EBA FINAL draft Regulatory Technical Standards

On non-delta risk of options in the standardised market risk approach under Articles 329(3), 352(6) and 358(4) of Regulation (EU) No 575/2013 (Capital Requirements Regulation -CRR)

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Table of contents

1. Executive Summary

These draft Regulatory Technical Standards (henceforth 'RTS') specify the treatment of non-delta risks of options and warrants in the calculation of own funds requirements for market risk under the standardized approach, in accordance with Articles 329(3), 352(6) and 358(4) of Regulation (EU) No 575/2013 (Capital Requirement Regulation 'CRR').

The CRR requires the EBA to further define a range of methods to reflect in the own funds requirements other risks, apart from delta risk, in a manner proportionate to the scale and complexity of institutions' activities in options and warrants.

The draft RTS broadly follow the Basel II framework which provides for the following alternative methods:

- a simplified-approach which can be applied exclusively by institutions that only buy options;
- the delta-plus method which can be applied by banks that also sell options;
- the scenario approach which is more sophisticated and is addressed to banks with a sizeable trading activity in options.

The simplified approach and the scenario approach as set out for in the Basel framework have been adapted to the European specificities and the requirements of the CRR. Furthermore, since the EBA believes that certain non-standard options are not suited to the simplified approach and the delta-plus method, a new conservative treatment for such instruments has been introduced.

2. Background and rationale

The CRR requires the EBA to *'develop draft regulatory technical standards defining a range of methods to reflect in the own funds requirements other risks, apart from delta risk in a manner proportionate to the scale and complexity of institutions' activities in options and warrants'* referring to:

(i) options on interest rates, debt instruments, equities, equity indices, financial futures, swaps and foreign currencies referred to in Article 329;

(ii) foreign currency options referred to in Article 352 (5) and (6);

(iii) commodities options referred to in Article 358 (3) and (4).

The EBA has agreed to refer to the treatment of option risk outlined in the Basel framework, though it is proposing to introduce some adaptations from the 1996 Market Risk Amendment. One advantage of this approach is that it will promote continuity in the regulatory framework of those countries that did implement the Basel framework in their national legislation[1]. The impact assessment (see Section 5.1) discusses this point.

The Basel framework provides for three alternative methods:

(i) the simplified approach;

(ii) the delta-plus approach;

(iii) the scenario approach.

Adaptation of the Basel framework to the CRR

The CRR requires positions in options to be treated on a delta equivalent basis and non-delta risks to be treated separately from delta risks. Accordingly, positions in options have to be treated on a delta equivalent basis and the treatment of non-delta risks is set out separately in these RTS.

The Basel framework is not always in line with this provision. In particular, the simplified approach and the scenario approach measure the delta and non-delta risks jointly, while only the delta-plus approach enables to determine delta and non-delta risks separately.

The EBA has therefore decided to adapt the simplified method and the scenario approach to the CRR as follows:

(i) under the adapted simplified approach capital requirements are determined as the difference (if positive) between the capital requirements as determined following the simplified Basel approach and the risk weighted delta equivalent amount.

(ii) under the adapted scenario approach the simulated price changes determined by the scenario matrix are calculated net of delta effects.

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[1] Currently Directive 2006/EC/49 generally states that 'Other risks, apart from the delta risk, associated with options shall be safeguarded against.' (Annex V, point 5).

Combination of methods

The EBA considers that:

(i) a combination of the different methods should be allowed between separate legal entities within a group;

(ii) the combination of the delta-plus method with the scenario approach within a single institution should be permitted if the scope of application of the two approaches is predefined and appropriately justified.

This option is supported by the following arguments.

(i) the possibility of different levels of sophistication in different trading areas is addressed, allowing banks to treat non-standard options in a more risk-sensitive way.

(ii) the use of the scenario approach would only be available for the positions for which the institutions fulfil the relevant requirements.

(iii) institutions can avoid the punitive fallback treatment of discontinuous options under the delta plus approach by selectively applying a more risk sensitive approach to these types of options.

Prudential treatment of certain types of options

The EBA considers that certain types of options might not be suitable for the simplified and the delta-plus approach as outlined in the Basel framework. In particular the following types of options have been identified:

(i) for the simplified approach: all options different from American or European call or put options;

(ii) for the delta-plus approach: options with discontinuities in delta and gamma (e.g. barrier options)[2].

These RTS introduces a prudential treatment for these types of options. Under this treatment the capital requirements on non-delta risks shall be equal to:

(i) the market value of the option less the risk weighted delta-equivalent amount for bought options

(ii) the market value of the underlying asset (or the maximum payable amount if contractually fixed), less the risk weighed delta-equivalent amount for written (i.e. sold) options,

This prudential treatment applies also to the delta plus approach in cases where the values for gamma or vega cannot be calculated.

The EBA believes that this conservative treatment incentivizes institutions that operate in non-standard options to switch to more advanced approaches.

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[2] In these cases the second order Taylor approximation on which the delta-plus approach is based might not be appropriate.

Unified treatment of bond options and interest rate options

The Basel framework proposes a separate treatment of bond options and interest rate options in the delta-plus and in the scenario approach. Under the Basel Framework, bond options are considered to be sensitive to price changes in the price of the underlying bond, while interest rate options are considered to be sensitive to the underlying interest rate. The treatment of the two cases should be 'equivalent'.

The EBA has introduced a unified treatment where both bond and interest rate options are considered to be interest-rate sensitive. The relevant interest rate is (i) for bond options, the yield-to-maturity of the underlying bond; (ii) for interest rate options the underlying interest rate; (iii) for swaptions, the rate of the underlying swap.

The EBA believes that such a unified treatment improves the risk sensitivity of the own funds requirement and is also consistent with risk management practices, because it allows for offsetting between interest rate options and bond options.

Scenario approach: allowance for significant option traders

The Basel framework [paragraph 718(Lxiii)] proposes that banks that are significant option traders can be allowed to aggregate some time bands in the treatment of interest rate options. The EBA believes it is not clear why institutions that are significant traders (and are therefore rather sophisticated) should be allowed to use a simpler approach than other banks. Such a provision is contrary to the proportionality principle (that the approach shall be proportionate to the scale and the complexity of the operations of an institution).

Advanced institutions should be expected to use the internal model approach which is more risk sensitive and considers such correlations. The EBA believes that the Basel provision, by reducing own funds requirements for option traders, does not create the right incentives for the use of an internal model.

The EBA therefore did not implement this Basel provision in the draft RTS.

