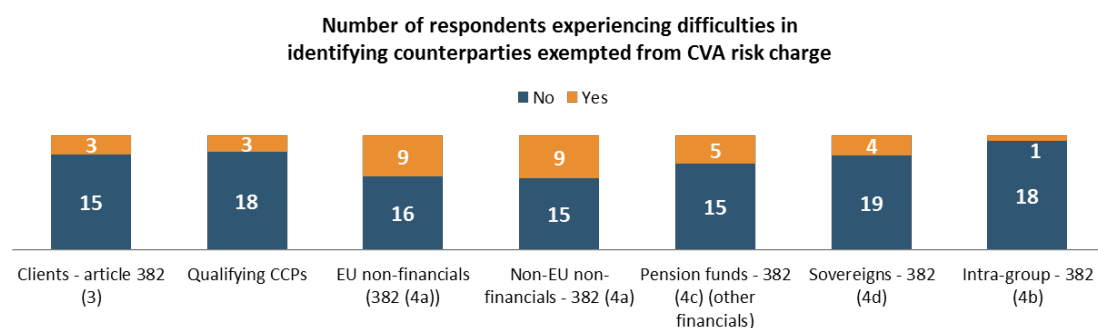
Operational issues related to exempted transactions

Regardless of their impact, EU exemptions also pose a number of operational issues. As shown in the below Figure 21, the definition of the exemptions is not clear for a number of respondents, particularly the definition of the Non-financial and the Pension funds exemptions due to cross-references with the EMIR regulation.

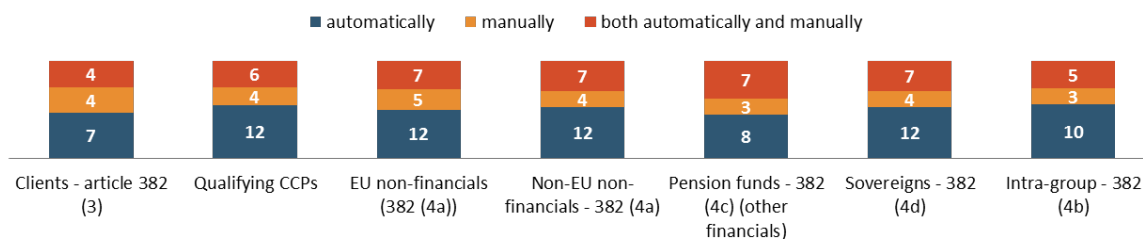
In addition, most of the respondents did not implement a fully automatic process to identify and remove the transactions exempted from the CVA risk charge. Manual processes increase operational risks but may also give rise to difficulties in re-integrating transactions within the scope (e.g. transactions with pension funds after the transitional period, transactions with NFC that start to exceed the clearing threshold).

The total number of respondents (in white on Figure 21) differs for each type of exemption.

Figure 21: Difficulties experienced to identify and remove exempted transactions



How are exempted counterparties removed from CVA risk charge?



Addressing EU exemptions

Legal constraints for short-term action

As specified in CRR Article 456(2), redefining or removing EU exemptions is outside the scope of the provisions that the Commission is empowered to amend via delegated act. Only the clients' trade exemption set out under CRR Article 382(3) could be amended via delegated act.

Therefore, regardless of any action that could be undertaken in the short-term to monitor or partially mitigate excessive risks generated by EU exemptions, only a full legislative process will be able to address the issues raised by EU exemptions in a consistent manner across the EU.

Rationale for redefining or removing EU exemptions in the medium-term

Based on the findings of the data collection exercise, the EBA believes that there are strong arguments in favour of removing or at least redefining EU exemptions in the medium-term, as this would:

- **Ensure banks' own funds requirements for CVA risks reflect the risks they are exposed to**

First and foremost, the own funds requirements for CVA risks should take into account the situations where banks are exposed to CVA risks in their accounting P&L. As demonstrated earlier, banks usually compute an accounting CVA for most of the transactions that are exempted from the CVA risk charge under the CRR and the CVA risks generated by these transactions can be substantial. In this regards, redefining or removing EU exemptions from the CVA risk charge will reduce the misalignments between the accounting and prudential scopes.

In addition, exempting from the CVA risk charge transactions exempted from the clearing obligation under EMIR does not seem to be fit for purpose. In fact, banks face higher CVA risks when precisely their counterparties do not post collateral. In this situation, banks use the accounting CVA to mitigate their counterparty credit risk instead of using collateral and this is when a capital requirement for CVA risks makes even more sense.

In particular, it appears that most of non-financial counterparties are exempted based on the current definition of the NFC exemption, which leads to believe that the exemption is particularly lenient and does not exclude only the small and medium-sized enterprises that may not bear higher trading costs. Furthermore, the fact that EMIR thresholds are computed without including

derivatives used for hedging purposes, thus potentially exempting from the CVA risk charge derivative instruments entered into for hedging purposes, also constitutes an inadequate side-effect of referring to EMIR regulation.

Should an exemption of NFCs still be needed, a redefinition of the non-financial exemption could be considered, not based on EMIR clearing thresholds but on a more precise definition of small and medium-sized enterprises.

- **Improve the overall consistency of the CVA framework worldwide**

EU exemptions introduced a noticeable divergence from the Basel framework. This probably undermined the consistent application of the Basel framework worldwide.

Policy recommendations

Whereas the EBA believes that there are strong arguments in favour of removing or redefining specific EU exemptions, the EBA also acknowledges that exemptions were introduced in reaction to the unintended consequences of the conservative approach followed in the international standards. As observed above, the impact of removing EU exemptions is material for the banks that participated in the data collection exercise (although most of them would still have compliant CET1 ratios) and it is still uncertain whether there is a risk that counterparties that do not traditionally enter into collateralisation agreements could stop using derivatives due to the resulting increase in trading costs.

Policy recommendation 3: The EBA considers that the CVA risk generated by EU exempted counterparties can be substantial and should be captured prudentially. Acknowledging the legal impossibility to amend EU exemptions via the delegated act foreseen in CRR Article 456(2) and bearing in mind ongoing discussions in Basel, the EBA recommends that all EU exemptions should be reconsidered and possibly removed in the context of legislative amendments to the CRR, upon completion of a review of the CVA risk charge in Basel as part of the Fundamental Review of the Trading Book.

In addition, in order to partially address the risks generated by EU exemptions in the short-term, the EBA recommends monitoring the impact on the CVA risk charge of the transactions exempted from the CVA risk charge, as well as defining potential situations of excessive CVA risks to be considered as part of the Supervisory Review and Evaluation Process (SREP) of institutions.

- **Monitoring of exempted CVA risks**

The monitoring of the impact on the CVA risk charge of the transactions exempted from the CVA risk charge will require banks to calculate according to CRR Articles 383, 384 or 385 (advanced method, standardised method or alternative method) the CVA risk charge for the transactions

under the scope of their regulatory CVA charge including the transactions currently excluded under the CRR.

In order to assist competent authorities and favour convergence across the EU, one or several thresholds would be defined and computed as part of the monitoring. Such thresholds would indicate a presumption of situation of excessive CVA risks not covered by Pillar 1 to be further investigated by competent authorities.

▪ **Guidance on assessing an institution's excessive CVA risks under SREP and potential supervisory measures**

The EBA will provide guidance on how to assess an institution's excessive CVA risk under SREP and how to apply potential supervisory measures. The guidance will specify criteria of what constitutes a situation of excessive CVA risks. Based on this guidance, competent authorities will decide whether or not to take supervisory measures having regard to the specific situation of each institution. In particular, competent authorities may decide to apply additional own funds requirements for excessive CVA risks. This guidance will be subject to public consultation in accordance with the founding regulation of the EBA⁵⁷.

The Supervisory Review and Evaluation Process (SREP) referred to under Section III of CRD4 evaluates the risks to which an institution is or might be exposed, as well as the risks it poses to the financial system. As set out in CRD Article 97(2), this review should cover all requirements of CRR Regulation. As a result, the scope of SREP also includes the CVA risk charge.

The supervisory measures and powers specified in CRD Articles 102, 103 and 104 target situations where the requirements of the CRD or the CRR are not met or where identified 'risks' or 'elements of risks' are not 'covered' by the CRR. Determination of additional own funds requirements under CRD Article 104(2) is further specified in EBA Guidelines on common procedures and methodologies for the supervisory review and evaluation process.

CRR exemptions cannot constitute a case of non-compliance. CRR exemptions constitute directly applicable legislation, which has been approved by the EU Parliament and the Council and is enforceable against institutions and competent authorities in all EU Member States. Furthermore, CVA risk can be considered, at least in principle, as a risk covered by the CRR, as it is subject to a full title of the CRR (Title VI), even if CRR exemptions leave elements of this risk uncaptured (by will of EU legislator). However, it could also be argued that, based on CRR Article 382, the CRR does not fully cover these risks under Pillar 1. Hence, a firm's excessive CVA risks may be considered as constituting 'elements of risks' that are not covered by Pillar 1. In such case, additional own funds requirements should be imposed by competent authorities in line with CRD Article 104(2) to capture excessive/tail CVA risks.

⁵⁷ Regulation (EU) No 1093/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Banking Authority)

The qualification of excessive CVA risks will be carried out as part of the SREP process by considering the specific situation of a firm. The monitoring will constitute only one element of the overall SREP review of CVA risks accompanied by any relevant firm-specific information (e.g. ICAAP). Competent authorities should also, as part of their assessment, take into account the fact that the computation of the thresholds relies on a Basel/CRR framework, which, as shown in this report, has been very conservatively calibrated and raises issues, which the EBA recommends to address (see in particular Section 5.4).

Where, following SREP assessment, competent authorities would qualify a firm as in a situation of excessive CVA risks and where, having regard to other relevant firm-specific information, competent authorities would consider that supervisory action in the form of additional own funds requirements is required, the threshold(s) used as part of the monitoring to indicate a presumption of excessive CVA risks could also be used to calibrate such additional own funds requirements (supervisory benchmark). For example, only the fraction of risk that is above the threshold(s) could be capitalised. Supervisory benchmarks will be developed in order to help competent authorities to determine additional own funds requirements for excessive/tail CVA risks as part of the overall work on supervisory benchmarks for SREP purposes.

As supervisory measures cannot materially reverse the effect of exemptions that are enshrined in EU regulation, any supervisory action taken by competent authorities based on SREP, which would have such an effect by capturing a large fraction of exempted CVA risks, would run significant risks of being challenged. As a result, additional own funds requirements should never be calibrated in such a way to simply request capital requirements that replicate in full or in substantive part the international standards that have not been implemented into EU legislation.

The EBA will provide further information on the timeline in the course of 2015. Subject to completion of sufficient work by the end of 2015 (definition of thresholds, guidance on assessing an institution's excessive CVA risks and guidance for supervisors on how to determine additional own funds requirements for excessive CVA risks), the 2016 cycle of SREPs could already implement this EBA coordinated approach.

Policy recommendation 4: Considering that the CVA risk generated by EU exempted counterparties can be substantial and acknowledging the legal impossibility to amend EU exemptions via the delegated act foreseen in CRR Article 456(2), the EBA recommends defining an EBA coordinated approach for yearly monitoring of the impact of transactions exempted from the CVA risk charge and for defining situations constituting a presumption of excessive CVA risks to be considered under SREP.

This approach will be further specified in a guidance on assessing excessive CVA risks under SREP, which will be submitted for public consultation in the course of 2015.

Clarifying the clients' trade exemption

In addition to exempting the transactions with a qualifying central counterparty, CRR Article 382(3) excludes a client's transactions with a clearing member, when the clearing member is acting as an intermediary between the client and a qualifying central counterparty and the transactions give rise to a trade exposure of the clearing member to the qualifying central counterparty.

In the absence of definition of the terms 'clearing member' and 'client' in CRR Article 4, the definitions of 'clearing member' and 'client' as set out in CRR Article 300 are used, even if those definitions in principle only apply 'for the purposes of this Section'. For the sake of clarity, these definitions should be moved to CRR Article 4. This could be performed via EC delegated act under CRR Article 456(1)(a).

Policy recommendation 5: The EBA recommends moving the definitions of 'clearing member' and 'client' from CRR Article 300 to Article 4, so that these definitions apply without ambiguity to the whole of the CRR and not only to the articles dedicated to the own funds requirements for exposures to a central counterparty.

The clients' trade exemption was intended as a means of maintaining incentives to central clearing, in particular 'indirect clearing'. In fact, some concerns were raised that an ill-fitted interaction between the CVA risk charge and the own funds requirements for banks' exposures to CCPs resulted in higher capital requirements for centrally cleared clients' transactions than in the bilateral case.

The current wording of CRR Article 382(3) has spread confusion over whether transactions are excluded from the perspective of the client only or both perspectives of the client and the clearing member (naturally when the client is subject to the CRR, otherwise the client does not have to compute a CVA risk charge to the clearing member).

The translation of this article in the different EU official languages does not always lead to the same interpretation. Most EU official languages use a similar expression as the English version, i.e. 'a client's transactions with a clearing member'. In this case, two interpretations coexist. It can be argued that 'a client's transactions' denotes possession, thus suggesting that the exemption should apply from the perspective of the client only. Or it can be argued that, regardless of the perspective, 'transactions' are exempted, that any transaction necessarily involves two sides and that from the clearing member perspective also these transactions are 'a client's transactions'.

However, some EU official languages (IT, ES, RO, CS) explicitly exclude 'transactions between a client and a clearing member'.

In this context, the EBA interpretation of the current CRR provisions is that under both drafting options, what is exempted is the type of transaction, not the party. The article simply refers to the parties as a means to identify the type of transactions exempted. Centrally cleared clients' trades are, therefore, currently exempted from both the perspective of the clearing member and the client, when the client is subject to the CRR.

Nonetheless, the EBA considers that the provisions of CRR Article 382(3) should be made consistent with the treatment of clients' exposures set out under CRR Article 305(2) and, ultimately, with BCBS standard on 'Capital requirements for bank exposures to central counterparties' taking effect on 1st January 2017⁵⁸. This work, however, should be conducted after an appropriate review of the incentives structure ensuring that indirect clearing remains incentivised compared to the bilateral case. Due to a lack of time, this review could unfortunately not be conducted thoroughly within the allocated time frame.

Policy recommendation 6: The EBA views that, in the context of indirect clearing, CRR Article 382(3) currently exempts from the CVA risk charge centrally cleared clients' trades from the perspective of both the clearing member and the client, when the client is subject to the CRR. The EBA, however, recommends reconsidering this treatment in the light of international regulatory developments and based on an appropriate review of the incentives structure ensuring that indirect clearing remains incentivised vis-à-vis bilateral trading.

⁵⁸ See BCBS standard on 'Capital requirements for bank exposures to central counterparties' published in April 2014

5.2 Calculation of capital requirements of CVA risk

Among the 32 banks that participated in the CVA data collection exercise, 18 banks only use the standardised method to compute the CVA risk charge (hereafter referred to as ‘S-CVA banks’) whereas 14 banks use the advanced method (hereafter referred to as ‘A-CVA banks’).

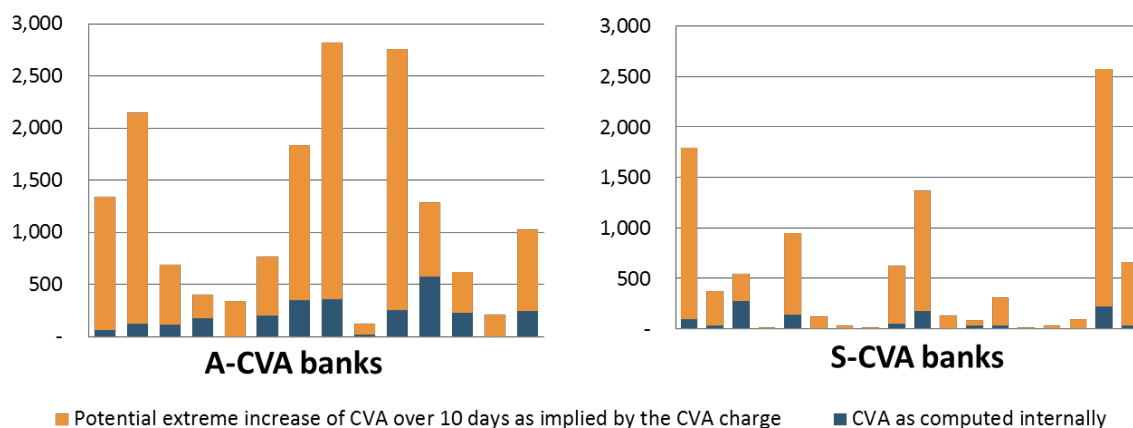
Among the 14 A-CVA banks:

- 2 banks calculate all their CVA risk charge using the advanced method and
- 12 banks also use the standardised method for certain transactions which are not covered by the scope of the IMM or when an appropriate proxy spread cannot be found for the counterparty.

5.2.1 Conservatism of the calculation methods

The following figure compares, on the same scope (i.e. transactions subject to the CVA risk charge under the CRR), the total unilateral CVA computed internally by banks with the potential increase over 10 days, under extreme conditions, in this unilateral CVA as implied by the regulatory CVA risk charge. The latter measure was approximated by dividing the RWA amount by 12.5 for both S-CVA and A-CVA banks (in the latter case, the RWA computed under the standardised method were added to the RWA computed under the advanced method), which provides the sum of the VaR and stressed VaR times the relevant multiplier for the advanced method and a proxy of the VaR for the standardised method. Arguably, this proxy is conservative for the advanced method (due to the sum of the VaR and stressed VaR) but it gives an interesting indicator of the potential extreme change in the unilateral CVA as implied by the regulatory framework.