3. EBA FINAL draft Regulatory Technical Standards on non-delta risk of options in the standardised market risk approach under Articles 329(3), 352(6) and 358(4) of Regulation (EU) No 575/2013 (Capital Requirements Regulation - CRR)

EUROPEAN COMMISSION

Brussels, XXX
[…](2012) XXX draft

COMMISSION DELEGATED REGULATION (EU) No …/..

of XXX

[…]

supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to regulatory technical standards for non-delta risk of options in the standardised market risk approach under Articles 329(3), 352(6) and 358(4)

COMMISSION DELEGATED REGULATION (EU) No …/..

of XXX

[…]

supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to regulatory technical standards for non-delta risk of options in the standardised market risk approach under Articles 329(3), 352(6) and 358(4)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012[3], and in particular third subparagraph of Article 329(3), third subparagraph of 352(6) and third subparagraph of 358(4) thereof,

Whereas:

(1)   With the view to ensuring consistency of EU rules with internationally agreed minimum standards, it is desirable to base the rules for the measurement of the risk of options and warrants on the approaches provided in the framework of the Basel Committee for Banking Supervision (BCBS), adapted to take into account the requirements of Regulation (EU) No 575/2013. The use of these approaches is further desirable given they are designed to apply to institutions of different levels of sophistication, thereby ensuring respect of the principle of proportionality in the application of these rules; as a result, the risk sensitivity of each of these approaches is also different.

(2)   Given it is necessary to give banks applying the delta-plus approach the possibility of treating non-continous options in a more risk-sensitive way, institutions should be able to combine the approaches provided for the measurement of the risk of options and warrants under certain conditions, not only within groups but also within single legal entities. Nevertheless, in order to avoid the possibility of selective application of approaches by firms with the view to minimizing their own funds requirements ('cherry picking'), the combination of approaches within a legal entity should only be allowed on the condition that firms specify the scope of application of each approach in an *a priori* manner, to be applied consistently over time.

(3)   Non-delta risks related to options and warrants may include, but are not limited to convexity risk ('gamma risk'), volatility risk ('vega risk'), interest rate risk ('rho

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[3]   OJ L 176, 27.6.2013, p. 1.

risk'), nonlinearities which cannot be captured by gamma risk, the risk of implied correlation on basket options or warrants. Of these risks, only the gamma and vega are of such materiality that justifies the imposition of own funds capital requirements, even for the more sophisticated institutions, and therefore only these types of risks should be covered in the calculation of own funds requirements under this Regulation. According to the provisions of Directive 2013/36/EU relating to the Supervisory Review and Evaluation Process of institutions, all such residual risks are expected to be monitored and considered under the so-called Pillar 2 approach.

(4)   Given that Article 330 of Regulation (EU) No 575/2013 concerning the treatment of fixed-to-floating interest-rate swaps applies only 'for interest rate risk purposes', it should not apply to this Regulation.

(5)   The provisions in this Regulation are closely linked, since they all deal with the measurement of non-delta risk of options and warrants related to different underlyings. To ensure coherence between those provisions, which should enter into force at the same time, and to facilitate a comprehensive view and compact access to them by persons subject to those obligations, it is desirable to include all the regulatory technical standards required by Regulation (EU) No 575/2013 on this topic in a single Regulation.

(6)   This Regulation is based on the draft regulatory technical standards submitted by the European Supervisory Authority (European Banking Authority) to the Commission.

(7)   The European Supervisory Authority (European Banking Authority) has conducted open public consultations on the draft regulatory technical standards on which this Regulation is based, analysed the potential related costs and benefits and requested the opinion of the Banking Stakeholder Group established in accordance with Article 37 of Regulation (EU) No 1093/2010.

HAS ADOPTED THIS REGULATION:

Section 1 – General Provisions

Article 1 –
Determination of the Own funds requirements for the non-delta risk of options and warrants

1. Institutions shall calculate their own funds requirements for market risk in relation to the non-delta risk of options or warrants as required by Articles 329(3), 352(6) and 358(4) of Regulation (EU) No 575/2013, according to one of the approaches described in Sections 2, 3 and 4.

2. Subject to the conditions established in Sections 2, 3 and 4, institutions may combine the use of different approaches, at the consolidated level. At the individual level institutions may only combine the scenario and the delta plus approach subject to the conditions established in sections 3 and 4.

3. In the course of the calculation described in paragraph 1, institutions shall:

   (a) Break down baskets of options or warrants into their fundamental components;

   (b) Break down caps and floors or other options which relate to interest rates at various dates, into the separate caplets or floorlets relating to a single date;

   (c) Treat options or warrants on fixed-to-floating interest rates swaps into options or warrants on the fixed interest leg of the swap;

   (d) Treat options or warrants that relate to more than one underlying among those described in Article 5(3), as a basket of options or warrants where each option has a single distinct underlying.

Section 2 – Simplified approach

Article 2 –
Conditions for application of the Simplified approach

Institutions may only use the simplified approach where they only purchase options and warrants.

Article 3 –
Determination of own funds requirements according to the Simplified approach

1. Institutions applying the simplified approach shall calculate the own funds requirements relative to non-delta risks of call and put options or warrants as the higher amount between zero and the difference between the following values:

   (a) The gross amount, as described in paragraphs 2 to 5;

   (b) The risk weighted delta equivalent amount, which shall be calculated as the market value of the underlying instrument, multiplied by the delta and then multiplied by one of the following relevant weightings:

   (i) For specific and general equity risk or interest rate risk, according to Part Three, Title IV, Chapter 2 of Regulation (EU) No 575/2013;

   (ii) For foreign exchange risk, according to Part Three, Title IV, Chapter 3 of Regulation (EU) No 575/2013;

   (iii) For commodity risk, according to Part Three, Title IV, Chapter 4 of Regulation (EU) No 575/2013.

2. For options or warrants which fall under one of the following two categories:

(a) Where the buyer has the unconditioned right to buy the underlying at a predetermined price at the expiration date or at any time before the expiration date, and where the seller has the obligation to fulfil the buyer's demand ('simple call options or warrants')

(b) Where the buyer has the unconditioned right to sell the underlying in the same manner ('simple put options or warrants')

the gross amount referred to in paragraph 1 shall be determined according to paragraphs 3 to 4.

3. Where one of the following conditions is met:

(a) The option or warrant incorporates a right to sell the underlying asset ('long put') and is combined with holdings in the underlying asset ('long position in the underlying instrument')

(b) The option or warrant incorporates a right to buy the underlying asset ('long call') and is combined with the promise to sell holdings in the underlying instrument ('short position in the underlying asset')

the gross amount referred to in paragraph 1 shall be calculated as the maximum between zero and the market value of the underlying security multiplied by the sum of specific and general market own funds requirements for the underlying minus the amount of the profit, if any, resulting from the instant execution of the option ('in the money').

4. Where one of the following conditions is met:

(a) The option or warrant incorporates a right to buy the underlying asset ('long call')

(b) The option or warrant incorporates a right to sell the underlying asset ('long put')

the gross amount referred to in paragraph 1 shall be the lesser of the following two amounts:

(a) The market value of the underlying security multiplied by the sum of specific and general market risk requirements for the underlying asset

(b) The value of the position determined by the mark-to-market method or the mark-to-model method as provided in points (b) and (c) of Article 104(2) of Regulation (EU) No 575/2013 ('market value of the option or warrant').

5. For all types of options or warrants which do not have the characteristics of paragraph 2, the gross amount referred to in paragraph 1 shall be the market value of the option or warrant.

Section 3- Delta-plus approach

Article 4 –
Overview of determination of own funds requirements according to the Delta-plus approach

1. Where institutions opt to apply the Delta-plus approach, for options and warrants whose gamma is a continuous function in the price of the underlying and whose vega is a continuous function in the implied volatility ('continuous options and warrants'), the own funds requirements for non-delta risks on options or warrants shall be calculated as the sum of:

(a) The own funds requirements relating to the partial derivative of delta with reference to the price of the underlying ('gamma risk'), which, for bond options or warrants is the partial derivative of delta with reference to the yield-to-maturity of the underlying bond, and for swaptions is the partial derivative of the delta with reference to the swap rate;

(b) The requirement relating to the first partial derivative of the value of an option or warrant, with reference to the implied volatility ('vega risk').

2. Implied volatility shall be taken to be the value of the volatility in the option or warrant pricing formula for which, given a certain pricing model and given the level of all other observable pricing parameters, the theoretical price of the option or warrant is equal to its market value, where 'market value' is understood in the manner described in Article 3(4).

3. The own funds requirements for non-delta risks related to non-continuous options or warrants shall be determined as follows:

(a) Where the options or warrants have been bought, as the maximum amount between zero and the difference between the following values:

(i) The market value of the option or warrant, understood in the manner described in Article 3(4).

(ii) The risk weighted delta equivalent amount, understood in the manner described in Article 3(1)(b).

(b) Where the options or warrants have been sold, as the maximum between zero and the difference between the following amounts:

(i) The relevant market value of the underlying asset, which shall be taken to be either the maximum possible payment at expiry date, if it is contractually fixed, or the market value of the underlying asset or the effective notional value if no maximum possible payment is contractually fixed;

(ii) The risk weighted delta equivalent amount, understood in the manner described in Article 3(1)(b).

4. The value for gamma and vega used in the calculation of own funds requirements shall be calculated using an appropriate pricing model as referred to in Articles 329(1), 352(1) and 358(3) of Regulation 575/2013. Where either gamma or vega cannot be calculated in accordance with this condition, the capital requirement on non-delta risks shall be calculated according to paragraph 3.

Article 5 –
Determination of the Own funds requirements for convexity risk ('gamma risk') according to the Delta-plus approach

1. For the purposes of Article 4(1)(a), the own funds requirements for gamma risk shall be calculated by a process consisting of the following sequence of steps:

   (a) For each individual option or warrant a gamma impact shall be calculated;

   (b) The gamma impacts of individual options or warrants which refer to the same distinct underlying type shall be summed up;

   (c) The absolute value of the sum of all of the negative values resulting from step (b) shall provide the own funds requirements for gamma risk. Positive values resulting from step (b) shall be disregarded.

2. For the purpose of step (a) of paragraph 1, gamma impacts shall be calculated in accordance with the formula described in Annex 1.

3. For the purposes of step (b) of paragraph 1, a distinct underlying type shall be:

   (a) For interest rates in the same currency, each maturity time band as set out in Table 2 of Article 339 of Regulation (EU) No 575/2013;

   (b) For equities and stock indices, each market as defined in the rules to be developed pursuant to Article 341 (3) of Regulation (EU) No 575/2013;

   (c) For foreign currencies and gold, each currency pair and gold;

   (d) For commodities, commodities considered identical as defined in Article 357(4) of Regulation (EU) No 575/2013.

Article 6 –
Determination of the Own funds requirements for volatility risk ('vega risk') according to the Delta-plus approach

For the purposes of Article 4(1)(b), the own funds requirement for vega risk shall be calculated by a process consisting of the following sequence of steps:

   (a) For each individual option the value of vega shall be determined;

   (b) For each individual option an assumed +/-25 % shift in the implied volatility shall be calculated, where implied volatility shall be understood in the manner described in Article 4(2);

   (c) For each individual option the vega value resulting from step (a) shall be multiplied by the assumed shift in implied volatility resulting from step (b);

(d) For each distinct underlying type, understood in the manner described in Article 5(3), the values resulting from step (c) shall be summed up.

(e) The sum of absolute values resulting from step (d) shall provide the total own funds requirement for volatility risk.

Section 4 – Scenario approach

Article 7-
Conditions of application of the scenario approach

Institutions may use the scenario approach where they fulfil all of the following requirements:

(a) They avail of a risk control unit that monitors the risk of the options portfolio of the institutions and reports the results to the management;
(b) They integrate the results of the scenario approach in the internal reporting to management;
(c) They notify competent authorities of a predefined scope of exposures to be covered by this approach consistently over time.

For the purposes of (c), institutions shall define the precise positions that are subject to the scenario approach, including the type of product and/or identified desk and portfolio; the distinctive risk management approach that applies to such positions; the dedicated IT application that applies to such positions; and a justification for the allocation of the above positions to the scenario approach, vis-à-vis those allocated to other approaches.

Article 8 – Definition of the scenario matrix according to the scenario approach

1. For each distinct underlying type, understood in the manner described in Article 5(3), an institution has to define a scenario matrix which contains a set of scenarios.

2. The first dimension of the scenario matrix shall be the price changes in the underlying above and below its current value. The range of changes shall be:

(a) For interest rate options or warrants, plus/minus the assumed change in interest rates set out in column 5 of Table 2 of Article 339 of Regulation (EU) No 575/2013;

(b) For options or warrants on equity or equity indices, plus/minus the weighting provided in Article 343 of Regulation (EU) No 575/2013;

(c) For foreign exchange and gold options or warrants, plus/minus the weighting indicated in Article 351 of Regulation (EU) No 575/2013 or, where appropriate, plus/minus the weighting indicated in Article 354 of Regulation (EU) No 575/2013;

(d) For commodity options (warrants), plus/minus the weighting indicated in point (a) of Article 360(1) of Regulation (EU) No 575/2013.