Figure 22: Relationship between the (unilateral) CVA as computed internally and its potential extreme change as implied by the CVA risk charge (expressed in million EUR)



As observed, the regulatory CVA risk charge currently implies a very conservative increase in the unilateral CVA over 10 days for a majority of banks in the panel (10 to 20 times the CVA computed

internally). The level of conservativeness seems to be comparable for both the standardised and advanced methods.

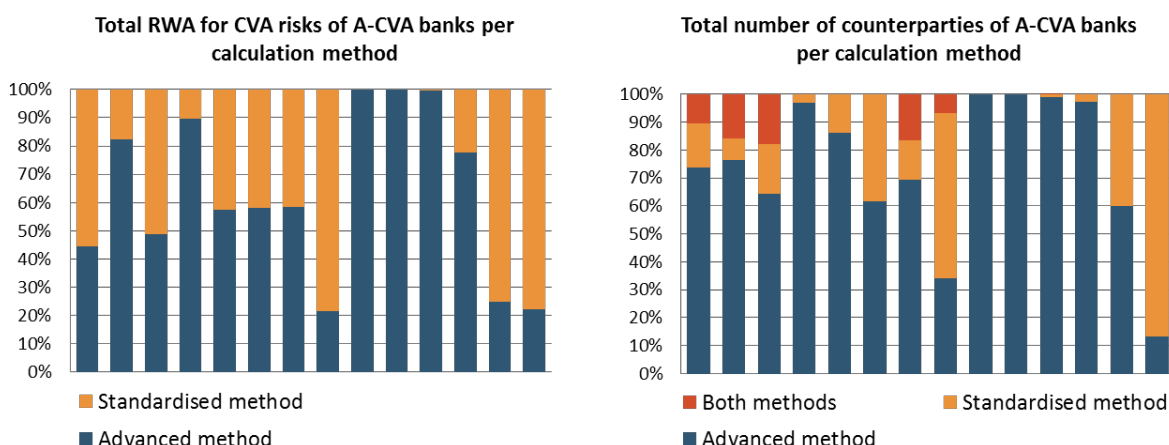
For A-CVA banks, however, the comparison in Figure 22 essentially reflects the over-conservativeness of the current CVA framework (in particular the sum of the CVA VaR and the Stressed CVA VaR). The non-stressed CVA VaR component of the regulatory CVA risk charge (not represented on Figure 22) would have been a better proxy for the potential extreme increase of CVA over 10 days for A-CVA banks. However, it would not have reflected how the regulatory framework currently measures CVA risk.

Due to time constraints, this report does not contain any direct comparison of the advanced and standardised methods on same portfolios. In the CVA framework, the incentive to apply the advanced method is unclear since no specific permission is required: using the advanced method is mandatory when a bank has been permitted to use both the IMM and the SIR VaR. Such analysis would better fit in a Hypothetical Portfolio Exercise ('HPE exercise'), such as the one mandated under CRD Article 78.

5.2.2 Materiality of standardised method for A-CVA banks

As discussed above, most A-CVA banks still have a portion of their transactions capitalised under the standardised method. Figure 23 below shows the breakdown of the total RWA for CVA risks and number of counterparties per calculation method for each A-CVA bank. Please note that the CVA risks of the same counterparty can be capitalised using both the advanced and the standardised methods when some transactions with this counterparty are in the scope of the IMM but not all of them.

Figure 23: RWA and number of counterparties per calculation method



The standardised method still plays an important role for certain A-CVA banks. In particular, the RWA computed under the advanced method represent:

- Less than 30% of the total RWA for CVA risks for 3 out 14 A-CVA banks

- Less than 60% of the total RWA for CVA risks for 8 out 14 A-CVA banks.

For the respondents, this is mainly explained by the coverage of the IMM model, which at group level or even at legal entity level may not cover all transactions.

In addition, the data collection exercise showed that only very few banks (2 over 13 respondents) move a counterparty to the standardised method due to inappropriate outputs of the proxy spread methodology. This raises some concerns over the application of the requirement of CRR Article 383(6) since, as shown in Section 5.2.3 below, the outputs of the proxy spread methodologies are often questionable.

5.2.3 EBA RTS on a limited number of smaller portfolios

According to CRR Article 383(4), an institution which is permitted to use the IMM for the majority of its business, but which uses another approach for counterparty credit risk for smaller portfolios, may, subject to permission from the competent authorities, calculate the CVA risk charge using the advanced method for these non-IMM netting sets. The permission can only be granted for a limited number of smaller portfolios.

EBA RTS⁵⁹ define what constitutes a limited number of smaller portfolios for the purposes of this provision. Three conditions have to be cumulatively met to include all non-IMM netting sets (irrespective of the counterparty) under the advanced method:

- the number of all non-IMM transactions subject to the CVA risk charge shall not exceed 15 % of the total number of transactions subject to the CVA risk charge
- the size of each individual non-IMM netting set subject to the CVA risk charge shall not exceed 1 % of the total size of all netting sets subject to the CVA risk charge
- the total size of all non-IMM netting sets subject to the CVA risk charge shall not exceed 10 % of the total size of all netting sets subject to the CVA risk charge.

The size of a netting set is defined as the exposure value of the netting set according to the Mark-to-Market method (CRR Article 273), taking into account netting but not the effects of collateral.

According to the data collection exercise, nine out of 14 A-CVA banks prefer not to apply the above conditions to include the non-IMM portfolios in the advanced method and, therefore, capitalise the CVA risks of these portfolios under the standardised method. Out of the remaining five A-CVA banks, which apply the conditions set out in the EBA RTS, four banks meet the three conditions whereas one bank does not meet two of the three conditions (see Figures 24 to 26 below).

⁵⁹ COMMISSION DELEGATED REGULATION (EU) No 526/2014 of 12 March 2014 supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to regulatory technical standards for determining proxy spread and limited smaller portfolios for credit valuation adjustment risk

Figure 24: Percentage of number of non-IMM netting sets to total number of all netting sets

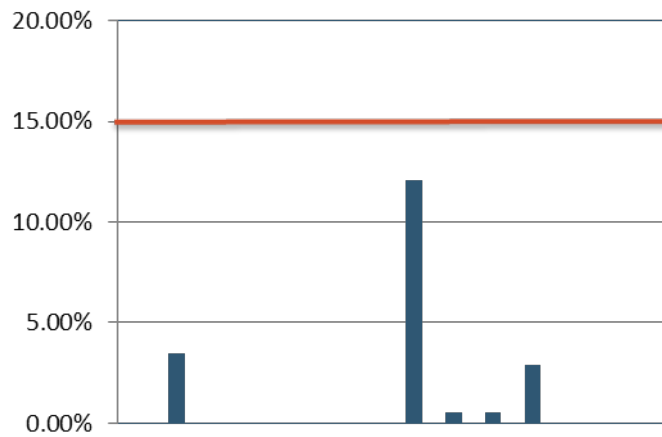


Figure 25: Percentage of size of largest non-IMM netting set to total size of all netting sets

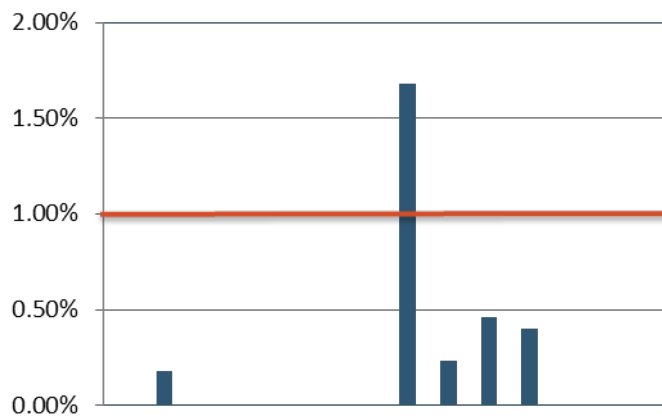
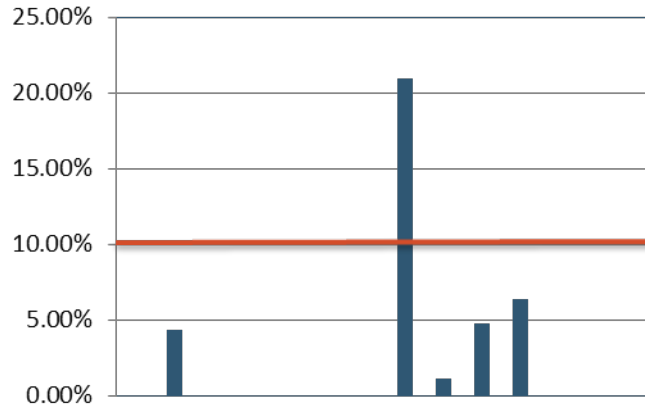


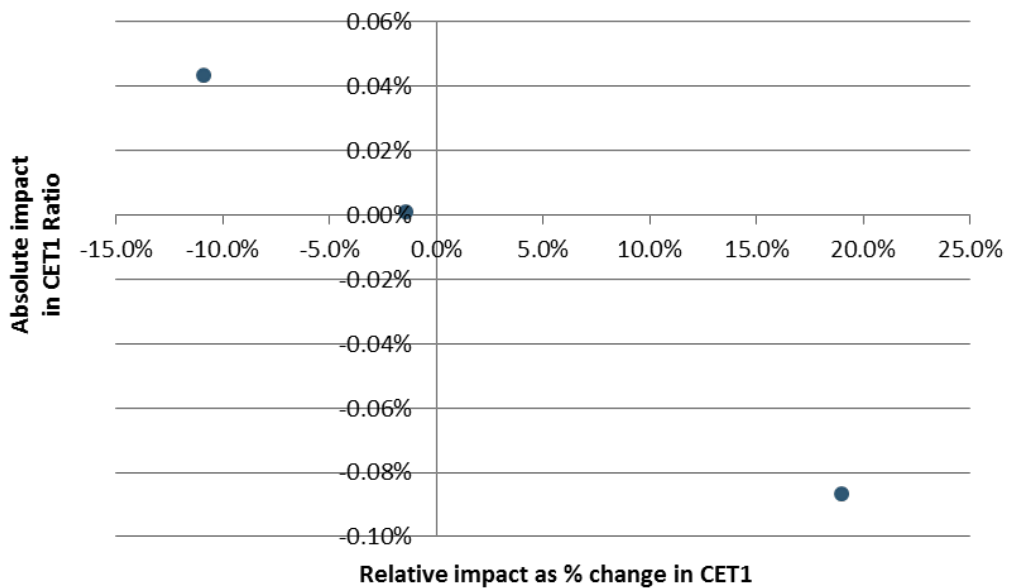
Figure 26: Percentage of size of all non-IMM netting sets to total size of all netting sets



In addition, A-CVA banks applying the option of CRR Article 383(4) were asked to compute the impact of moving the smaller non-IMM portfolios that they currently include in the advanced method to the standardised method.

As shown in Figure 27 below, this impact can be material in the CVA risk charge but it is not necessarily more conservative and has a relatively small impact on the CET1 ratio of the three banks that calculated it.

Figure 27: Impact of not meeting the three conditions of the EBA RTS to capitalise non-IMM portfolios under the advanced method



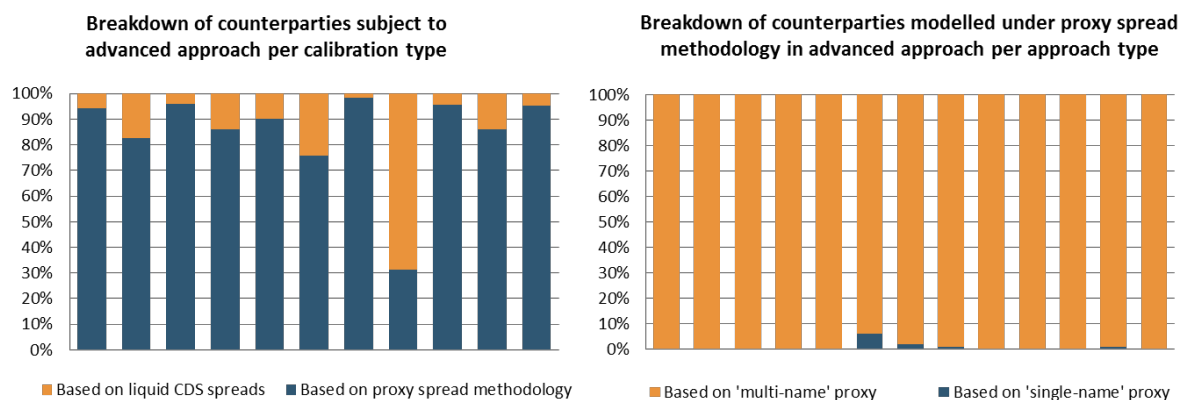
5.2.4 Proxy spread methodology under the advanced method

According to CRR Article 383(1), when there is no CDS spread available for a counterparty, institutions have to use a proxy spread that is appropriate having regard to the rating, industry and region of the counterparty.

As shown by Figure 28, the proxy spread methodology applies to the vast majority of counterparties subject to the advanced method: for 10 out of 11 A-CVA banks that responded, more than 75% of counterparties under the advanced method are subject to the proxy spread methodology. This is an intrinsic feature of the regulatory CVA risk charge, which relies on a majority of proxies for the computation of own funds requirements.

Moreover, the proxy spreads of most of the counterparties under the proxy spread methodology are derived from the general approach, which considers the categories of rating, industry and region of the counterparty, since the specific provisions to compute the proxy spread from a single related entity is limited to regional governments or local authorities⁶⁰ (see Figure 28).

Figure 28: Number of counterparties subject to proxy spread and single-name proxy spread



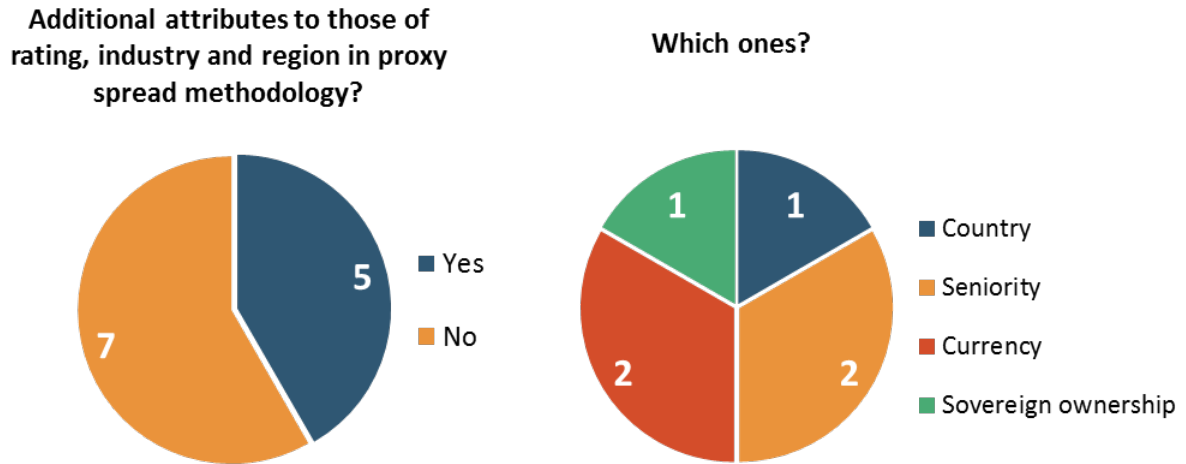
The RTS on proxy spread provide a general approach for determining a proxy spread by considering the broad categories of rating, industry and region. Nonetheless, the EBA also allows institutions with some flexibility to determine the most appropriate proxy spread based on their expert judgment⁶¹.

The RTS require institutions to consider at a minimum the attributes of rating, industry and region of the counterparty to estimate an appropriate proxy spread. Institutions are free to consider additional attributes, but, as shown by Figure 29 below, the majority of respondents do not include more attributes than the minimum required ones.

⁶⁰ Recital 4 and Article 1(2) of COMMISSION DELEGATED REGULATION (EU) No 526/2014

⁶¹ Recital 2 of COMMISSION DELEGATED REGULATION (EU) No 526/2014

Figure 29: Additional attributes to rating, industry and region



As part of the data collection exercise, the EBA also conducted a limited benchmarking of proxy spread methodologies of A-CVA banks. Banks were requested to provide a one year historic of proxy spreads, as generated by their methodology, for both hypothetical and real counterparties (the hypothetical counterparties were characterised by a rating, an industry and a region).

The resulting historic time series were plotted in the following figures. The first three graphs show the outputs on three hypothetical counterparties: a UK insurer rated AA, a Swiss municipality of more than 100,000 inhabitants rated A and a Japanese airline company rated BB. The next three graphs show the outputs on three real counterparties: Government of Turkey, Berkshire Hathaway Inc. and Tata motors Ltd. Real historical CDS spreads are plotted in yellow.