3. The price change scenarios in the underlying shall be defined by a grid of at least seven points which includes the current observation and divides the range indicated in paragraph 2 in equally spaced intervals.

4. The second dimension of the scenario matrix shall be defined by volatility changes. The range of changes in volatilities shall be between ±25% of the implied volatility, where implied volatility shall be understood in the manner described in Article 4(2). This range shall be divided in a grid of at least three points which include a 0 % change and divide the range in equally spaced intervals. The competent supervisory authority may require a different rate of volatility and/or different intermediate points.

5. The scenario matrix is determined by all possible combination of points, defined in paragraphs 3 and 4. Each combination shall constitute a single scenario.

Article 9 –
Determination of the own funds requirements according to the scenario approach

According to the scenario approach, the own funds requirement on non-delta risk of options or warrants shall be calculated by a process consisting of the following sequence of steps:

(a) For each individual option or warrant all the scenarios defined in Article 8 shall be applied to calculate simulated net loss or gain corresponding to each scenario. The simulation shall use full revaluation methods, meaning that it simulates the price changes by the use of pricing models and without relying to local approximations of these models.

(b) For each distinct underlying type, understood in the manner described in Article 5(3), the values obtained at point (a) and referring to the individual scenarios shall be aggregated.

(c) For each distinct underlying type understood in the manner described in Article 5(3), the 'relevant scenario' shall be defined as the scenario for which the values determined in step (b) result in the largest loss, or the lowest gain if there are no losses.

(d) For each distinct underlying type, understood in the manner described in Article 5(3), the own funds requirements shall be calculated in accordance with the formula described in Annex 2.

(e) The total own funds requirement on non-delta risk of options or warrants is the sum of the own fund requirements obtained in step (d) for all distinct underlying types understood in the manner described in Article 5(3).

Section 5- Final provision

Article 10

Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

For the Commission
The President

[For the Commission
On behalf of the President

[Position]

Annex 1- Formula to be used for the purposes of Article 5(2).

$$\text{Gamma impact} = \tfrac{1}{2} \times \text{Gamma} \times VU^2$$

where VU:

(a) for options or warrants on interest rates or bonds is equal to the assumed change in yield indicated in column 5 of Table 2 of Article 339 of Regulation (EU) No 575/2013;

(b) for equity options or warrants and equity indices the market value of the underlying multiplied by the weighting indicate in Article 343 of Regulation (EU) No 575/2013;

(c) for foreign exchange and gold options or warrants is equal to the market value of the underlying, calculated in the reporting currency and multiplied by the weighting indicated in Article 351 of Regulation (EU) No 575/2013 or – if appropriate – the weighting indicated in Article 354 of Regulation (EU) No 575/2013;

(d) for commodity options or warrants is equal to the market value of the underlying, multiplied by the weighting indicated in point (a) of Article 360.1 of Regulation Regulation (EU) No 575/2013.

Annex 2- Formula to be used for the purposes of Article 9(d)

Own funds requirements = -min (0,PC-DE)

where

(a) PC ('Price Change') is the sum of price changes of the options with the same distinct underlying type understood in the manner described in Article 5(3) (negative sign for losses and positive sign for gains) and corresponding to the relevant scenario determined in step (c) of Article 9;

(b) DE is the 'delta effect' calculated as follows:

DE = ADEV x PPCU

where

(i)   ADEV ('aggregated delta equivalent value') is the sum of negative or positive deltas, multiplied by the market value of the underlying of the contract, of options that have the same distinct underlying type understood in the manner described in Article 5(3);

(ii)   PPCU ('percentage price change of the underlying') is the percentage price change of the underlying, as defined in the scenario matrix, corresponding to the relevant scenario determined in Article 9 step (c).

4. Accompanying documents

4.1 Cost-benefit analysis

Introduction

The European Banking Authority (EBA) has been discussing with its members the amendment of the existing framework, to address the non-delta risk of option (and warrant) holdings in view of enhancing the capital absorbing capacity of the banking sector against potential unfavourable market movements. To do so, the EBA requested feedback to a questionnaire sent to the national supervisory authorities (NSAs). The questionnaire was to find out about the current level of application of the internationally recognised market practices and implementation of the non-binding Basel Committee on Banking Supervision's (BCBS) regulatory provisions across the European banking system.

Apart from the feedback requested on the "current market practices and level of implementation of Basel rules" applied in their jurisdiction, the EBA asked NSAs to provide their views on what would be the (sources of) main costs / benefits arising from the amendment of the existing regulatory framework.

The present impact assessment (IA) is based on the responses to the aforementioned questionnaire which was circulated to the EBA members and answered by most of them[4] by mid-February 2013.

Procedural issues and stakeholder consultation

While developing the questionnaire for the IA, it was felt important to consult members of the EBA (and thus the competent authorities they represent) on the options for the possible amendment of the existing framework, with special focus on whether i) the Basel regulatory framework on addressing non-delta option risk should be the basis for the amendment, or ii) the EBA should discuss an ad-hoc approach to be developed from scratch. The members all said that the second option should be excluded as it would be time-consuming, require a lot of resources and, most probably, would result in the same methods proposed by the BCBS.

EBA staff, in cooperation with the NSA representatives, developed an impact assessment questionnaire to assess implementation of the existing Basel rules by the NSAs. The questionnaire also asked for feedback on possible qualitative and quantitative benefits for the various banking systems through the full implementation of Basel rules in future. The associated costs were assessed in terms of additional capital requirements that the proposed regime would result in, compared to the existing level of market risk capital requirements, while the benefits were assessed in qualitative terms.

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[4] This analysis is based on the responses submitted by AT, BE, CY, CZ, DE, EL, ES, FI, FR, HR, IT, LT, LV, PL, PT, SE, SI

The IA is based on the responses to the questionnaire as to whether the permanent partial use of more than one option valuation model would affect the entire European banking system, or whether this possibility would affect a small number of banks.

Problem definition

The current version of the CRD does not cover the calculation of capital requirements for other risks, apart from delta risk, for positions in various option-like financial products, i.e. options and warrants on interest rates, debt instruments, equities, equity indices, financial futures, swaps and foreign currencies and commodity derivatives. The EBA must face up to this problem, bearing in mind that for some of the option-like products, small banks are not required to use sophisticated methods to calculate capital requirements as they have no expertise in developing sophisticated option valuation models to calculate the non-delta risks. The EBA therefore should propose a variety of methods, bearing in mind the principle of proportionality in the implementation and application of option valuation models by small banks.

Although the IA cannot specifically answer the question whether it is necessary to continue allowing the permanent partial use of calculating non-delta risk capital requirements, it provides some evidence about how such a provision would affect the European banking system and the effort to achieve maximum harmonisation across the EU.