Figure 30: Proxy spread benchmarking of hypothetical counterparties - UK insurer, rated AA

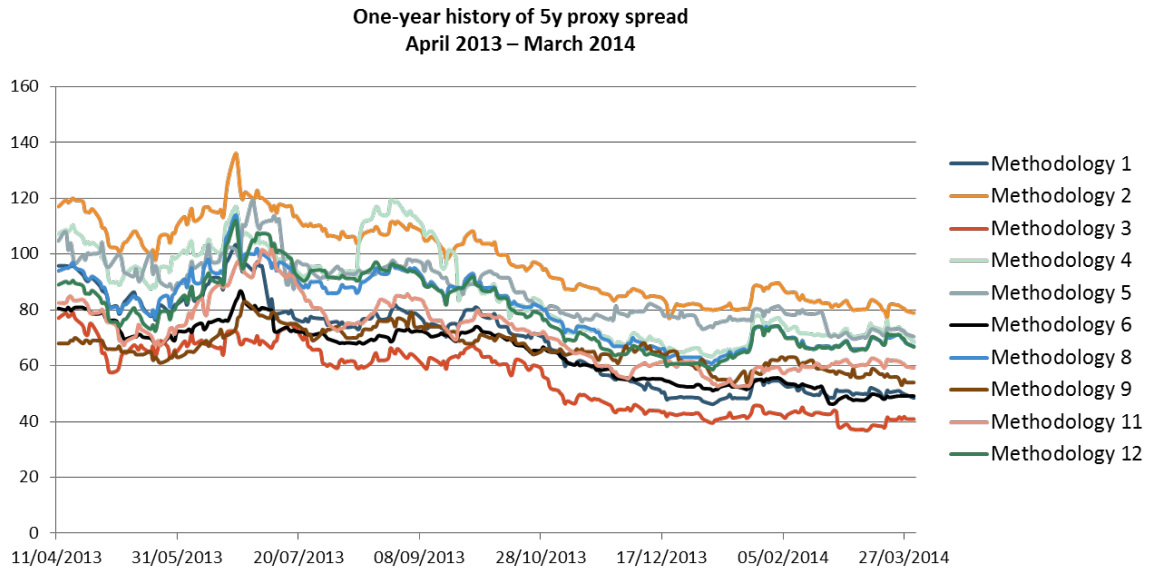


Figure 31: Proxy spread benchmarking of hypothetical counterparties – Swiss municipality of more than 100,000 inhabitants, rated A

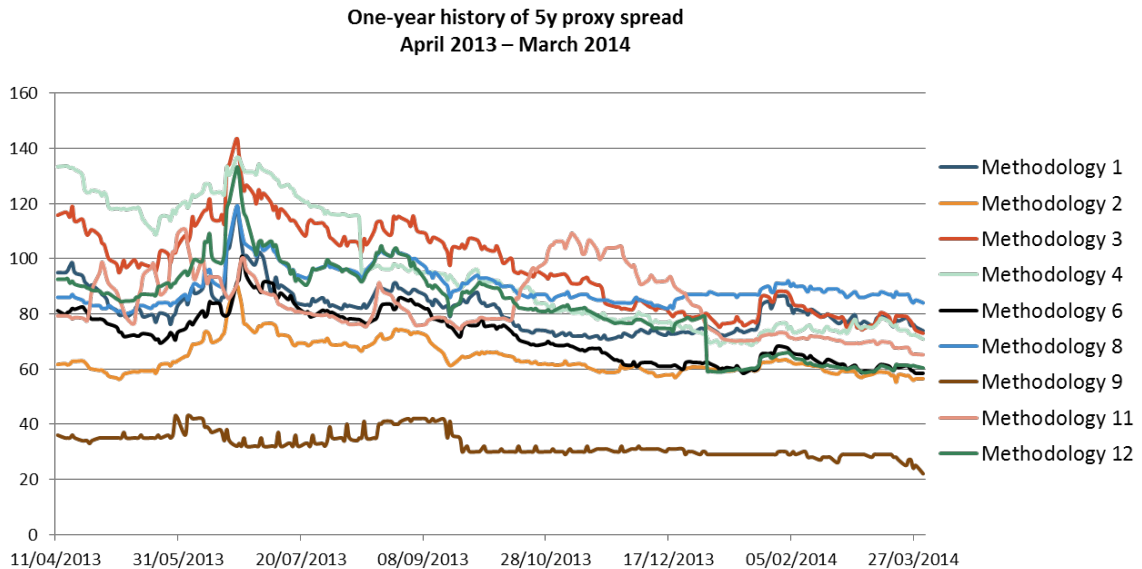


Figure 32: Proxy spread benchmarking of hypothetical counterparties - Japanese airline company, rated BB

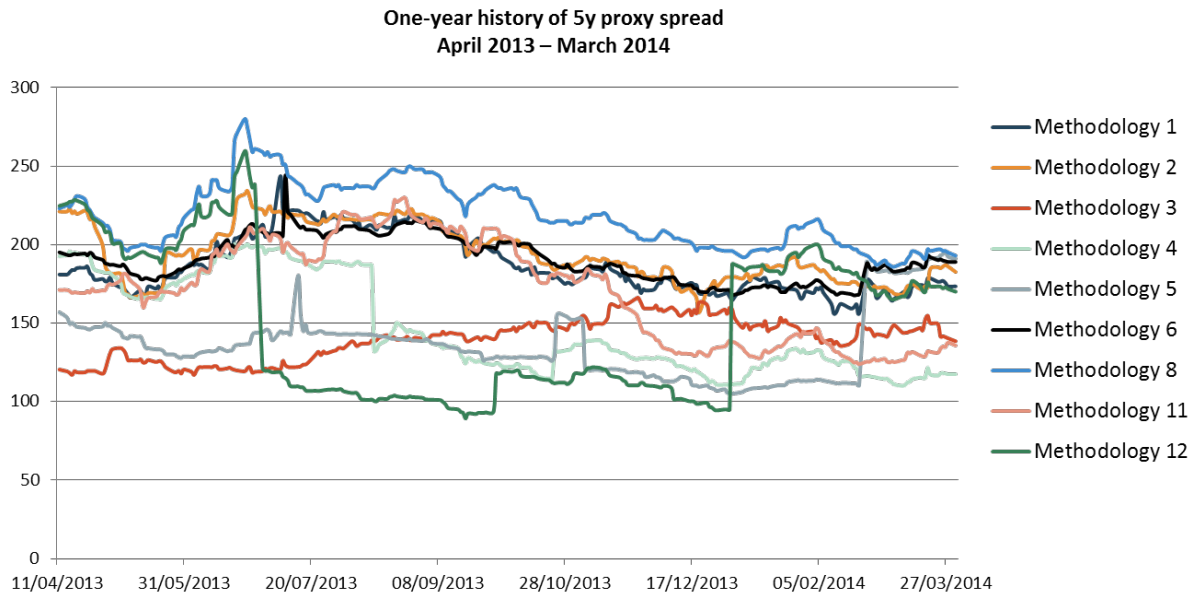


Figure 33: Proxy spread benchmarking of real counterparties - Government of Turkey

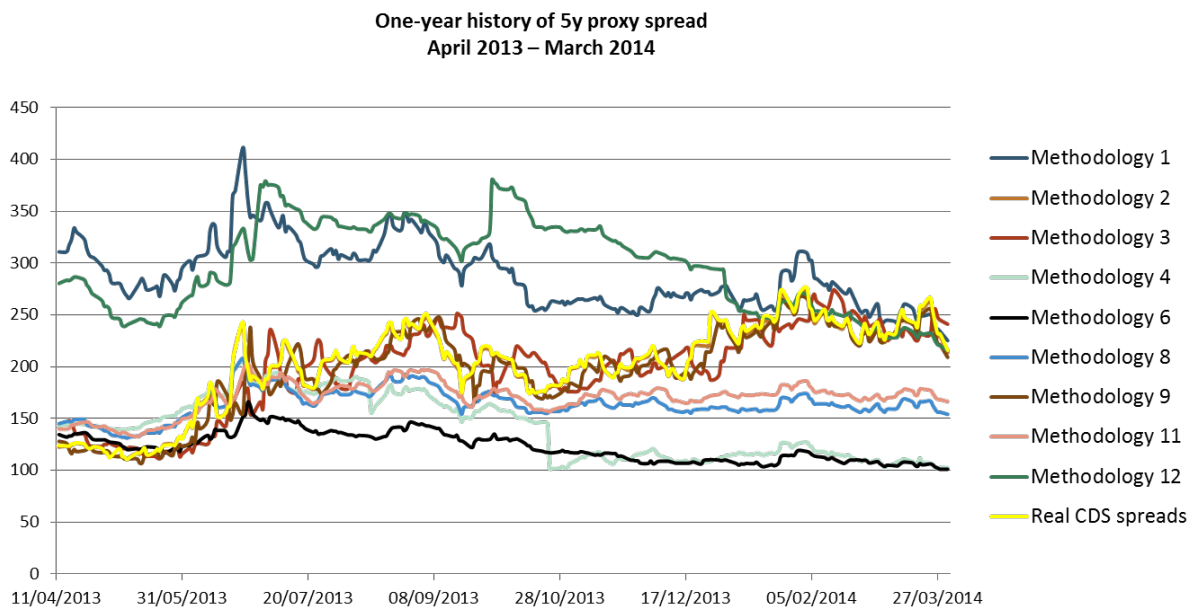


Figure 34: Proxy spread benchmarking of real counterparties – Berkshire Hathaway Inc

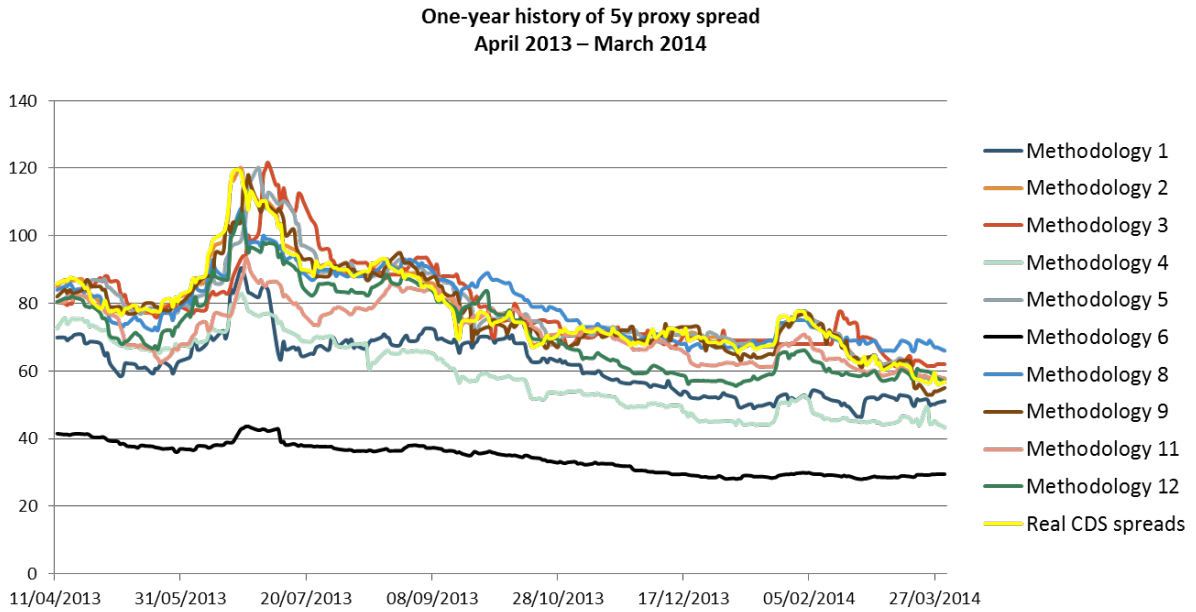
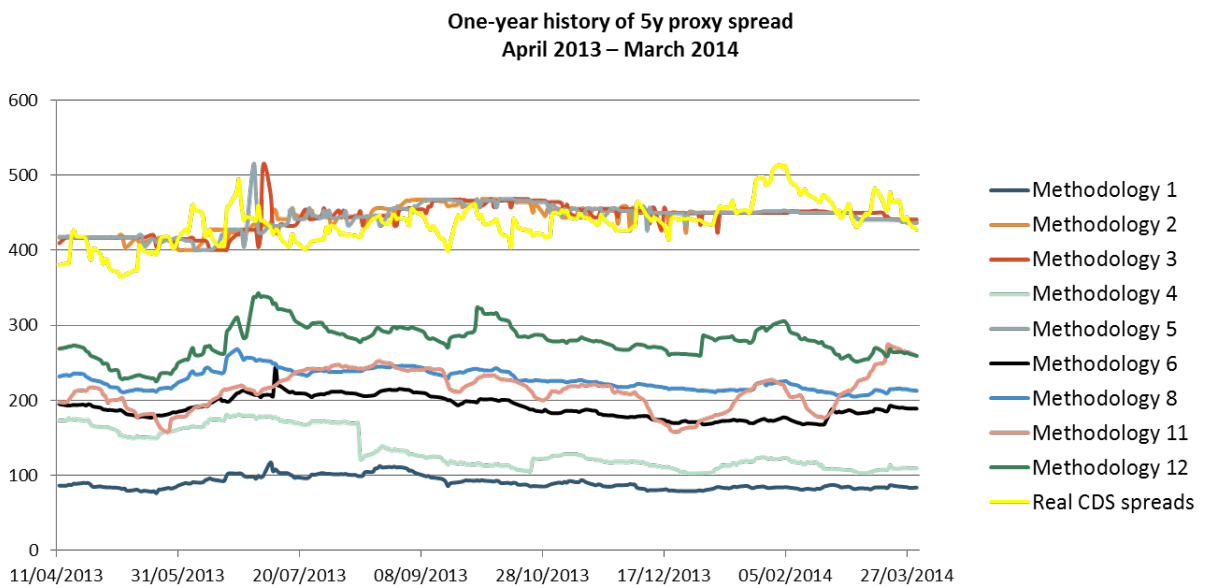


Figure 35: Proxy spread benchmarking of real counterparties – Tata motors Ltd



Proxy spread methodologies show high diversity. Financial counterparties for which many CDS data are quoted show more comparable outcomes when proxied. In contrast, non-financial counterparties show highly variable outcomes in both the overall level of proxy spreads and their volatility. In addition, many methodologies do not seem to overcome the issues of discontinuities or jumps in the time series which may significantly increase the level of volatilities.

In addition, based on the collected CDS data for the three real counterparties (time series over one year from 12/04/2013 to 31/03/14), the EBA computed the 1-day, one-sided 99% non-stressed CVA VaR using the following assumptions:

- The exposure value EE has been taken flat at 1 million USD over 10 years (including at $t=0$)
- Based on the available CDS tenors, $t_1 = 1Y$; $t_2 = 3Y$; $t_3 = 5Y$; $t_4 = 7Y$ and $t_5 = 10Y$
- The effect of LGD_{MKT} is not taken into account (LGD_{MKT} is set to 0.6 even where firms provided their own internal values)
- No regulatory multiplication factor is applied.

The results on the following tables show significant variation, including in the case where sufficient CDS data should be available for building proxy spreads (financial counterparties).

Figure 36: Computation of 1-day regulatory CVA VaR 99% - Government of Turkey

	CVA 31/03/14	CVA VaR 99%	CVA VaR 99% (in % CVA 31/03/14)	CVA 31/03/14 (in % Mean CVA 31/03/14)	CVA VaR 99% (in % Mean CVA VaR 99%)
Methodology 1	215139	12853	6.0%	26.1%	20.4%
Methodology 2	188112	11587	6.2%	10.3%	8.5%
Methodology 3	205909	15342	7.5%	20.7%	43.7%
Methodology 4	116432	4162	3.6%	-31.7%	-61.0%
Methodology 6	116174	4618	4.0%	-31.9%	-56.7%
Methodology 8	151727	5630	3.7%	-11.0%	-47.3%
Methodology 9	186052	22831	12.3%	9.1%	113.9%
Methodology 11	159160	4576	2.9%	-6.7%	-57.1%
Methodology 12	196397	14481	7.4%	15.1%	35.6%
Mean	170567	10676	6.3%		
Stdev	36784	6436	2.9%	21.6%	60.3%

Figure 37: Computation of 1-day regulatory CVA VaR 99% - Berkshire Hathaway Inc

	CVA 31/03/14	CVA VaR 99%	CVA VaR 99% (in % CVA 31/03/14)	CVA 31/03/14 (in % Mean CVA 31/03/14)	CVA VaR 99% (in % Mean CVA VaR 99%)
Methodology 1	71272	5971	8.4%	-5.6%	49.7%
Methodology 2	87198	3522	4.0%	15.5%	-11.7%
Methodology 3	87403	8149	9.3%	15.8%	104.3%
Methodology 4	63274	3314	5.2%	-16.2%	-16.9%
Methodology 5	87195	3519	4.0%	15.5%	-11.8%
Methodology 6	43462	760	1.7%	-42.4%	-80.9%
Methodology 8	80797	3228	4.0%	7.0%	-19.1%
Methodology 9	86639	6283	7.3%	14.8%	57.5%
Methodology 11	75180	2447	3.3%	-0.4%	-38.7%
Methodology 12	72490	2700	3.7%	-4.0%	-32.3%
Mean	75491	3989	5.3%		
Stdev	14025	2171	2.4%	18.6%	54.4%

Figure 38: Computation of 1-day regulatory CVA VaR 99% - Tata motors Ltd

	CVA 31/03/14	CVA VaR 99%	CVA VaR 99% (in % CVA 31/03/14)	CVA 31/03/14 (in % Mean CVA 31/03/14)	CVA VaR 99% (in % Mean CVA VaR 99%)
Methodology 1	95404	4672	4.9%	-52.6%	-52.8%
Methodology 2	290439	19064	6.6%	44.4%	92.6%
Methodology 3	292744	19993	6.8%	45.6%	101.9%
Methodology 4	115249	4501	3.9%	-42.7%	-54.5%
Methodology 5	298930	21381	7.2%	48.7%	116.0%
Methodology 6	171762	5291	3.1%	-14.6%	-46.6%
Methodology 8	195657	3406	1.7%	-2.7%	-65.6%
Methodology 11	203820	6238	3.1%	1.4%	-37.0%
Methodology 12	243451	16043	6.6%	21.1%	62.0%
Mean	201066	9901	4.9%		
Stdev	75933	7698	2.0%	37.8%	77.7%

Proxy spread methodologies of A-CVA banks are described in generic terms in the Figure below.

Figure 39: Overview of proxy spread methodology of A-CVA banks

	Short description of proxy spread methodology
Methodology 1	Waterfall of approaches 'Single-name' proxy approach 'Bucketing' approach Use of average in buckets Use of single-name CDS spreads
Methodology 2	'Bucketing' approach Use of median in buckets Use of single-name CDS spreads
Methodology 3	'Regression' approach Use of single-name CDS spreads Use of CDS indices spreads Consideration of other attributes than region, rating and sector
Methodology 4	'Bucketing' approach Use of single-name CDS spreads Use of median in buckets
Methodology 5	'Bucketing' approach Exclusion of erratic proxy output
Methodology 6	'Regression' approach Use of single-name CDS spreads
Methodology 7	Waterfall of approaches 'Single-name' proxy approach 'Bucketing' approach Use of single-name CDS spreads Use of bond spreads Consideration of other attributes than region, rating and sector
Methodology 8	'Decision-tree' approach Consideration of other attributes than region, rating and sector
Methodology 9	'Bucketing' approach Use of median in buckets Use of single-name CDS spreads
Methodology 10	Waterfall of approaches 'Single-name' proxy approach 'Bucketing' approach Consideration of other attributes than region, rating and sector
Methodology 11	Waterfall of approaches 'Bucketing' approach Use of average in buckets Use of single-name CDS spreads Consideration of other attributes than region, rating and sector Fallback approach for erratic proxy
Methodology 12	'Bucketing' approach Use of single-name CDS spreads Fallback approach for erratic proxy

The EBA decision, as part of its RTS, to provide institutions with some flexibility to determine the most appropriate proxy spread was motivated by concerns that sufficiently reliable CDS data may not be always available for combinations of rating, industry and region. CDS spreads are at the heart of proxy spread methodologies for accounting and regulatory purposes, therefore any problem affecting the CDS market is likely to raise issues for the regulatory CVA risk charge.

According to ISDA analysis⁶², whereas the observed decrease in CDS notional outstanding as measured by the Bank for International Settlements seems to suggest a reduction in market activity (see Section 4.4), the decrease is apparently only attributable to portfolio compression. Furthermore, trading activity measured using DTCC CDS Trade Information Warehouse (TIW) suggests that the CDS market risk transaction activity, as measured by the notional amount traded, increased by 15% in 2013 compared to 2012 after decreasing slightly over the period 2011-2012. CDS index trading seems to have driven this growth in notional volumes and trade counts, whereas trading in single-named CDS declined during the period.

Despite recent efforts to increase the liquidity of the CDS market, including standardisation of CDS contracts, it may still be very challenging to meet the data quality requirements specified in the RTS. In addition, banks reported that changes in the regulation (implementation of IRC and of the prudential treatment of correlation trading, regulation on short selling and leverage ratio) led to a significant reduction of the depth of the CDS market.

The following table shows the availability of CDS data according to the different minimum levels of granularity⁶³ prescribed in the RTS. CDS data were selected from MARKIT based on the following criteria:

- CDS with a MARKIT Liquidity Score of 1 to 4 only
- CDS on senior claims only (Tier = SNRFOR)
- Underlying entity having an external rating.

As of October 2014, 1,423 single-name CDS in the MARKIT database meet these criteria. It is worth noting that this sample has not been submitted to banks' data quality checks, also required under the RTS (a significant number of these CDS could fail to pass banks' data quality checks).

Figure 40 provides the breakdown of these entities according to rating, industry and region categories. Segments with 10 or more constituents (respectively 20 or more) are highlighted in light green (respectively dark green) in the table.

⁶² ISDA Research Notes - CDS Market Summary: Market Risk Transaction Activity – October 2013

⁶³ Region: Europe, North America, Asia, rest of the world; Industry: public sector, financial sector, others; Rating: six CRR credit quality steps. Instead of the credit quality steps, the seven typical external non-default ratings AAA-CCC ratings are used here

Figure 40: Availability of CDS data - October 2014 (Source MARKIT)

Region EBA	Industry	Rating MARKIT							Grand Total
		AAA	AA	A	BBB	BB	B	CCC	
Asia		1	33	88	57	13	3		195
	Public Sector		12	12	4		1		29
	Financials	1	6	33	15	1			56
	Others		15	43	38	12	2		110
Europe		10	32	114	163	71	44	11	445
	Public Sector	10	4	4	18	3	1	4	44
	Financials		13	52	30	19	7	3	124
	Others		15	58	115	49	36	4	277
North America		6	24	145	258	96	68	15	612
	Public Sector	1	2						3
	Financials		5	44	55	7	8	1	120
	Others	5	17	101	203	89	60	14	489
Rest of World		1	11	39	81	20	15	4	171
	Public Sector	1	5	3	15	4	5	2	35
	Financials		5	18	19	4	5		51
	Others		1	18	47	12	5	2	85
Grand Total		18	100	386	559	200	130	30	1,423

The following Figure is taken from Appendix 1 of the ISDA/AFME response to consultation on the RTS on proxy spread⁶⁴. ISDA/AFME had conducted a very similar exercise, however based on a more granular breakdown for the industry category as required by the consultative paper. Applying similar assumptions to the one described above, ISDA/AFME assessed that, as of August 2013, 1,214 CDS were available for use in banks' proxy spread methodology. This was also subject to further data quality checks to be performed by banks.

In August 2013, a total of 18 (21%) out of 84 possible combinations did not present any single underlying CDS to contribute to a proxy spread construction. In the ISDA/AFME response, this percentage amounted to 38% (63 out of 168 possible combinations) due to the more granular breakdown required at that time by the consultative document⁶⁵. The reduction of the granularity of the industry category to 'Public sector', 'Financial sector' and 'Others' in the final draft RTS helped limiting these cases.

In October 2014, 17 (20%) out of 84 possible combinations do not present any single underlying CDS. Segments with 10 or more constituents seem also to have increased.

⁶⁴ http://www.eba.europa.eu/documents/ddm/com.liferay.portlet.dynamicdatalists.model.DDLRecord/420031/view_uoloadFiles

⁶⁵ The 2013 consultative paper required as a minimum granularity for Industry: public sector, banks, insurance, other financial services, industrials and others.

Figure 41: Availability of CDS data - August 2013 (Source ISDA-AFME and MARKIT)

Region EBA	Industry	Rating MARKIT							Grand Total
		AAA	AA	A	BBB	BB	B	CCC	
Asia			10	22	26	10	5		73
	Public Sector		1	3	1	3	1		9
	Financials			7	7		1		15
	Others		9	12	18	7	3		49
Europe		13	25	121	160	64	26	8	417
	Public Sector	9	4	1	6	1	1	1	23
	Financials	3	10	62	33	16	7	4	135
	Others	1	11	58	121	47	18	3	259
North America		2	17	137	266	85	72	22	601
	Public Sector		1						1
	Financials		5	48	31	5	5	3	97
	Others	2	11	89	235	80	67	19	503
Rest of World			11	23	56	17	12	4	123
	Public Sector		5	6	28	3	4	2	48
	Financials		4	10	13	4	3	1	35
	Others		2	7	15	10	5	1	40
Grand Total		15	63	303	508	176	115	34	1,214

Considering that more than 75% of counterparties are subject to proxy spread, the EBA recommends that more flexibility should be allowed in the proxy spread methodology of A-CVA banks, in particular in relation to the use of alternative approaches based on a more fundamental analysis of credit risk for those counterparties for which no peers have liquid quoted CDS nor other market quoted credit spread due to their very nature (e.g. funds, pension funds, trade/project finance).

In order to ensure a high level of convergence and the identification of best practices, which could be then translated into guidelines, institutions should justify and document all the instances where proxy spreads are based on an alternative approach other than using the three attributes of rating, region and industry. The use of alternative approaches shall also be justified by the use of the similar approaches to proxy the spreads of the same counterparty for accounting CVA purposes. Indeed, IFRS 13 does not preclude from the use of unobservable inputs 'to the extent that relevant observable inputs are not available'⁶⁶. Such unobservable inputs shall be developed 'using the best information available in the circumstances, which might include the entity's own data'⁶⁷.

⁶⁶ IFRS 13 §87

⁶⁷ IFRS 13 §89

Ideally, CRR Article 383(1) should be amended via EC delegated act in order to allow for this increased flexibility in the proxy spread methodology. If not, the EBA RTS on proxy spread would be reviewed to more specifically include this possibility.

Policy recommendation 7: The current proxy spread methodology relies on credit spread data from peers of the counterparty for which a proxy spread has to be generated (considering the attributes of rating, region and industry). Acknowledging some limits of such methodology, the EBA recommends allowing institutions to use alternative approaches based on a more fundamental analysis of credit risk to proxy the spread of those counterparties for which no time series of credit spreads are available, nor for any of their peers, due to their very nature.

The EBA recommends that institutions justify and document all the instances where proxy spreads are based on an alternative approach other than using the three attributes of rating, region and industry. The use of alternative approaches shall also be justified by the use of similar approaches to proxy the spreads of the same counterparty for accounting CVA purposes. The EBA should monitor the range of practices in this area and could issue guidelines on such practices.

In addition, the EBA recommends extending the possibility of use of single name proxy spreads to the case of a parent and a subsidiary, which share at least either the same industry or the same region.

LDG_{MKT}

CRR Article 383(1) defines LDG_{MKT} as the ‘LGD of the counterparty that shall be based on the spread of a market instrument of the counterparty if a counterparty instrument is available. Where a counterparty instrument is not available, it shall be based on the proxy spread that is appropriate having regard to the rating, industry and region of the counterparty’.

The regulatory CVA formula set out in CRR Article 383 does not distinguish between the LDG_{MKT} used for implying probabilities of default (in denominator in the exponential functions) and the LDG_{MKT} which should reflect the recovery of the netting set with the counterparty (first term of the formula), assuming that both LDG_{MKT} are equal. There are instances, however, where the recovery of a derivative transaction (or netting set of derivative transactions) with a given counterparty should be allowed to differ from the fixed LGD commonly used by market participants for determining implied PDs (i.e. 60% for senior unsecured debt), in particular when derivative exposures are subject to a guarantee (state guaranteed) or secured (for instance in structured finance transactions such as project finance).

A Basel FAQ⁶⁸ acknowledges that ‘in cases where a netting set of derivatives has a different seniority than those derivative instruments that trade in the market from which LGD_{MKT} is inferred, a bank may adjust LGD_{MKT} to reflect this difference in seniority’.

Therefore, the EBA recommends that, in the regulatory CVA formula set out in article 383, the term LDG_{MKT} before the sum (thereafter referred to as LGD_{MKT}^*) should be allowed to differ from the LDG_{MKT} that appears in both denominators in the exponential functions (thereafter referred to as LGD_{MKT}), where banks can demonstrate that the seniority of the derivative exposure differs from the seniority of the CDS.

As for LGD_{MKT} , when there are liquid CDS quotes on the market for a given counterparty, LGD_{MKT} should be inferred from these quotes. When there is no liquid CDS quote on the market for a given counterparty, LGD_{MKT} shall be inferred either from the liquid CDS quotes of the counterparties used to compute its proxy spread or based on the alternative approach used to compute the proxy spread as proposed under policy recommendation 7.

Ideally, CRR Article 383(1) should be amended via EC delegated act. If not, an EBA Q&A could be published to clarify this possibility.

Policy recommendation 8: The EBA recommends amending the Regulatory formula for the Advanced method in order to allow institutions to reflect the seniority of the netting set in LGD_{MKT}^* .

The EBA recommends that institutions justify and document all the instances when LGD_{MKT}^* differs from LGD_{MKT} or when LGD_{MKT}^* is based on an alternative approach where no CDS are available as proposed under policy recommendation 7.

Appropriateness of a unified proxy methodology for market risk and CVA risk

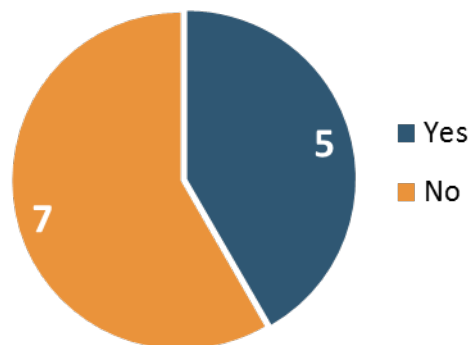
In the EBA Opinion published alongside the EBA RTS on 20 December 2013, the EBA committed to re-consider the ‘appropriateness of a unified proxy methodology for both market risk and CVA purposes against an alternative approach that would require a proxy methodology to be used for CVA purposes only as part of its report under Article 456(2). The EBA recognises that this issue is part of a broader issue related to the entire CVA framework and that the consistency of a possible solution with the Basel framework or relevant changes thereof is to be further evaluated. If appropriate, the EBA will encourage the Commission, European Council and the European Parliament to contemplate an amendment of Article 383(7), when considering subsequent revisions of the CRR.’

⁶⁸ Basel CCR FAQ 2b.5 (December 2012)

The CVA data collection exercise shows that the proxy methodology used for CVA risk differs from the proxy methodology for market risk for a majority of respondents.

Figure 42: Different proxy spread methodologies for market and CVA purposes

Same proxy methodology for CVA charge and market risk charge?



The EBA reiterates that the proxy spread methodology used for CVA purposes and the proxy methodology used for market risk purposes may have good reasons for diverging. Usually, the proxy methodology used for market risk applies to ‘tradable’ names/entities, which are not necessarily traded on a regular basis so as to have continuous time series. The proxy spread methodologies for CVA purposes apply to many more names/entities – banks’ clients for derivative instruments -, most of whom do not issue debt instruments.

The reference to the ‘institution’s approved internal model for the specific risk of debt instruments’ is removed to clarify that having a unified proxy methodology for both market risk and CVA purposes does not constitute a CRR requirement.

Policy recommendation 9: The EBA recommends the following amendment to CRR Article 383(6) in order to clarify that a unified proxy methodology for both market risk and CVA risk purposes does not constitute a CRR requirement:

‘For exposures to a counterparty, for which the institution’s ~~approved internal model for the specific risk of debt instruments~~ proxy spread methodology does not produce a proxy spread that is appropriate with respect to the criteria of rating, industry and region of the counterparty, the institution shall use the method set out in Article 384 to calculate the own funds requirement for CVA risk.’

Update of EBA RTS mandate

In order to clarify that a unified proxy methodology for both market risk and CVA purposes does not constitute a CRR requirement, the EBA RTS mandate in CRR Article 383(7) should be amended to remove the reference to the ‘institution’s approved internal model for the specific risk of debt instruments’. The mandate should also be updated to cover LGD_{MKT}^* .

Policy recommendation 10: Consistently with policy recommendations 8 and 9, the EBA recommends the following amendment to CRR Article 383(7):

‘EBA shall develop draft regulatory technical standards to specify in greater detail:

(a) how a proxy spread is to be determined ~~by the institution’s approved internal model for the specific risk of debt instruments~~ for the purposes of identifying $s_{i,j}$, LGD_{MKT}^* and LGD_{MKT} referred to in paragraph 1;

(b) the number and size of portfolios that fulfil the criterion of a limited number of smaller portfolios referred to in paragraph 4.