The EBA aims to achieve the maximum possible harmonisation as a way of reaching the objectives of a level playing field, preventing regulatory arbitrage opportunities, and enhancing supervisory convergence and legal clarity. The development of common procedures and practices is also expected to reduce the compliance burden of credit institutions and contribute to the efficient and effective cooperation between the supervisory authorities.

Level of implementation and current supervisory framework

The IA questionnaire was submitted to 28 European Economic Area (EEA) countries, and 17 responded. Seven reported full implementation of the existing Basel regulatory framework for addressing option risks; ten reported partial implementation. The sample consisted of 261 banks. The vast majority (213) applied the delta-plus approach, followed by a few banks that apply the scenario approach (10) and, even less, the simplified approach (7)[5]. Only 11,8% of the sample (31 banks) applied approaches other than the simplified and delta-plus methods (no method and other methods).

The summary of the results of the current supervisory framework is provided in the following table.

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[5] It is worth mentioning that in one jurisdiction there are 31 banks that apply the simplified approach. However, they are excluded from the sample because of their small size. If they were included, the figures in table 1 would become: Total sample: 292; simplified approach: 38 (13%); delta-plus approach: 213 (73%); scenario approach: 10 (3%); other method: 27 (9%); no method: 4 (1%).

Figure 1: Methods used by EEA banks for assessing the market risk arising from options – number of banks and percentage of total

Total number of banks: 261	
Methods	**Number (percentage) of banks**
1. Simplified	7 (2.8%)
2. Delta-plus	213 (81.7%)
3. Scenario approach	10 (3.6%)
4. Other method	27 (10.3%)
5. No method (even though banks hold options)	4 (1.5%)

The NSAs were asked whether the partial use of different methods was allowed for assessing the risks arising by the options holdings at a consolidated level and at the same legal entity level respectively. Out of the thirteen NSAs which responded to this question, six NSAs allow the partial use at a consolidated level whereas only four allow the partial use at the same legal entity level. The findings show that the partial use of calculating capital requirements for option positions at a consolidated or on a solo basis is not a common supervisory practice in the EEA. It is also inferred from the aforementioned findings that there is no harmonisation of regulatory practices.

The actual partial use of alternative methods by the banks is even lower than that indicated by the supervisory framework; only 5.4% of the banks use two or more methods at a consolidated level, whereas the figure at the same legal entity level drops to an immaterial 4.0%. In essence, the market practice in EEA banks is to use only one method for assessing the market risk arising from option positions.

Figure 2: National provisions for partial use of methods for assessing option risk and actual use of these provisions by the banks – Allowance by national regulators

Do national regulators allow partial use?		
	Yes	**No**
At a consolidated basis, within the group	6 (46%)	7 (54%)
On a solo basis, within the same legal entity	5 (31%)	9 (69%)

Figure 3: National provisions for partial use of methods for assessing option risk and actual use of these provisions by the banks – Actual use

Consolidated / Solo	Actual use by the banks (number of different methods)		
	one	**two**	**More than two**
At a consolidated basis, within the group	94.6%	3.6%	1.8%
At a solo basis, within the same legal entity	96.0%	2.2%	1.8%

According to the experience of the NSAs, the most common combination of methods used under the partial use allowance is the use of delta-plus and scenario approach[6]. Even allowing for this to be the case, only 3.6% of the banks apply two methods for estimating the capital requirements for options at a consolidated level, while the percentage on a solo basis (legal entity level) drops to 2.2%. Only 1.8% of the sample, at a consolidated level and on a solo basis, applies more than two methods for valuing options and estimating the capital requirements for option positions.

Objectives

General objectives

The impact assessment was done bearing in mind the general objective of guaranteeing the 'international competitiveness of EU banking sector (G-3)'[7].

Problem drivers

In the Commission Staff Working Paper – Impact Assessment accompanying the CRR, the relevant driver of the problem identified (not having capital requirement provisions for non-delta option risk) is the 'lack of harmonization in application of regulatory adjustments'.

Operational objectives / specific objectives

The operational objective to be met is to 'develop a harmonised set of provisions in the area of definition of capital' which includes the following 'specific objectives':

- prevent regulatory arbitrage opportunities (S-3);
- reduce compliance burden (S-5);
- enhance level playing field (S-6);
- enhance supervisory cooperation and convergence (S-7).

Cost-benefit analysis

General assessment (first-order) set of policy options

The general assessment (first-order) set of policy options involves the following two options: (a) transfer the basic models and principles of the BCBS rules into the CRD IV; or (b) draft new methods from scratch.

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[6] This view was expressed by the majority of the members of the EBA in the meeting of 21-22 February in Brussels.

[7] For more information refer to the Commission Staff Working Paper – Impact Assessment accompanying the document Regulation of the European Parliament and the Council Regulation on prudential requirements for the credit institutions and investment firms:
(http://ec.europa.eu/internal_market/bank/docs/regcapital/CRD4_reform/IA_regulation_en.pdf)

As mentioned at the beginning of the IA, discussions at the EBA led to excluding the alternative option of exploring the possibility for inventing from scratch new methods for calculating capital requirements. The main reason for this was (a) any survey of this type would be time-consuming, and (b) it would probably lead to methods similar to those described in Basel II. Moreover, as shown in Table 1, the vast majority of the European banks (almost 89%) use the methods described in Basel II (simplified, delta-plus, scenario approach). By requiring these banks to change the existing modelling infrastructure would impose high cost on them.

The EBA therefore decided to take over the existing provisions in Basel II to address the non-delta risk of option holdings of EEA banks. The IA assesses the benefits and costs, as shown below, in view to justify the decision of choosing the proposed option.

Benefits

The magnitude of the benefits was estimated for all stakeholders involved (credit institutions, national supervisory authorities and other stakeholders) and due to the difficulty in quantifying future benefits, there were four generic classes of magnitude: negligible (including no impact), low, medium and high.

The main sources of benefits identified were: (a) benefits from the harmonisation of the CRD IV rules with the BCBS rules; (b) reputation benefits (for the credit institutions) arising from their compliance with the internationally widespread market practices; and (c) the reduction of unrealised costs (opportunity costs) that would come about if the supervisors were to impose a different set of capital requirement methods (other than those set out in Basel II).