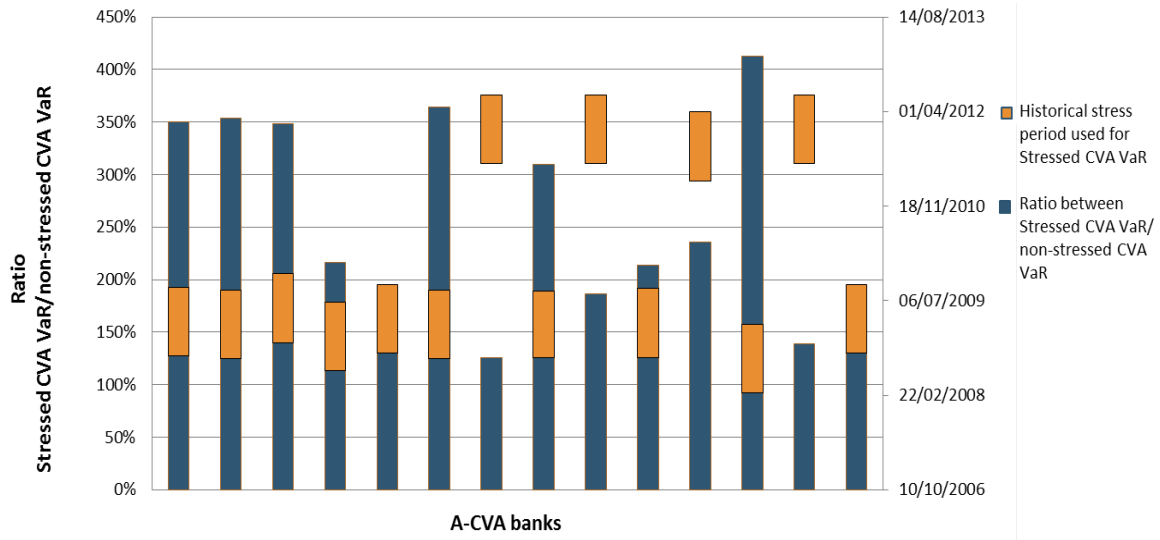
EBA shall submit those draft regulatory technical standards to the Commission by 1 January 2014.

Power is delegated to the Commission to adopt the regulatory technical standards referred to in the first subparagraph in accordance with Articles 10 to 14 of Regulation (EU) No 1093/2010.’

5.2.5 Selection of stress period for A-CVA banks

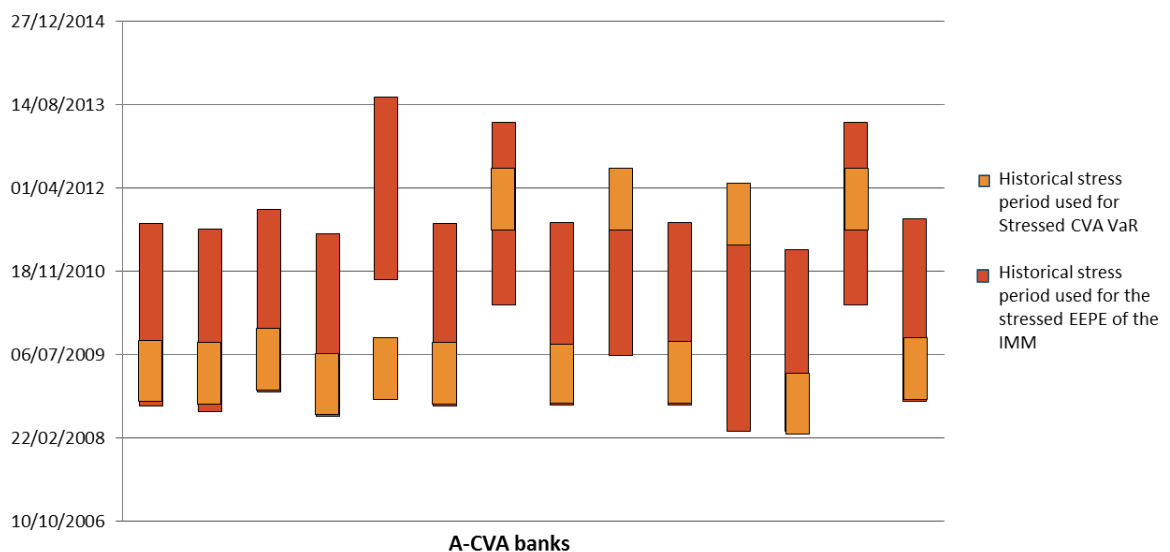
The CVA data collection exercise confirms the importance of the selection of the stress period for the stressed VaR component of the CVA risk charge. Whereas most firms using a one year historical period of stress around 2008-2009 for their stressed CVA VaR have a ratio of stressed CVA VaR to non-stressed CVA VaR between 3 and 4, most firms using a one-year historical period of stress around 2010-2012 exhibit a ratio between 1 and 2.5.

Figure 43: Impact of selection of historical period on conservativeness of Stressed CVA VaR



According to CRR Article 383(5)(a), the period of stress for the credit spread parameters shall be the most severe one-year stress period contained within the three-year period used for the exposure parameters (IMM). The following figure confirms that this is generally the case. Most banks, except two, comply with CRR rules for determining their stress period for the CVA VaR (i.e. within the stress period used for the IMM). However, banks that display a small ratio between the stressed VaR and the non-stressed VaR components of the CVA risk charge tend to choose their stress period at the end of the stress period of the IMM.

Figure 44: Stress period for CVA VaR and stressed EEPE



Policy recommendation 11: The EBA recommends that, when the stress period used for the stressed CVA VaR does not contain any data from Q2 2008 to Q2 2009, competent authorities should assess the relevance of setting a multiplier higher than 3 for the Stressed Value-at-Risk input to the CVA risk charge in order to address potential underestimation of own funds requirements for CVA risk.

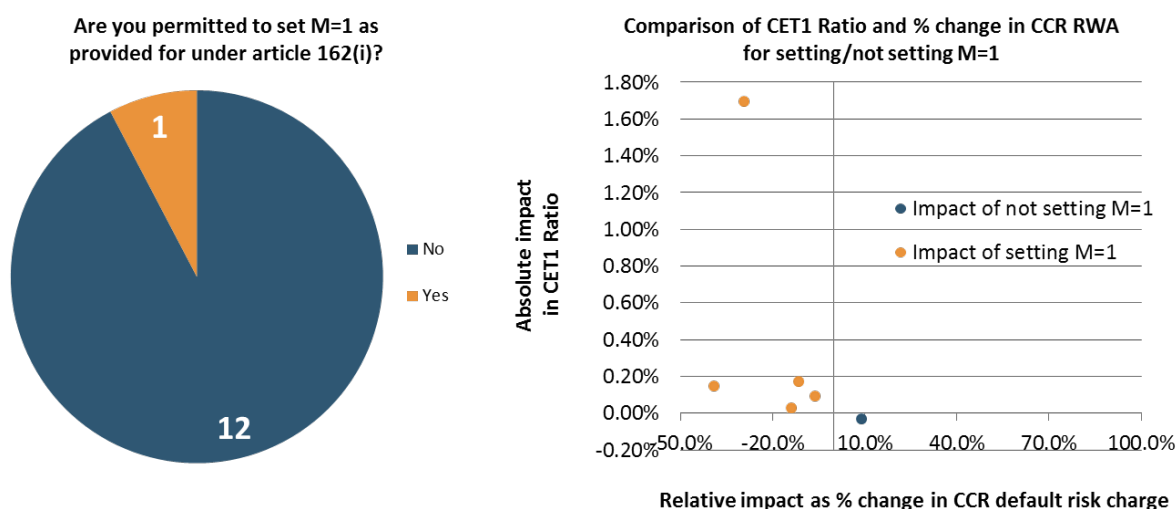
5.2.6 Specific permissions

Permission to use M=1 for A-CVA banks

According to CRR Article 162(1)(i), institutions using the IMM to calculate exposure values and an internal model for the specific risk of debt instruments, which can demonstrate to the competent authorities that their internal model for specific risk associated with traded debt positions applied in Article 383 contains effects of rating migrations, can set M to 1 in the formula laid out in Article 153(1).

Only one A-CVA bank in the sample has been permitted to use M=1 in the CRR default risk charge. As part of the CVA data collection exercise, institutions were asked to compute the impact on the own funds requirement for counterparty credit risk (default risk charge) of either setting M=1 (for those institutions that are currently not permitted to do so) or not setting M=1 (for the institution having been granted permission). Six institutions computed the impact as shown on the next figure.

Figure 45: Permission to set M=1 and impact for banks



As observed, the permission to set $M=1$ leads to a significant capital reduction in the CCR default risk charge: between -5% to -40% for respondents. The impact in the CET1 ratio of those banks is much more moderate.

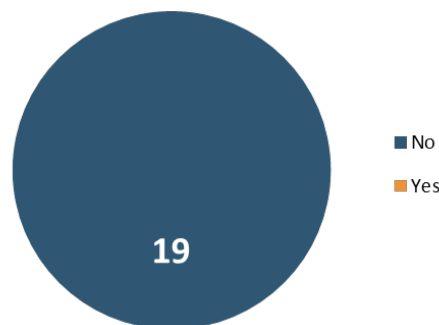
Permission to use internal CVA model for estimating M

According to CRR Article 162(1)(h), institutions that use an internal model to calculate a one-sided credit valuation adjustment (CVA) may use, subject to the permission of the competent authorities, the effective credit duration estimated by the internal model as M.

None of the banks in the panel has been permitted to use its internal model of unilateral CVA to estimate M.

Figure 46: Use of internal CVA model for estimating M

Are you permitted to use your internal model of unilateral CVA to estimate M as proposed under 162(h)?



5.2.7 Calculation of M_i in the standardised method

In CRR Article 384, the maturity M_i is defined as 'effective maturity of the transactions with counterparty i '. M_i is one of the inputs in the standardised CVA formula, where all indices ' i ' actually refer to the counterparty (and not the netting set). In particular, EAD_i^{Total} is defined as 'the total counterparty credit risk exposure value of counterparty i ' (summed across its netting sets)'. The CVA formula is actually computed at counterparty level.

Two approaches are available for the computation of M_i depending on whether the bank uses the IMM for the computation of CCR EAD. However, in both cases, M_i is computed under Article 162(2) at the netting set level, with a floor of 1 year and a cap at 5 years. Please note that the cap at 5 years does not apply for CVA purposes, where the longest remaining maturity in the netting set is considered.

The CVA standardised method only refers to the product $M_i \times EAD_i^{Total}$, apparently confirming that a unique counterparty specific effective maturity M_i should be multiplied with the total EAD

across all netting sets with counterparty i . Unclear is how the discount factor has to be applied in this case, since it references the same unique M_i .

When asked to clarify the same ambiguity in Basel, the Basel Committee provided the following answer (Basel CCR FAQ 2.a2): ‘If there is more than one netting set to the same counterparty, an effective maturity (M) should be determined separately for each netting set, the EAD of each netting set should be discounted according to its individual maturity and the quantities $M \times EAD$ should be summed.’

Consistently with Basel FAQ 2.a2, the product $M_i \times EAD_i^{\text{Total}}$ should be equal to the sum over all netting sets j with a given counterparty i of the product of:

For banks using the IMM: $\sum M_j \times EAD_j$

For banks not using the IMM: $\sum M_j \times EAD_j \times DF(M_j)$ where $DF(M_j) = (1 - \text{EXP}(-0.05 \cdot M_j)) / (0.05 \cdot M_j)$

Policy recommendation 12: The EBA recommends clarifying the standardised method for CVA, in particular the way the term $M_i \times EAD_i^{\text{Total}}$ is to be computed.

5.2.8 Use of Original Exposure Method

Subject to consent of the competent authority, CRR Article 385 allows institutions that use the original exposure method for counterparty credit risk to compute for CVA risk a capital requirement equal to 10 times the capital requirement computed for counterparty credit risk for those exposures.

According to information provided by Member States, 5 European banks use this approach.

There is no strong rationale for allowing an alternative approach for such a limited number of banks. The standardised method set out under CRR Article 384 is sufficiently simple to be applied by all banks. Banks using the OEM for counterparty credit risk purposes should use the EAD computed under the OEM in the standardised method for CVA. CRR Article 384(1) already refers, for the computation of EAD_i^{Total} , to Sections 3 to 6 of Title II, Chapter 6 (OEM is in Section 4).

Policy recommendation 13: The EBA recommends removing the alternative approach of CRR Article 385 (institutions using the Original Exposure Method) as the approach is applied by very few institutions across the EU and its outputs do not reflect CVA risks in a sufficiently risk-sensitive way. Institutions using the OEM for counterparty credit risk purposes should use the EAD computed under the OEM in the standardised method for CVA, as provided for under CRR Article 384(1). A transitional period could be set for institutions to move towards the standardised method.

5.3 Eligible hedges

5.3.1 Eligible hedges under the CRR

Banks are permitted to reduce their regulatory CVA exposures, both under the advanced and standardised methods by purchasing ‘eligible hedges’. While this is allowed in both the Basel⁶⁹ and European regulatory framework, some minor differences can however be identified in regards with the scope of eligible instruments, more clearly specified in CRR, and exclusion from market risk own funds requirements.

Eligible hedges are defined in CRR Article 386 of CRR as follows:

- Eligible hedges are used solely for the purpose of mitigating CVA risk and managed as such
- Eligible hedges can be either:
 - single-name CDS or other equivalent hedging instruments referencing the counterparty directly, or
 - index CDS, provided that the basis between any individual counterparty spread and the spreads of index credit default swap hedges is reflected, to the satisfaction of the competent authority, in the Value-at-Risk.
- Tranched or nth-to-default CDS and credit linked notes are not eligible hedges for the purposes the calculation of the own funds requirements for CVA risk.

Furthermore, eligible hedges used for the purpose of reducing CVA risk are exempted from market risk capital requirements. While in the Basel framework eligible hedges included in the CVA capital charge must be removed from the total market risk capital charge calculation (general and specific risk), in CRR, it is allowed to exclude these hedges only from the calculation of own funds requirements for specific risk.

5.3.2 Other market risk hedges

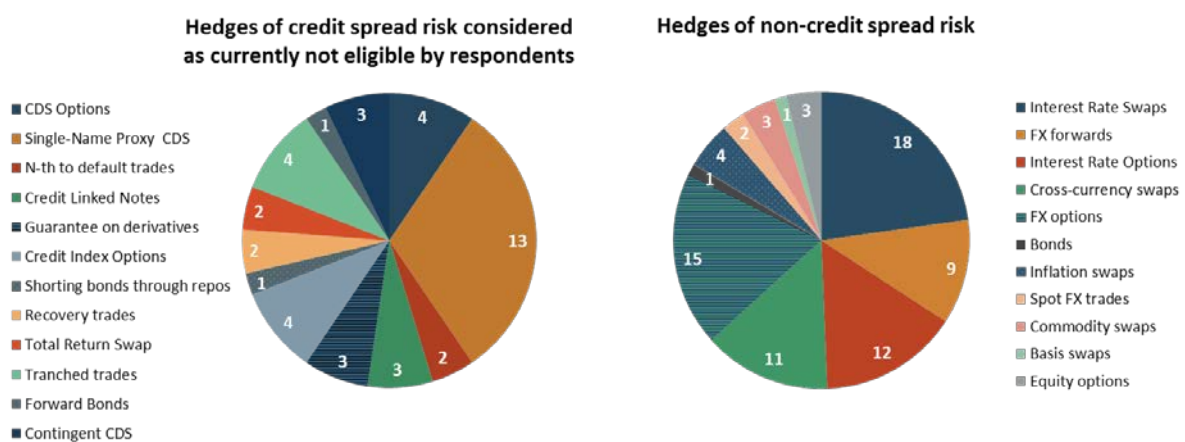
Only credit hedges are eligible in the regulatory framework, both in the Basel framework and in the CRR. Other hedging instruments used to hedge the market risk of the derivative exposures (e.g. Interest rate or FX derivatives) are not recognised in the CVA charge. However, these ‘CVA market risk hedges’ are frequently used by large banks that dynamically hedge all CVA risks.

⁶⁹ <http://www.bis.org/publ/bcbs189.pdf>

The main consequence of this treatment is that certain credit hedges (i.e. those not accounted for in the regulatory CVA charge) and all CVA market risk hedges appear as open directional positions under the market risk capital requirements.

The recognition of eligible hedges for non-credit spread risks implies the capture of all CVA risks in the CVA risk charge, which may require significant structural changes. A policy recommendation is made in this respect as part of Section 5.4.

Figure 47: Hedges that respondents would like to see recognised as eligible



5.3.3 Eligible hedges of exempted counterparties

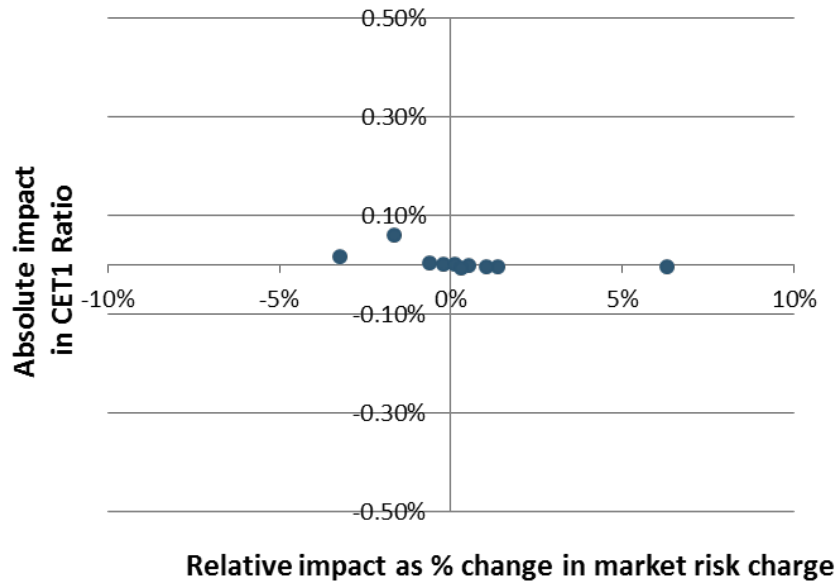
The credit risk eligible hedges that institutions may use to hedge the CVA risk of counterparties exempted under the CRR are usually not exempted from market risk capital requirements and, therefore, appear as open directional positions.