Figure 4: Benefits of the preferred option, expressed in level of magnitude, from the implementation of the existing Basel II framework (percentage of answers to total answers provided)

Source of benefits	Level of impact (benefits) / (Negligible=1, Low=2, Medium=3, High=4)			
	1	2	3	4
1. Benefits from the harmonisation of the CRD IV rules with the International Regulatory Standards (BCBS)	38.5%	30.8%	0%	30.8%
2. Reputation benefits arising from the compliance with the internationally widespread and tested market practices	60.0%	20.0%	0%	20.0%
3. Unrealised costs	75.0%	0%	0%	25.0%
4. Other	100.0%	0%	0%	0%

Figure 5: Overall magnitude of benefits

Source of benefits	Average level of impact (benefits)
1. Benefits from the harmonisation of the CRD IV rules with the International Regulatory Standards (BCBS)	Low to Medium
2. Reputation benefits arising from the compliance with the internationally widespread and tested market practices	Negligible to Low
3. Unrealised costs	Negligible to Low
4. Other	Negligible
Overall	**Low**

Costs

It was inferred from the discussions in the EBA meetings, that the cost from the transposition of Basel methods for assessing the non-delta risk will affect only the credit institutions holding option and warrant positions; whereas the other stakeholders will not be affected or only to a small extent. The impact on other stakeholders, apart from the banking sector, was therefore not examined in this IA.

The impact on the credit institutions was assessed in terms of additional market risk capital requirements that the implementation of the Basel II rules will add to the existing level of market risk capital requirements for EEA banks. A total of 13 out of 17 Member States replied that the additional capital requirements would be less than 2% of the existing level of market risk capital requirements, another two answered that it would be lower than 15%, and only two said it would be between 15% and 50%.

Figure 6: Cost of the preferred option, expressed in additional market risk capital requirements arising from the implementation of the framework proposed

Level of impact (additional cost)	Answers by the Member States (MS)
1. Negligible (ACR<2%)	13 (76.5%)
2. Low (2%≤ACR<15%)	2 (11.8%)
3. Medium (15%≤ACR<50%)	2 (11.8%)
4. High (ACR≥50%)	0 (0%)
Average level of impact (costs)	**Negligible to low**

It should be noted that despite the initial costs that RTS implementation imply, in the long run, the additional capital requirements could reduce the risk of having undercapitalised banks. The initial cost might eventually result in the benefit (from a social point of view) of having better capitalised banks than if the risks were underestimated. This benefit is however difficult to estimate precisely.

Second-order set of policy options

Second-order set of policy options are the following: (a) allow the permanent partial use of models to value the non-delta option risks; (b) do not allow the permanent partial use of models to value the non-delta option risks.

This IA assesses another set of policy options:

- allowing the permanent partial use of option valuation models for estimating the capital requirements of option holdings on either a consolidated or solo basis;
- prohibition of the partial use of the option valuation models at either a consolidated or on a solo basis.

The findings of the questionnaire show that most supervisors do not allow the banks in their jurisdictions to use more than one model for option valuation and thus for the estimation of capital requirements. However, a significant minority of supervisors allows the partial use of option valuation models (46% at a consolidated level, 31% at a legal entity level). The picture is different when it comes to the actual application of the models by the banks. It appears that only 5.4% of the banks at a consolidated level and 4.0% of the banks on a solo basis use two or more methods to calculate the capital requirements for their option holdings.

From the evidence provided by the national supervisors, the prohibition of the partial use of option valuation methods in the same bank or the same banking group under the current regime, would impact a limited number of banks in the EEA. However, this IA does not take into account a new treatment for non-standard options introduced by these RTS, which might increase the partial use of option valuation methods in an institution that invests in this type of options.

Proposal

Taking into account the cost-benefit analysis[8], it is apparent that the take over and subsequent implementation of the Basel II rules for addressing the non-delta risk for options and warrants will have a net positive impact, as the benefits (low) are expected to be higher than the costs (negligible to low). However, due to the diversity of the characteristics of the national banking systems across EEA, the EBA should make adjustments in these RTS, as applicable, to reflect the special characteristics of EEA banks.

These adjustments include the possibility of allowing the combination of the methodologies stated in the RTS within the same legal institution.

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[8] The proposal is based on the data received from the NSAs which responded to the questionnaire.

4.2. Views of the Banking Stakeholder Group (BSG)

No feedback was received from the BSG.

4.3. Feedback from the public consultation

Comments	Summary of responses received	EBA analysis	Amendments to the draft RTS
General comments			
Effective date	One respondent notes that the RTS will be formally adopted in November leaving only limited time to implement new capital calculations before Q1 2014.	The RTS rely largely on existing Basel practices which should minimise the burden of implementation (although some burden is inevitable)	No change
Transitional period	One banking association argues that the proposal submitted by the EBA contains various amendments and more conservative approaches in a number of respects compared to the Basel framework. For instance, the request for a separate calculation and recognition of delta and non-delta risks. As these changes would be significant, banks in that jurisdiction would only be able to implement them after an extended transitional period.	The requirement to separate delta from non-delta effects is established set down in the CRR text, not in the RTS.	No change
Fundamental review of the trading book	One respondent does not find it helpful to change the market risk rules within the transition period before the implementation of the new international market risk framework.	Under the CRR mandate the draft RTS must be presented by December 2013 and makes reference to the existing market risk framework.	
Implied volatility Article 4 (2)	A respondent notes that under the provisions of Article 4(2), the determination of the implied volatility shall be based on the market value. However, when it comes to simple (OTC) options which only differ from listed	Under Article 104(2) CRR trading book positions have to be either marked-to-market (if a market value is directly observable on the market) or marked-to-model (if a market value has to be estimated by a pricing model).	In Article 4(2) a clarifying reference to Article 3(4) is

	options in terms of strike or expiry there is no readily observable market price. In such cases, for determining the delta factor, Article 329 (formerly Article 318)(1), 352 (formerly Article 341)(1), Article 358 (formerly Article 347) (3) CRR require the use of an internal pricing model in need of supervisory approval, during the calculation of which the implied volatility will have to be used as an input parameter. Consequently, in such cases the 'implied volatility' under Article 4(2) has to refer to said input parameters.	The expression 'market value' refers to the value determined by mark-to-market or mark-to-model and is already defined in Article 3(4).	introduced.
Vega risk Article 6	One respondent considers that it is unclear whether the shift in Article 6(b) should be seen as an absolute figure or as a relative figure and, second, it is unclear which shift (+25% and/or -25%) should be applied under Article 6(b) in order to be multiplied with vega under the provisions of Article 6(c).	The shift is a relative figure (i.e. it is expressed in the form of a percentage) and it should be applied in both directions (+/-)	No change.
Full revaluation for every scenario	One respondent feels it would be excessive to carry out a full revaluation for every scenario. Instead, a revaluation by means of an approximation should be sufficient.	Partial revaluation (i.e. gamma and vega revaluation) is applied in the delta-plus method. In the scenario approach the use of full revaluation enhances the risk sensitivity of the approach because it: - takes account of cross-gamma effects in the joint measurement of the gamma and vega risk; - is coherent with the application of a more advanced method; - permits a satisfactory treatment of discontinuous options.	No change
Scenario approach: inclusion of the hedging positions linked to the	In the understanding of one respondent it is not explicitly permitted to include hedges in the scenario approach. The respondent is concerned that this would result in a clear exaggeration of the risks in mixed	Since delta effects are stripped out, the inclusion of hedges in the form of cash instruments would not change the outcome of the scenario approach. The EBA repeats that hedges in the form of options – if they	No change.