EBA Q&A 2013_402⁷⁰ clarifies that eligible credit risk hedges of counterparties exempted from the scope of application of CVA own funds requirements are subject to the relevant own funds requirements for specific risk as set out in Part Three, Title IV of CRR, unless they are treated as credit risk mitigation for counterparty credit risk as set out in Part Three, Title II, Chapter 4 of CRR.

Explicitly exempting these transactions from the market risk charge has a small impact for all 10 respondents. Most of the hedges for CVA charge are recognised as credit risk mitigant for the default risk charge. In addition, few counterparties exempted have CDS available on the market due to their nature, which implies that banks usually do not hedge the idiosyncratic credit spread risks of CVA for those counterparties.

⁷⁰ See <http://www.eba.europa.eu/single-rule-book-qa>

Figure 48: Removal of eligible hedges of exempted counterparties from the market risk charge



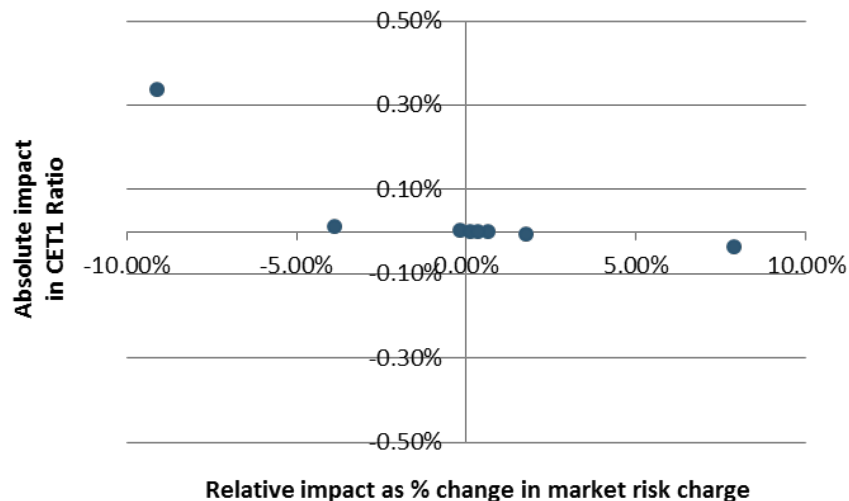
5.3.4 Hedges for non-credit spread risks of CVA

These hedges are not recognised as eligible hedges for the CVA charge in the CRR. Therefore, they appear as ‘naked positions’ in the market risk charge.

Participating banks were asked to calculate the impact of removing these non-credit spread risk hedges from the market risk charge (as proposed by US regulation). This is not the ideal solution as it assumes that these hedges are perfect.

Among the 8 respondents, only 3 banks seem to be moderately or significantly impacted by this treatment. Interestingly, some banks do not benefit from this treatment (i.e. have a negative impact in CET1 ratio) meaning that these CVA hedges offset other risks of their trading book.

Figure 49: Removal of non-credit spread risk CVA hedges from the market risk charge



5.3.5 Policy Recommendations on eligible hedges

CRR Article 386 currently applies to both the standardised and advanced approaches, without distinguishing the types of eligible hedges for each method. However, the standardised method is based on a simplified, prescribed formula, which cannot integrate appropriately the mitigating effect of a number of credit derivative instruments that could qualify as eligible hedges under CRR Article 386. In addition, the CRR wording ‘other equivalent hedging instruments’ under CRR Article 386 is a constant source of interpretation questions about which instruments can be recognised as eligible hedges.

Therefore, the EBA recommends that under the standardised approach, only single-name CDS, CLN and indices should be recognised as eligible hedges and that under the advanced approach, all credit derivative instruments that are in the scope of the market risk VaR for specific risk of debt instruments and that are not identified as the instruments defined under CRR Article 386(2) should be recognised as eligible hedges. In particular, the wording of CRR Article 386(2) should make clear that the CLNs mentioned in this article refer to ‘tranche CLN’.

CRR Article 386 should be amended via delegated act to clarify that separately for the advanced and standardised methods.

Policy recommendation 14: The EBA recommends amending CRR Article 386 via EC delegated act to clarify, separately for the advanced and the standardised methods, which instruments can be considered as eligible hedges.

5.4 CVA risk as a component of the market risk framework

As set out in CRR Article 456(2), the EBA is mandated to assess as part of its CVA report the treatment of CVA risk as a stand-alone charge versus an integrated component of the market risk framework. Considering the fundamental change that moving CVA risk to the market risk framework would represent, the EBA acknowledges that any policy recommendation in this respect should also be discussed in Basel in order to ensure international convergence.

5.4.1 CVA risk in the Fundamental Review of the Trading Book (FRTB)

The Basel Committee on Banking Supervision agreed to consider the question of the treatment of CVA risk as an integrated component of the market risk framework as part of its Fundamental Review of the Trading Book.

The Basel Committee on Banking Supervision issued in October 2013 a second consultative paper on the fundamental review of capital requirements for the trading book, after a first consultative paper published in May 2012.

The Committee has remained cautious of the degree to which CVA risks can be effectively captured in a single integrated modelling approach considering the practicality of integrated modelling of CVA and market risk. In its second consultative paper, the Committee decided that, for the time being, it was not appropriate for CVA to be fully integrated into the market risk framework, given the complexity and model risk in an integrated model. The Committee agreed on a limited number of changes to the CVA calculation to maintain consistency with the revised market risk requirements, in particular basing the advanced approach upon the bank's ES model used to calculate the capital charge for bond credit spreads, net of any allowable counterparty credit hedges.

5.4.2 CVA data collection exercise

As part of the CVA data collection exercise, participating banks were asked to compute, using their own internal models and internal definition of CVA (without reference to the regulatory formula), a Value at Risk for CVA risk (without the application of any multiplier) under four different scenarios.

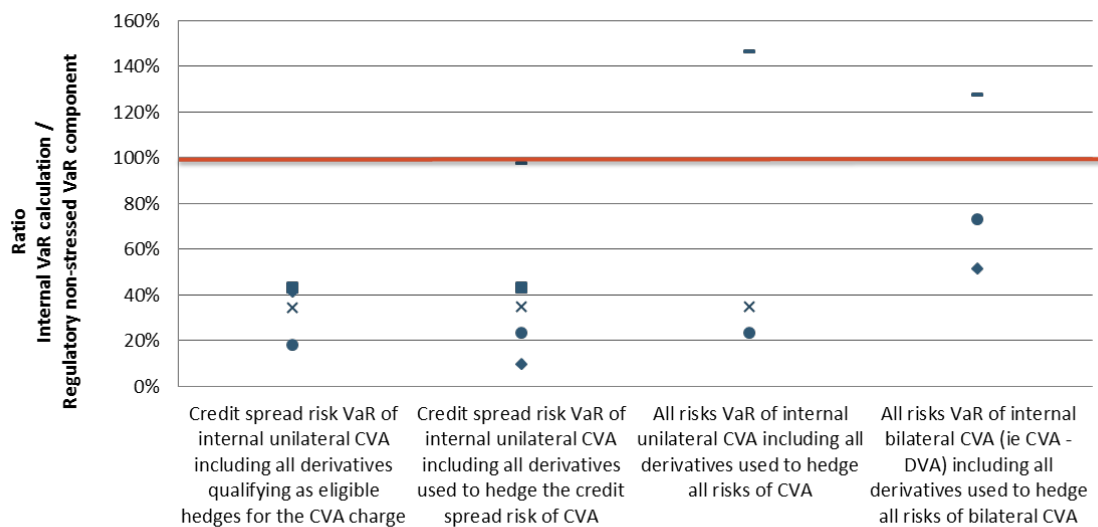
The following figure compares the ratio of internal VaR calculations to the regulatory non-stressed VaR component for the four different scenarios. Firms are represented by similar patterns across the different scenarios.

The figures were computed by very few firms and show mixed results:

- For almost all scenarios, the VaR on internal CVA appears to be lower than the VaR on regulatory CVA
- 3 banks experienced almost no changes over the first 3 scenarios

- The last scenario (all CVA risks including DVA) appears to be the most conservative when compared to the other ones, but the lack of data prevents drawing general conclusions.

Figure 50: Comparison of internal and regulatory CVA VaR measures



5.4.3 Framing a revised CVA risk charge in a renewed context

The CVA data collection exercise has highlighted increased convergence in banks' practices in relation to CVA. Banks seem to have progressively converged in reflecting the cost of the credit risk of their counterparties in the fair value of derivatives, charging their counterparties/clients for it and calculating for internal purposes a CVA risk charge. Banks increasingly tend to manage CVA risk dynamically (not only credit spread risk, but also interest rate risk, FX risk...) and to centralise CVA pricing, risk management and hedging within CVA desks.

In addition, CVA practices for Accounting CVA, Regulatory CVA and Internal CVA (i.e. CVA used for pricing and risk management purposes), which were largely divergent across EU banks when the CVA framework was agreed in Basel have now broadly converged towards the use of market implied data based on CDS spreads and proxy spreads in the vast majority of cases.

This convergence is the result of industry practice, as well as a consequence of the implementation in the EU of IFRS 13 and the Basel CVA framework.

In contrast, accounting practices were much more diverse when the Basel Committee, in reaction to CVA losses observed during the crisis, initiated discussions on the implementation of a prudential framework for CVA. Accounting for CVA was not universally fair valued through P&L and, in many instances, relied almost exclusively on the use of historical default probabilities. Confronted to this diversity, the Basel Committee defined a prudential framework independent of accounting requirements, reflecting a market approach (based on the use of credit spreads)

rather than a credit approach (based on the use of historical PDs) and prescribing a regulatory formula from which both advanced and standardised methods were derived.

Concerns around unintended effects of the Basel CVA framework contributed to the introduction of exemptions in the EU. Main reasons for CRR exemptions given by the industry included:

- the disconnection from firms' internal CVA practices and the clear incentive given by the market-based regulatory CVA framework to switch from the use of historical PDs to the use of market implied data for accounting purposes, thus implying important costs for major European banks to change their accounting and dynamically manage CVA risks
- the conservative calibration of the CVA risk charge (3 x sum of VaR and Stressed VaR) and the significant increase in trading costs charged to clients (corporate), with a risk that clients stop hedging their commercial/financial risks using derivatives; US/EU structural differences in terms of access to market funding and project financing, the EU being much more bank intermediated with derivatives being used to hedge IR or FX risks, whereas the US relies more on market funding
- the over-reliance of the CVA regulatory framework on the CDS market, the liquidity of which was seen as problematic, in particular compared to the US CDS market and in the context of contradicting simultaneous initiatives on CDS market (implementation of Basel 2.5, including IRC and conservative prudential treatment of correlation trading, regulation on short selling, leverage ratio) – this was seen as a major issue for sovereign counterparties, bearing in mind the very conservative level of calibration of the regulatory CVA risk charge.

Albeit on a more limited scale, other Basel jurisdictions also identified some shortcomings in the Basel framework, which they chose to address. In particular, the US decided not to penalise firms hedging the market risks of their CVA by excluding non-credit hedges of CVA from the application of market risk requirements (to the extent that they are not themselves trading positions). Canada and Switzerland adopted similar treatments. Other countries (in particular Japan) do not have any CVA in their accounting rules, as a consequence banks will generally not hedge any CVA.

5.4.4 Policy Recommendations on Basel FRTB

With a view of re-establishing international convergence in the implementation of the Basel CVA framework and consistently with the conclusions of the CVA data collection exercise reflected in this report, the EBA recommends the following in the ongoing fundamental review of the trading book in Basel and suggests that the European Commission should consider possible action in this respect once the work under way in Basel is completed.

CVA should be moved to the market risk framework and treated as a fair value adjustment subject to prudent valuation requirements

The current CVA framework is a stand-alone capital charge accounting for CVA variability due to credit spread risk only. It constitutes a specific framework, including features of both credit risk

and market risk frameworks. Moving CVA to the market risk framework would recognise that CVA is now commonly fair valued through P&L. It would pave the way for the capture of CVA volatility not only due to credit spread risk but also to EE volatility, which is currently left uncaptured thus significantly underestimating CVA risk. It would also allow the consistent incorporation of market risk hedges of CVA risk.

As is the case in the EU, banks' accounting CVA computations, which are not directly under the control of banking regulators, should, as any adjustment to fair-valued instruments, be subject to Basel prudent valuation guidance. As a result, the formula used for accounting purposes would be placed under the review of supervisors, with the possibility for supervisors to require valuation adjustments, in particular to account for model risk. This would be all the more important if institutions are allowed to use their internal CVA models without reference to the regulatory formula.

CVA should constitute a desk as defined in FRTB and remain a standalone risk-charge in the market risk framework, with CVA advanced and standardised methods adjusted to reflect outcome of FRTB

In line with the Committee's decision to adopt changes to the CVA calculation to maintain consistency with the revised market risk requirements, the EBA recommends that CVA should constitute a separate desk in the market risk framework and that the advanced and standardised methods should be adjusted accordingly.

Consistently with the FRTB, the advanced method would be based on the expected shortfall at the confidence level of 97.5% over a period of stress. Considering that the Sensitivity Based Approach (SBA) would require banks to compute CVA sensitivities to risk factors that are difficult to calculate, the current standardised method for CVA, once revised, would be made available to less advanced banks for the computation of the CVA risk charge. Nevertheless, the SBA would be computed by advanced banks, in particular in case it is used as a floor, since the revised standardised method may not constitute a sufficiently risk-sensitive method to be used as a credible basis for the computation of a floor.

While recognising that a fully integrated approach would have the advantage of allowing joint modeling of all markets risks, the EBA shares the concerns of the Committee on the complexity and technical challenges of a fully integrated approach. In particular, the requirement to compute market risk capital requirements daily is likely to raise computational issues for CVA risk, especially in the case of a reviewed CVA risk charge that would capture not only credit spread risk but also EE volatility. Therefore, the EBA recommends that, once moved in the market risk framework, CVA remains a standalone risk charge subject to weekly computation only.

Market risk hedges of CVA (interest rate, FX hedges...) should be recognised as eligible hedges

Provided that CVA is moved to the market risk framework, market risk hedges should be recognised as eligible hedges of EE risk of CVA. This would solve some of the issues presented in Section 2.2.5 of the report, notably the fact that currently market risk hedges of CVA risk appear as open directional positions in the trading book, thus subject to penalising capital requirements for the banks hedging these risks. Due to the standalone nature of the revised CVA charge, eligible CVA hedges of credit spread risk or EE risk would, however, have to be allocated to the CVA desk and separated from the rest of the trading book.

Subject to definition of specific conditions (e.g. capture of basis risk), proxy hedging should be allowed

‘Proxy hedging’ usually refers to relaxing the strict requirement that single-name CVA hedges should reference the counterparty directly. Allowing for proxy hedging would, for example, permit the use of the CDS of the parent company to hedge the CVA risk of with a subsidiary of the group or use of the sovereign CDS to hedge the CVA risk of a regional or local authority. This flexibility would be introduced as an answer to the incompleteness and lack of liquidity of the CDS market, on which the CVA framework is based. Specific conditions should be defined, including appropriate capture of basis risk.

Subject to conditions, advanced institutions should be allowed to use their internal CVA models (without reference to the regulatory formula) for the purposes of computing the own funds requirement for CVA risks

With the view of bringing the regulatory CVA risk charge more in line with banks’ internal and accounting practices, advanced banks should be allowed to use their internal CVA models for the purposes of computing the own funds requirement for CVA risks. As for any other trading book instrument, the expected shortfall would therefore be computed based on the price of the instrument (in this case, CVA) calculated by banks’ pricing models. As a result, the current regulatory formula would be dropped, even if this would be subject to strict conditions.

In particular, IMM approval would constitute a pre-requisite for institutions to be permitted to use this new advanced method. A separate approval would be needed for institutions to be permitted to use their internal CVA models. Likewise, a minimum margin period of risk for CVA purposes would be set at a level closer to actual market practices though sufficiently prudent. In addition, the new advanced approach would be subject to a P&L attribution process and backtesting requirements that are appropriate for a risk measure computed at least weekly.

Furthermore, though being calculated based on banks’ pricing models, the CVA used for regulatory purposes would have to be computed on a larger scope of counterparties than for accounting purposes, as the scope would necessarily include counterparties subject to strong CSA agreements.

In the EU, at least annual benchmarking exercises on internal models used to determine own funds requirement will be conducted under the coordination of the EBA. These regular exercises shall help to identify potential variability drivers and modelling choices that may produce an unduly reduction in own funds requirements. Accordingly, both the variability and the potential underestimation of own funds requirements that might stem from the use of internal approaches for CVA risk in the EU will be under strong scrutiny.

The CVA framework should be re-dimensioned for the regulatory CVA risk charge to better reflect institutions' internal practices

This would imply removing the sum of the non-stressed component and the stressed component while moving to the expected shortfall measure, as well as calibrating the liquidity horizons for credit spread risk used for CVA purposes based on a separate QIS for the new CVA desk. At this stage, it is unclear whether the liquidity horizons for credit spread risk as defined by the FRTB could be uncritically applied to CVA.

Policy recommendation 15: The EBA recommends amending the Basel CVA framework along the following lines:

- CVA should be moved to the market risk framework and treated as a fair value adjustment subject to prudent valuation requirements
- CVA should constitute a desk as defined in the Fundamental Review of the Trading Book and remain a standalone risk-charge in the market risk framework
- CVA advanced and standardised methods should be adjusted to reflect outcome of Fundamental Review of the Trading Book, in particular the sum of the VaR and the stressed VaR should be removed
- Market risk hedges of CVA (interest rate, FX hedges...) should be recognised as eligible hedges
- Subject to definition of specific conditions (e.g. capture of basis risk), proxy hedging should be allowed
- Subject to conditions, advanced institutions should be allowed to use their internal CVA pricing models (without reference to the regulatory formula) for the purposes of computing the own funds requirement for CVA risks
- The CVA framework should be re-dimensioned for the regulatory CVA risk charge to better reflect institutions' internal practices.

The EBA suggests that the European Commission should consider possible action in this respect upon completion of the Fundamental Review of the Trading Book in Basel.

6. Review on the application of CVA charges to non-financial counterparties established in a third country

6.1 CVA Review - Background

Alongside the CVA Report, the EBA has produced a Review on the application of CVA charges to non-financial counterparties (NFCs) established in a third country, in light of international regulatory developments, including the review of thresholds and potential methodologies on the calibration of these thresholds, as mandated under CRR Article 382(5).

According to CRR Article 382(4)(a), transactions with NFCs, where those transactions do not exceed the clearing threshold specified according to EMIR Article 10(4), are currently excluded from the own funds requirements for CVA risk, regardless of whether these NFCs are established in the EU or in a third country. In particular, the CRR requires the clearing threshold as specified in EMIR to be applied by NFCs established in a third country in order for them to be excluded from the CVA risk charge.

The EBA will develop, in cooperation with ESMA, RTS to specify the procedures for excluding transactions with NFCs established in a third country from CVA risk. The EBA already partially addressed this issue in EBA Q&A 2013_472, where the following preliminary answer was given, with all caveats: 'the institution itself is responsible for taking the necessary steps to identify all non-financial counterparties that qualify for the exemption under Article 382(4)(a) of the CRR and calculate their own funds requirements for CVA risk with respect to those eligible non-financial counterparties accordingly (regardless of whether they are located within the EU or in a third country)'. As a result, 'institutions should define appropriate arrangements with non-financial counterparties to ensure they remain informed of their status as regards the clearing threshold on an ongoing basis'. The relevance of this answer will be reassessed, in cooperation with ESMA, as part of the upcoming RTS.

6.2 Limitation of mandate to review the CRR regime

The exemption from the CVA risk charge of NFCs is an EU specificity that has no equivalent in jurisdictions applying the Basel CVA risk framework. In those jurisdictions, the CVA risk framework applies to all counterparties, regardless of whether they are financial or non-financial or any other type of counterparty, and regardless of any threshold.

Considering the above, the mandate of the Review is therefore limited to the calibration and the relevance of the threshold set in EMIR for excluding NFCs established outside of the EU. Regardless of the outcome of this Review, the EMIR threshold is and will remain, until further

legislative change, the reference for the exclusion of NFCs established in the EU and outside the EU as this is a CRR provision that cannot be amended by the CVA delegated act. In particular, the RTS produced in cooperation with ESMA will not be able to amend this.

6.3 NFCs established in a third country in CVA data collection exercise

In order to comply with the mandate of CRR Article 382(5), the EBA assessed separately the issue of NFCs established in a third country in the CVA data collection exercise. As shown by the Figure 20, the Non-EU NFCs exemption represents the greatest impact in terms of CET1 ratio for one bank in the panel. In addition, its impact is non-negligible for other banks of the panel. On average, it is the most material exemption after EU NFCs and Sovereigns.

As shown by Figure 21, banks still have operational difficulties to identify the non-EU NFCs that are exempted from the CVA risk charge according to CRR Article 382(4a): this is the case for 9 respondents out of 24. It makes this type of exemption, together with the exemption of EU NFCs, the most difficult to apply. Half of the respondents seem to remove these counterparties automatically, whereas the other half remove them manually or both automatically and manually.

6.4 Shortcomings of basing NFCs exemption on EMIR clearing threshold

Exempting counterparties from CVA risk that are not required to exchange collateral leads to the exemption of exposures that, all other things being equal, generate a comparatively greater CVA risk (i.e. the exposure value for counterparty credit risk entering the CVA formula is more important in the non-collateralised case). The fact that some smaller NFCs - regardless of whether they are established in the EU or outside the EU - do not have the technical capabilities to collateralise their derivative transactions may be a valid reason for exempting them from the clearing obligation under EMIR. However, it cannot constitute a valid reason from exempting them from the CVA framework. On the contrary, transactions exempted from EMIR clearing obligation should always, in principle, be subject to a CVA risk charge.

In addition, aligning the exemption from the CVA risk charge with the exemption from EMIR clearing obligation removes some of the incentives to enter into collateralisation agreements. Though exempted, NFCs under EMIR still have the option to collateralise their trades and a CVA risk charge would certainly incentivise them to do so. In particular, larger NFCs may have the technical capabilities to enter into collateralisation agreements for their derivative transactions. However, the alignment of both exemptions with the same threshold, in addition to leaving uncaptured risks, removes any incentive to central clearing or collateralisation of derivative transactions.

Furthermore, the EMIR threshold is probably too high to be fit for CVA purposes. It may be argued that it makes sense to exempt from the CVA risk charge derivatives used for hedging NFCs' commercial risks. It is much more difficult to understand why those derivative instruments

entered into for hedging purposes are exempted from the computation of EMIR thresholds and why, as a result, derivatives not used for hedging purposes are exempted from the CVA risk charge provided that those transactions are below the threshold.

For all these reasons, any threshold set for the exemption of NFCs from the CVA risk charge, if they were judged as necessary, should be much lower than any EMIR threshold.

6.5 EBA recommendations for the application of CVA charges to Non-EU NFCs

Provided that the definition of the NFCs exemption from the CVA risk charge remains based on EMIR clearing threshold, there are no strong reasons from a technical point of view why this approach should fundamentally differ for NFCs established outside the EU (the EMIR clearing threshold applies to EU NFCs). It should be noted, however, that removing the exemption for NFCs established outside the EU would re-establish a level-playing field between EU banks and banks in non-EU jurisdictions, which do not benefit from the CRR exemption. Nonetheless, removing this exemption is out of the scope of the EC delegated act as set out in CRR Article 456(2).

In view of current CRR provisions, the EBA recommends applying the same approach for exempting NFCs for CVA purposes, regardless of whether they are established in the EU or outside the EU. Minor differences may be justified by local specificities.

Nevertheless, the EBA believes that exempting from the CVA risk charge counterparties that are not subject to clearing obligation (in some cases, neither from bilateral margining) is ill-suited since banks are more exposed to potential CVA losses in that situation.

As a result, the EBA recommends reconsidering the exemption from the CVA risk charge of transactions with NFCs upon completion of the fundamental review of the trading book in Basel.

Policy recommendation 16: In line with CRR provisions and until EU exemptions are reconsidered, the EBA recommends applying the same approach for exempting NFCs for CVA purposes, regardless of whether they are established in the EU or outside the EU.

7. Technical annexes

7.1 Data collection exercise

7.1.1 Objective of the data collection

The EBA launched a data collection exercise with European banks in Q2-Q3 2014 to provide supporting evidence for the recommendations made in the present report. The data requested covered a large number of issues related to the CVA capital charge to meet the mandate given for this report.

European banks with sizeable OTC derivative portfolios and material capital requirements for CVA risks were invited to participate to the data collection on a voluntary basis, regardless of whether they use the advanced method or the standardised method for calculating the CVA capital charge. In fact, these banks are likely to be most affected by any proposed changes in the CVA capital charge framework under the CRR. However, banks using the advanced method were requested more information than banks using the standardised method since more operational issues resulted from the former.

Due to competing international and European data collection exercises in 2014 (e.g. Basel Fundamental review of the trading book QIS, ECB Asset Quality Review), the EBA tried to minimize the burden for banks by requesting data that could be extracted easily from existing banks' systems or that would not require too much modelling efforts to generate.

7.1.2 Description of the data collected and main assumptions used

The data requested were mainly based at the end of March 2014. This corresponds to the latest reporting period of capital requirements before the start of the data collection, avoiding banks to re-calculate some of the data required at another date.

Broadly, the data requested covered the following topics:

- General data on banks' OTC derivative and SFT activities
- Specific data related to banks' CVA risks and capital requirements for CVA risks under the CRR, including a comparison between the scope of the accounting CVA requirements and the scope of the capital requirements against CVA risks under the CRR
- Specific data related to the exemptions from the CVA capital charge under the CRR, including impacts of reverting to the Basel III scope
- Specific data related to the recognition of eligible hedges under the CRR, including impacts of alternative treatments for the eligible hedges

- Specific data related to the policies proposed in the EBA RTS on proxy spread and smaller portfolio (only for the banks permitted to use the advanced approach).

A number of assumptions were also used in the data collection to simplify certain calculations and ensure some consistency in the outputs of the participating banks. They do not constitute an interpretation of the CRR.

In this data collection exercise, the definition of 'unilateral CVA' follows the definition provided under CRR Article 381.

'Bilateral CVA' means the calculation and application of both a CVA and a DVA component to the portfolio of transactions with a counterparty. DVA reflects the current market value of the credit risk of the institution to the counterparty. CVA and DVA may be calculated jointly or separately, depending on the bank's own practice.

For the sake of simplicity, banks were asked to comply with the following assumptions throughout the data collection exercise:

- Exchange-traded derivatives shall not be included in the scope of the own funds requirements for CVA risk
- The own funds requirements for CVA risk shall not be applied to eligible hedges.

Finally, each time a recalculation of the CVA risk charge was requested, and in order to limit the number of recalculations, the re-calculated CVA VaR and Stressed VaR were assumed to be flat over January, February and March 2014.

A similar assumption was made for computations involving market risk internal models, as specified in the detailed instructions.

7.1.3 Process and timelines

The data collection consisted initially in a single template ('first template') along with dedicated instructions. Participating banks were given three months to complete it and submit their results to their national supervisory authorities. Feedback from the industry on the first template led to the publication of Q&As on the EBA website to clarify certain requests. An additional template ('second template') was also published since some necessary information was missing in the first template.

The two templates were submitted by the banks to the EBA via their NSA. After data quality checks from the EBA analysis team, an additional three week time allowed participating banks to correct potential mistakes in their initial submission.

Finally, the data collected was analyzed on an anonymized basis by the EBA analysis team. Poor quality data or erratic results were removed from the sample before being used for the analysis.

The key dates of the data collection are summarized in the below table:

Figure 51: Data collection exercise – Key milestones

30 April 2014	Publication of first template on the EBA website
16 May 2014	Publication of instructions
10 July 2014	Publication of Q&As and second template with additional information
31 July 2014	Deadline for banks to submit initial templates to NSA
5-8 August 2014	Data quality checks from EBA analysis team and questions sent to participating banks
29 August 2014	Deadline for banks to submit final templates to NSA
1-5 September 2014	Analysis of data from EBA analysis team
03 October 2014	Feedback on main results to participating banks

7.1.4 Number of participating banks

32 banks from 11 different jurisdictions participated in the data collection exercise. In the below table, the breakdown of participating banks is provided per jurisdiction with a distinction between banks that use the advanced method and banks that solely use the standardised method.

Figure 52: Data collection exercise – Number of participating banks

Member States	Number of participating banks		Total
	Advanced Method	Standardised Method	
Austria	-	1	1
Croatia	-	1	1
Denmark	-	1	1
France	3	1	4
Germany	1	-	1
Ireland	-	3	3
Italy	1	-	1
Netherlands	-	2	2
Poland	-	1	1
Sweden	1	4	5
United Kingdom	8	4	12
Total	14	18	32

7.2 Mathematical derivation of the CVA regulatory formula under the advanced method

7.2.1 Unilateral CVA

Consider Institution A which has a netting set with counterparty B expiring at time T (i.e. T is the longest maturity of all of the transactions included in the netting set). Institution A is interested in determining the one-sided CVA for this netting set, this means that Institution A does not consider the possibility of an own default. For simplicity we assume that the CCR exposure is not collateralised.

Define:

- NPV(t) as the default free value of the netting set at time t from the point of view of Institution A
- $E_t[\cdot]$ conditional expectation under the “risk-neutral measure” that takes account of the information available at time t⁷¹

⁷¹ Formally speaking $E_t[X]$ is defined as the conditional expectation $E[X|\mathcal{F}_t]$ with respect to a certain filtration \mathcal{F}_t with $t \leq T$. The filtration describes information becoming gradually available in time. The conditional expectation is calculated under the so called risk-free measure, i.e. the equivalent martingale measure associated to the risk free asset as a numeraire

- τ_B as the stochastic time of default of counterparty B⁷²
- LGD as the loss given default for counterparty B. LGD can be expressed as 1-REC where REC is the recovery rate
- $D(t_0, t_1)$ as the risk-free discount factor from t_1 to t_0 ($t_1 > t_0$).

The counterparty risk adjusted market value of the netting set $[\pi(t)]$ is described by the following formula:

$$(1) \pi(t) = NPV(t) - CVA(t)$$

$$\text{with } CVA(t) = E_t \left[1_{\{t < \tau_B \leq T\}} \cdot LGD \cdot D(t, \tau_B) \cdot \max[0, NPV(\tau_B)] \right]$$

where 1_E is an indicator variable that takes the value of 1 if event E verifies and zero otherwise. In this specific case $1_{\{t < \tau_B \leq T\}}$ takes the value of 1 if B defaults after t but before T, and zero otherwise.

In the formula for the calculation of CVA:

- Only states of the world in which B effectively defaults before the expiration of the netting set T are considered. If this is not the case there will be no losses due to counterparty credit risk
- Only states of the world in which the (risk free) market value of the netting set is positive. For negative values of the netting set there will indeed be no losses
- If conditions i) and ii) are satisfied a proportional loss (equal to LDG) of the value of the netting set is assumed
- Losses are discounted by using the risk-free rate before calculating the expected value which is indeed calculated under the risk-neutral measure.

The expression for CVA(t) is very difficult to calculate because of the following reasons:

- Time is continuous which means that the default of B can happen in every instant between t and T
- LGD is in general stochastic and correlated with the other variables
- The expression involves the stochastic default time τ_B as well as financial risk factors (which determine NPV) and requires therefore that credit risk factors are modelled jointly with financial risk factors

⁷² Formally speaking: τ_B is a stopping time with respect to the filtration \mathcal{F}_t . This implies that at time t it is perfectly known whether B defaulted before t or not

- The expression involves nonlinearities because only positive value of the netting sets are considered.

In order to deal with some these problems it is possible to make the following simplifications:

- Assume that LGD is constant: this is a standard assumption in the pricing of credit derivatives
- Divide the continuous interval $[t, T]$ in N buckets which are not necessarily equally spaced. Formally speaking a bucketing structure is given by the set $\{t_0, t_1, t_2, \dots, t_N\}$ where $t_0=t$ and $t_N=T$.

By applying these simplifications it is possible to approximate the expression for the CVA in the following way:

(2)

$$CVA(t) = LGD \cdot E_t \left[\sum_{h=1}^N 1_{\{t_{h-1} < \tau_B \leq t_h\}} \cdot D(t, t_h) \cdot \max[0, NPV(t_h)] \right]$$

$$CVA(t) = LGD \cdot \sum_{h=1}^N D(t, t_h) \cdot E_t [1_{\{t_{h-1} < \tau_B \leq t_h\}} \cdot \max[0, NPV(t_h)]]$$

Where the expected value considers the partition $]t_{h-1}, t_h]$ with $h=1 \dots N$. The first equation of (2) evaluates the effects of a default of B at time t_h (i.e it is assumed that if counterparty B defaults in the interval $[t_{h-1}, t_h[$, the default occurs at the end of the interval). The second equation in (2) has been derived by taking account of the fact that the discount factors $D(t, t_h)$ are constants and can therefore be taken out of the expected value.

A slightly more complicated approximation is given by the following expression:

$$(3) \quad CVA(t) = LGD \cdot E_t \left[\sum_{h=1}^N 1_{\{t_{h-1} < \tau_B \leq t_h\}} \frac{D(t, t_{h-1}) \cdot \max[0, NPV(t_{h-1})] + D(t, t_h) \cdot \max[0, NPV(t_h)]}{2} \right]$$

This formula assumes that a possible default of counterparty B in the interval $[t_{h-1}, t_h[$ occurs at the median time $(t_{h-1} + t_h)/2$ and approximates the discounted positive exposure by using the average of the values corresponding to the extremes of the interval (linear interpolation).

A further simplifying assumption is the hypothesis that the possible default of B and the value of a netting set are uncorrelated⁷³. In counterparty credit risk the presence of a positive correlation between the value of netting set and the event of default of the counterparty is known as 'wrong-way risk' (which enhances CCR), while the presence of a negative correlation is known as 'right-way risk' (which mitigates CCR).