options	portfolios featuring both option and non-option products.	refer to the same underlying as defined in Article 5(3) - must be included in the scenario approach and are therefore considered.	
Requirements to use the scenario approach	One respondent thinks the scenario approach is a supervisory standard method which should be generally exempt from any minimum requirements. Integration into the risk management regime should not be mandatory because due to simplifications such an approach is generally inappropriate for risk management. Due to the parameters imposed by supervisors with no option of a bank-specific calibration, the stress-testing is neither efficient nor effective. In the absence of any benefit, the costs of adjusting processes of risk management within a bank as well as the implementation of stress test scenarios are unwarranted. Another respondent would prefer a reference to "a scenario approach" in order to allow for different scenario matrixes used for risk management purposes.	According to the Basel Framework the scenario is subject to the qualitative standards of the internal model approach "which are appropriate given the nature of the business". The EBA agrees that not all of these qualitative standards are appropriate for an institution using the scenario approach. Nevertheless EBA believes that an institution using the scenario approach should satisfy the following minimum standards: - existence of a risk control unit that monitors the risk of the option portfolio (e.g. by the measurement of sensitivities or by stress tests); - integration of the results of the scenario approach in the internal reporting to management.	Change Article 7(a) and (b).
Responses to questions in Consultation Paper EBA/CP/2013/16			
Q1. Do you agree with the choice to use the Basel Framework to determine the capital requirements for	All the respondents agree that the three methods from the Basel framework are adequate. However, the industry notes that the CRR requires: – option delta to be calculated for all options under standard rules, both long and short – the local regulator to approve sensitivities	The treatment of the delta risks are outside of the scope of these RTS. The EBA agrees that the VaR approach, if correctly implemented, is the most satisfactory solution to the measurement of non-delta risk of options. However – following the Basel Framework - the use of a VaR model	

the non-delta risks of options and warrants? Are there other approaches that can effectively be used for the purpose of these RTS? Which ones? Explain your reasoning.	derived from option pricing models. One respondent notes that VaR framework is the most appropriate method for calculating and capturing risks arising in the Trading Book. A simplistic approach can be expected to make a number of assumptions with regard to risk types. The delta plus method adopts a "bottom up" approach regarding particular risk types- with a focus on gamma and vega. In the respondent experience, losses during the crisis were also a result of skew, dividends and other higher order risks alongside gamma and vega. The VaR would not only address delta, gamma and vega but also other risk drivers such as rho in addition to cross correlation between the option Greeks. It sees the treatment of gamma and vega in Articles 329 is independent of the specific and general risk capital requirements. The ability to capitalise non-delta risks through VaR is not conditional on the firm having specific risk VaR approval for the product category.	requires supervisory approval, while the RTS only specify standardised approaches for which no approval is required.	
Q2. Do you prefer the first option (exclusion of a combination of methods within a single institution) or the second option (exact definition of the scope of the	One respondent noted that this question may have far-reaching implications now that EBA standard has narrowed down the scope of application of the simplified method and delta-plus method; consequently, banks might have to face a choice between the fall-back solution for the simplified / delta-plus method and the scenario matrix method. Hence, whether they shall be entitled to apply the scenario approach entirely or only regarding certain transactions could be decision-relevant for the banks concerned. All the respondents endorse the second option that	The EBA acknowledges that a combination of methods within a single institution should be allowed, since such a combination: - takes account of different levels of sophistication inside an institution; - allows institutions that are active in the trading of discontinuous options to avoid the fallback treatment by applying the scenario method to these positions. Noneless, in order to prevent possible cherry-picking,	Adoption of option 2. Article 1.4 changed accordingly. The requirement of a predefined scope of application is introduced in Article 7(c).

scenario approach)? Explain your reasoning. If you prefer the second option, what additional conditions and controls should be established?	permits a combination of the scenario approach with the delta plus method.
	
	The business units within a bank in charge of options trading may feature large differences both in volume and in complexity of their transactions. For instance, there may be comprehensive trading in interest rate products/equity products whilst trading of foreign currency exposures will be confined to a limited amount of plain vanilla products for position hedging purposes. In this case, it would be preferable to apply the scenario approach to the interest rate/equity business line and the delta-plus method to the foreign currency business line, in order to reflect the proportionality principle.
	
	One respondent considers that the choice of the approach is to be specified according to the strategy: an institution that pursues different strategies (e.g. for FX/equity activities or liquid/illiquid underlyings) is entitled to use one approach with respect to each strategy.
	
	Another respondent suggests that the RTS, to prevent possible cherry-picking requires that the scope of application:
	  - is precisely defined (in terms of location, system or product);
	  - is justified by a firms trading policy;
	  - gives a clear, non-capital efficiency base, justification for the allocation to either the delta-plus method or the scenario approach;
		the combination of the delta plus approach and the scenario approach should be subject to a predefined scope of application, in accordance with new Article 7(c).	

	- exclude the combination of methods inside of a single portfolio. Another respondent believes that within the organization, sophistication of trading varies between products and locations, so a combination of internal model and standardized approach is appropriate to cater for the different trading areas. Often firms apply internal model for most Trading Book options, so standard rules are applied in areas where internal model is not being applied or where this is not cost effective. They suggest that the RTS should not set a prescriptive list of requirements as these should be determined in the meetings with the competent authority.		
Q.3 Do you believe that it is useful to implement the simplified approach established in the Basel text?	The majority of respondents welcome the introduction of a simplified approach for firms with very limited options activity, whose application shall be based on the size and complexity of options and warrants transactions at the level of the individual bank.	The EBA shares the opinion that the simplified approach should be retained in the final RTS.	No change.
Q.4 Do you agree with this prudential treatment, not contemplated in Basel Framework,	A majority of respondents consider that a fallback approach is necessary because neither the simplified approach nor the delta plus can be applied to discontinuous options, such a barrier options. One respondent welcomes the introduction of the fallback solution for the simplified approach as well as	The treatment is a fallback for institutions which apply the simplified or delta-plus method and is a deliberately conservative treatment of positions for which these methods are not appropriate. Sophisticated institutions that are significantly active in the trading of discontinuous options are supposed to	The fallback approach is maintained. Article 4(3) was modified in order to give a

| for non-standard options? | for the delta-plus method.