Under this assumption we can rewrite approximation (2) by factoring out the expected value:

⁷³ To be precise: it is assumed that they are conditionally (i.e. with reference to the conditional expected value at time t) uncorrelated which is a stronger assumption

$$(4) \quad CVA(t) = LGD \cdot \sum_{h=1}^N E_t [1_{\{t_{h-1} < \tau_B \leq t_h\}}] D(t, t_h) E_t [\max[0, NPV(t_h)]]$$

which can be rewritten in the following way:

$$(5) \quad CVA(t) = LGD \cdot \sum_{h=1}^N PD_B^t(t_{h-1}, t_h) D(t, t_h) E_t [\max[0, NPV(t_h)]]$$

Where $PD_B^t(t_{h-1}, t_h) = E_t [1_{\{t_{h-1} < \tau_B \leq t_h\}}]$ is the risk neutral probability observed at time t of a default of B between t_{h-1} and t_h . This risk neutral probability can be inferred on the base of market data (e.g. CDS spreads or bond credit spreads).

In a similar way it is possible to simplify approximation (3) which results in:

$$(6) \quad CVA(t) = LGD \cdot \sum_{h=1}^N PD_B^t(t_{h-1}, t_h) \frac{D(t, t_{h-1}) \cdot E_t [\max[0, NPV(t_{h-1})]] + D(t, t_h) \cdot E_t [\max[0, NPV(t_h)]]}{2}$$

Equation (6) can be used to explain the regulatory formula contained in article 383 of the CRR. According to this formula the CVA of a certain netting set⁷⁴ is estimated by the following expression:

$$(7) \quad CVA = LGD_{MKT} \cdot \sum_{h=1}^N \max \left\{ 0, \exp \left(\frac{-s_h t_{h-1}}{LGD_{MKT}} \right) - \exp \left(\frac{-s_h t_h}{LGD_{MKT}} \right) \right\} \frac{EE_{h-1} D_{h-1} + EE_h D_h}{2}$$

Where:

- s_h is the credit spread of the counterparty at tenor t_h ;
- LGD_{MKT} is the market implied LGD of the counterparty (i.e. the LGD that the market assumes in the pricing of the credit spread);
- D_h is the default risk-free discount factor from t_h to t_0 ;
- EE_h is the expected positive exposure at time t_h , measured by the internal model for the calculation of the exposure to counterparty credit risk.

Because of the definition of EE it is clear that $EE_h = E_t [\max(0, NPV(t_h))]$. It is also clear that $D_h = D(t, t_h)$.

The expression s_h/LGD_{MKT} approximates the instantaneous (risk neutral) intensity of default. For this reason $\exp[-s_h t_h/LGD_{MKT}]$ approximates the (risk-neutral) probability of survival, i.e. the probability that the counterparty does not default before t_h . By analogy it is possible to note that $\exp[-s_h t_{h-1}/LGD_{MKT}]$ is the probability that the counterparty does not default before t_{h-1} .

⁷⁴ For simplicity we assume that a bank has only one netting set with a certain counterparty. The supervisory formula is slightly more general by allowing for more than one netting sets

The difference between $\exp[-s_{h-1}t_{h-1}/\text{LGD}_{\text{MKT}}]$ and $\exp[-s_h t_h/\text{LGD}_{\text{MKT}}]$ is the probability that B defaults between t_{h-1} and t_h (it considers indeed all states of the world were B survives until t_{h-1} but not until t_h). This means that $\exp[-s_{h-1}t_{h-1}/\text{LGD}_{\text{MKT}}] - \exp[-s_h t_h/\text{LGD}_{\text{MKT}}]$ is an estimation for $\text{PD}_B^t(t_{h-1}, t_h)$. However, under some rare circumstances⁷⁵, this estimation might be negative. Since probabilities cannot be negative, formula (7) applies a floor to the estimation of $\text{PD}_B^t(t_{h-1}, t_h)$.

It is therefore possible to conclude that formula (6) and (7) are conceptually equivalent.

7.2.2 Bilateral CVA

Institution A has a netting set with counterparty B expiring at time T. For simplicity it is assumed that the CCR exposure is not collateralised.

τ_A and τ_B are respectively the stochastic times of default of Institution A and counterparty B while T is the date of expiration of the netting set. It is possible to state that Institution A will face CCR losses if both of the following conditions are satisfied:

- $\tau_B \leq T$, i.e. B defaults before the expiration date of the netting set (otherwise the netting set does no longer exist)
- $\tau_B \leq \tau_A$, i.e. B defaults before A defaults (otherwise the netting set is already closed out when B defaults)⁷⁶.

Thus B will face CCR losses if $\tau_A \leq T$ and $\tau_A \leq \tau_B$. By using these facts – and by defining LGD_A and LGD_B as the Loss Given Default respectively of A and B - it is possible to define the bilateral CVA adjusted value of the netting set by the following expression:

$$(8) \quad \pi(t) = \text{NPV}(t) - \text{CVA}(t) + \text{DVA}(t)$$

$$\text{CVA}(t) = E_t \left[1_{\{\tau_B \leq T \text{ and } \tau_B \leq \tau_A\}} \cdot \text{LGD}_B \cdot D(t, \tau_B) \cdot \max[0, \text{NPV}(\tau_B)] \right]$$

$$\text{DVA}(t) = E_t \left[1_{\{\tau_A \leq T \text{ and } \tau_A \leq \tau_B\}} \cdot \text{LGD}_A \cdot D(t, \tau_A) \cdot \max[0, -\text{NPV}(\tau_A)] \right]$$

DVA is the debit value adjustment, i.e. the price adjustment that takes account of the CCR taken by the counterparty. DVA is calculated as the risk-neutral expected value of the discounted losses, which counterparty B can incur. The formula includes the term $\max[0, -\text{NPV}(\tau_A)]$ in order to take account of the symmetry of the value of the netting set. A negative value for Institution A corresponds to a positive value for counterparty B and counterparty B can suffer losses only if the value of the netting set is positive from B's point of view.

7.3 Mathematical derivation of the calculation formula of the standardised method

⁷⁵ The conditions are more or less the same as having an interest rate structure resulting in negative forward rates

⁷⁶ Formally speaking: A will have CCR losses under the event $\{ \tau_B \leq \tau_A \leq T \} \cup \{ \tau_B \leq T \leq \tau_A \}$ which represents all the state of worlds in which both conditions are satisfied

The standardised formula for the CVA charge is based on an analytical approximation of CVA VaR under a single-factor lognormal of credit spreads, to which conservative adjustments have been added⁷⁷.

7.4 Clients' trades exemption in EU official languages

As mentioned in Section 5.1.2, the translation of CRR Article 382(3) in the different EU official languages has spread confusion over whether clients' transactions are excluded from the perspective of the client only or both perspectives of the client and the clearing member. Most EU official languages use a similar expression as the English version, i.e. 'a client's transactions with a clearing member', whereas some EU official languages (at least, IT, ES, RO, CS) explicitly exclude 'transactions between a client and a clearing member'.

BG: Сделките с квалифициран централен контрагент и сделките на клиент с клирингов член, при които клиринговият член действа като посредник между клиента и квалифициран централен контрагент и които пораждат експозиция по търговско финансиране на клиринговия член към квалифицирания централен контрагент, са изключени от капиталовите изисквания за риск при ККО.

ES: Quedarán excluidas de los requisitos de fondos propios por riesgo de AVC las operaciones con una contraparte central cualificada y entre un cliente y un miembro compensador, cuando éste último actúe como intermediario entre el cliente y una contraparte central cualificada, y las operaciones que den lugar a una exposición de negociación del miembro compensador a la contraparte central cualificada.

CS: Transakce se způsobilou ústřední protistranou a transakce mezi klientem a členem clearingového systému, pokud člen clearingového systému působí jako prostředník mezi klientem a způsobilou ústřední protistranou a dané transakce způsobují vznik obchodní expozice člena clearingového systému vůči způsobilé ústřední protistraně, se vylučují z kapitálových požadavků k riziku CVA.

DA: Transaktioner med en kvalificerende central modpart og en kundes transaktioner med et clearingmedlem, når clearingmedlemmet fungerer som formidler mellem kunden og en kvalificerende central modpart, og transaktionerne indebærer en handelseksponering af clearingmedlemmet over for den kvalificerende centrale modpart, er udelukket fra kapitalgrundlagskravene i relation til kreditværdijusteringsrisiko.

DE: Geschäfte mit einer qualifizierten zentralen Gegenpartei und Geschäfte eines Kunden mit einem Clearingmitglied, bei denen das Clearingmitglied als Vermittler zwischen dem Kunden und einer qualifizierten zentralen Gegenpartei auftritt und das Geschäft eine Handelsforderung des Clearingmitglieds gegenüber der qualifizierten zentralen Gegenpartei begründet, fließen nicht in die Eigenmittelanforderung für das CVA-Risiko ein.

⁷⁷ See Michael Pykhtin, AsiaRisk 'Model foundations of Basel III standardised CVA charge', August 2012

EN: Transactions with a qualifying central counterparty and a client's transactions with a clearing member, when the clearing member is acting as an intermediary between the client and a qualifying central counterparty and the transactions give rise to a trade exposure of the clearing member to the qualifying central counterparty, are excluded from the own funds requirements for CVA risk.

EL: Εξαιρούνται από τις κεφαλαιακές απαιτήσεις για τον κίνδυνο CVA οι συναλλαγές με αναγνωρισμένο κεντρικό αντισυμβαλλόμενο και οι συναλλαγές πελάτη με εκκαθαριστικό μέλος, όταν το εκκαθαριστικό μέλος ενεργεί ως διαμεσολαβητής ανάμεσα στον πελάτη και αναγνωρισμένο κεντρικό αντισυμβαλλόμενο και οι συναλλαγές δημιουργούν άνοιγμα διαπραγμάτευσης του εκκαθαριστικού μέλους έναντι του αναγνωρισμένου κεντρικού αντισυμβαλλομένου.

ET: Tehingud nõuetele vastava keskse vastaspoolega ning kliendi tehingud kliiriva liikmega jäetakse juhul, kui kliiriv liige on vahendaja kliendi ja nõuetele vastava keskse vastaspoole vahel ning kui nendest tehingutest tuleneb nõuetele vastavale kesksele vastaspoolele kliiriva liikme kauplemisriski positsioon, krediitiväärtuse korrigeerimise riski omavahendite nõudest välja.

FR: Les opérations avec une contrepartie centrale éligible et les opérations d'un client avec un membre compensateur, lorsque le membre compensateur agit en tant qu'intermédiaire entre le client et une contrepartie centrale éligible et que l'opération donne lieu à une exposition de transaction du membre compensateur envers la contrepartie centrale éligible, sont exclues des exigences de fonds propres pour risque de CVA.

GA: Beidh idirbhearta le contrapháirtí lárnach cáilitheach agus idrbhearta cliaint le comhalta imréitigh, i gcás ina ngníomhaíonn an comhalta imréitigh mar idirghabhálaí idir an cliant agus contrapháirtí lárnach cáilitheach agus ina dtiocfaidh risíocht trádála an chomhalta imréitigh i leith an chontrapháirtí lárnaigh cháilithigh de bharr na n- idirbheart, beidh na hidirbhearta sin eisiata ó na ceanglais cistí dílse le haghaidh an priacal CVA.

HR: Transakcije s kvalificiranom središnjom drugom stranom te transakcije klijenta s klirinškim članom, kada klirinški član djeluje kao posrednik između klijenta i kvalificirane središnje druge ugovorne strane, a transakcije dovode do izloženosti iz trgovanja klirinškog člana prema kvalificiranoj središnjoj drugoj ugovornoj strani, isključene su iz kapitalnog zahtjeva za CVA rizik.

IT: Le operazioni con una controparte centrale qualificata e le operazioni tra un cliente e un partecipante diretto, in cui il partecipante diretto agisce da intermediario tra il cliente e una controparte centrale qualificata e le operazioni danno origine ad un'esposizione commerciale del partecipante diretto verso la controparte centrale qualificata, sono escluse dai requisiti in materia di fondi propri per il rischio di CVA.

LV: CVA riska pašu kapitāla prasībās neiekļauj darījumus ar atbilstīgu centrālo darījumu partneri un klienta darījumus ar tīrvērtes dalībnieku, ja tīrvērtes dalībnieks darbojas kā starpnieks starp klientu un atbilstīgu centrālo darījumu partneri un darījumi izraisa tīrvērtes dalībnieka tirdzniecības riska darījumu ar atbilstīgu centrālo darījumu partneri.

LT: Apskaičiuojant nuosavų lėšų reikalavimus kredito vertinimo koregavimo rizikai padengti, neatsižvelgiama į sandorius su reikalavimus atitinkančia pagrindine sandorio šalimi ir kliento sandorius su tarpuskaitos nariu, kai tarpuskaitos narys veikia kaip kliento ir reikalavimus atitinkančios pagrindinės sandorio šalies tarpininkas, o dėl sandorių atsiranda tarpuskaitos nario prekybos pozicija reikalavimus atitinkančios pagrindinės sandorio šalies atžvilgiu.

HU: Az elfogadott központi szerződő féllel bonyolított ügyletek, valamint a valamely ügyfél és egy klíringtag közötti olyan ügyletek, amelyek esetében a klíringtag közvetítőként jár el az ügyfél és egy elfogadott központi szerződő fél között, és az ügylet kereskedési kitettséget eredményez a klíringtag számára az elfogadott központi szerződő féllel szemben, nem tartoznak a CVA-kockázathoz kapcsolódó szavatolótőke-követelmény hatálya alá.

MT: Transazzjonijiet ma' kontroparti ċentrali li tikkwalifika u t-transazzjonijiet ta' klijent ma' membru ta' kklerjar, meta l-membru ta' kklerjar jaġixxi bħala intermedjarju bejn il-klijent u kontroparti ċentrali li tikkwalifika u t-transazzjonijiet jnisslu skopertura tan-negozjar tal-membru ta' kklerjar lill-kontroparti ċentrali li tikkwalifika, huma esklużi mir- rekwiżiti ta' fondi proprji għar-riskju ta' CVA.

NL: Transacties met een gekwalificeerde centrale tegenpartij en transacties van een cliënt met een clearinglid worden, indien het clearinglid als tussenpersoon tussen de cliënt en een gekwalificeerde centrale tegenpartij optreedt en de transacties aanleiding geven tot een transactieblootstelling van het clearinglid ten aanzien van de gekwalificeerde centrale tegenpartij, uitgesloten van de eigenvermogensvereisten voor het CVA-risico.

PL: Wymogi w zakresie funduszy własnych z tytułu ryzyka związanego z CVA nie dotyczą transakcji z kwalifikującym się kontrahentem centralnym i transakcji klienta z uczestnikiem rozliczającym, w przypadku gdy uczestnik rozliczający pełni rolę pośrednika między klientem a kwalifikującym się kontrahentem centralnym, a transakcje skutkują ekspozycją z tytułu transakcji uczestnika rozliczającego wobec kwalifikującego się kontrahenta centralnego.

PT: Dos requisitos de fundos próprios para risco de CVA são excluídas as transações com uma contraparte central qualificada e as transações de um cliente com um membro compensador, quando este atuar como intermediário entre o cliente e uma contraparte central qualificada e as transações derem origem a um risco comercial do membro compensador sobre a contraparte central qualificada.

RO: Tranzacțiile cu o CPCC și tranzacțiile care au loc între un client și un membru compensator atunci când membrul compensator acționează ca intermediar între client și o CPCC, iar tranzacțiile dau naștere unei expuneri din tranzacții a membrului compensator la CPCC, sunt excluse de la aplicarea cerințelor de fonduri proprii pentru riscul CVA.

SK: Transakcie s kvalifikovanou centrálnou protistranou a transakcie klienta so zúčtovacím členom, ak zúčtovací člen koná ako sprostredkovateľ medzi klientom a kvalifikovanou centrálnou protistranou, ako aj transakcie, na základe ktorých vzniká zúčtovaciemu členovi obchodná

expozícia voči kvalifikovanej centrálnej protistrane, sú vylúčené z požiadaviek na vlastné zdroje pre riziko úpravy ocenenia pohľadávok.

SL: Posli s kvalificirano centralno nasprotno stranko in posli stranke s klirinškim članom so, kadar klirinški član nastopa v vlogi posrednika med stranko in kvalificirano centralno nasprotno stranko ter zaradi teh poslov nastanejo trgovalne izpostavljenost klirinškega člana do kvalificirane centralne nasprotne stranke, izključeni iz izračuna kapitalskih zahtev za tveganje CVA.

FI: Liiketoimet ehdot täyttävän keskusvastapuolen kanssa ja asiakkaan liiketoimet määrittösapuolen kanssa, silloin kun määrittösapuoli toimii välittäjänä asiakkaan ja ehdot täyttävän keskusvastapuolen välillä ja kun nämä liiketoimet aiheuttavat määrittösapuolelle ehdot täyttävään keskusvastapuoleen liittyvän kaupankäyntivastuun, jätetään vastuun arvonoikaisuriskin omien varojen vaatimuksen ulkopuolelle.

SV: Transaktioner med en kvalificerad central motpart och en kunds transaktioner och en clearingmedlem ska uteslutas ur kapitalbaskravet för kreditvärdighetsjusteringsrisk, när clearingmedlemmen agerar som mellanhand mellan kunden och en kvalificerad central motpart och transaktionerna ger upphov till handelsexponering för clearingmedlemmen, mot den kvalificerade centrala motparten.