Three respondents disagree with the proposed treatment because it appears to be excessively onerous. For example, in the case of equity barrier options, the proposed approach would often lead to a total capital requirement that is higher than the market value of the option (summing the general risk, the specific risk, the non-delta risk, the interest rate component and, where applicable, the foreign exchange component).

The proposed rules, would lead to inconsistent results. In fact, a barrier option can be less risky than the corresponding plain vanilla option, but, even so, the latter's capital requirements would be significantly lower than those for the barrier option. Therefore a different solutions should be considered for the treatment of the non-delta risk of non-standard options. A possibility could be to apply a greater VU multiplier in the calculation of the gamma impact.

It is explained that the banks already handle the risk of discontinuities by specific hedging strategies.

The proposal creates a disconnection in the capital treatment of non-continuous options on one hand and the capital treatment of their vanillas hedges on the other hand, making the hedges inefficient in terms of capital relief and hence disincentivizing banks to undertake such hedging. | use the scenario approach which deals with such options in a satisfactory manner. Since it is possible to combine different methods within an institution (see answer to Q2) it is possible to apply the scenario approach to the discontinuous options portfolios only, thus avoiding the fallback treatment. Furthermore, it is allowed to include hedges in the form of plain-vanilla options in the scope of application of the scenario approach.

The EBA would like to point out that the subtraction of the risk weighted delta equivalent was introduced in order to avoid the problem of double counting between delta and non-delta risks.

The EBA recognises that the concept of "risk weighted delta equivalent amount" is precisely defined only in Article 3(1) and with reference to the simplified approach. An equivalent clarification has been introduced in Article 4(3).

The following examples should clarify the treatment.

Example 1:
An institution buys an equity option with the following characteristics:
- market value of 300;
- delta of 0.6;
- underlying is a position of 300 shares of | clear definition of "risk-weighted delta equivalent amount". |

In addition the proposal introduces an asymmetric treatment between buyers and option sellers, based on the infinite capacity of losses for sellers without taking into account the hedges.

Lastly, supposing such instrument would be identified specifically, there should be a distinction between long and short positions (selling Autocalls differ in this sense from financing with Put Down and In) and between American and European barriers.

Another respondent considers that the fallback treatment is not immediately understandable due to the lack of a definition for the "risk weighted delta equivalent amount" and invites EBA to provide explanatory examples in order to illustrate its application.

One respondent finds the proposal clear and easy to interpret.

company X that have a market price of 10.1.

Since:
- the market value of the underlying is equal to 300*10.1=3,030
- the risk weight for a position in an equity is equal to 16 % (8% for general market risk plus 8 % for specific risk according to Articles 342 and 343 of the CRR)

The risk weighted delta equivalent amount of the position is equal to 3,030*0.6*0.16 = 290.88. This amount expresses the linear risk component that is already considered in the calculation of delta risks, and should therefore not be considered in the calculation of non-delta risks.

For this reason and following article 4.3 of the draft RTS, the own funds requirement under the fallback treatment is equal to the difference (if positive) between the market value of the option and the "risk weighted delta equivalent amount". The calculation results in 300 – 290.88=9.12.

Example 2:
As example 1 but with the following difference: the market value of the option is 280 instead of 300.

As in the previous example, the risk weighted delta equivalent amount is equal to 290.88. However, the

		own funds requirement for this position would be equal to zero because 280-290.88 = -10.88 which is a negative number. Example 3: As example 1, but with the following difference: the option is sold and not bought. As in example 1 the market value of the underlying is equal to 3,030. The 'risk weighted delta equivalent amount' is equal to 290.88. However, since the option is sold and not bought the own funds requirement under the fallback method is equal to 3,030-290.88= 2,739.12.	
Q5. Do you agree that the RTS should require that the conditions of Articles 318 (1), 341 (1), 347 (3) of the CRR are met for the calculation of gamma and vega?	Under the provisions of Article 4(4), gamma and vega shall be calculated in line with Article 329 (formerly Article 318(1)), Article 352 (formerly Article 341(1)), Article 358 (formerly Article 347(3)) CRR. These provisions refer to the use of the delta factor of the exchange concerned – if available. Otherwise, institutions have to use an internal model that is subject to supervisory approval or, respectively, the fallback solution. One respondent argues that, due to the fact that neither gamma nor vega can be obtained from an exchange, these factors – and also the delta – would have to be calculated by the bank itself using an appropriate model. Hence, a reference to said CRR Articles would appear constructive only if an explicit link is being made to the valuation model specified	The EBA recognises that regulated options markets normally do not provide data for gamma and vega. The reference to Articles 329, 352 and 358 of the CRR is therefore only partially appropriate. In any case the values for gamma and vega have to be calculated using an appropriate pricing model.	Article 4.4 is changed: "The value for gamma and vega used in the calculation of own funds requirements shall be calculated using an appropriate pricing model as referred to in Articles 329(1), 352(1) and

	thereunder. Accordingly, supervisory approval would become necessary for every new OTC traded product type, at least for the option parameters of which are not being provided by an exchange. This would prove to be a drain on innovation. They propose a solution where a reporting of the new calculation algorithms ought to be sufficient. It is also noted that unless gamma and vega can be supplied by the respectively affected exchange, the bank would have to use the fallback approach or develop its own model which would require supervisory approval		358(3) of Regulation 575/2013".
Q6. Do you think that the unified treatment of interest rate risk is sound? Could there be difficulties in implementing it in practice.	There are no major objections to this approach. The propose calculation of bond option gamma and vega will no longer depend on the bond price; instead, it shall be calculated based on the yield to maturity. The 'unified' approach is appropriate to the products for which the Industry expects to apply this approach (interest rate options under standard rules). However it is noted that could be reliance on local regulators to approve option pricing models for interest rate risk. For interest rate sensitivity measurement one respondent recommends the use of zero coupon rate yield sensitivities (pv01) rather than yield to maturity (YTM) sensitivity as a better basis for measuring interest	The idea of the unified treatment is: i) to introduce homogenous assumptions concerning the variation of the price of the underlying (VU) which are expressed in terms of interest variations; ii) to allow the offsetting between different interest rate sensitive instruments like interest rate and bond options. A majority of respondents are in favour of this treatment, the EBA therefore confirms it. The use of the zero coupon rate sensitivities might be interesting; however it would constitute a substantial	No change.

rate exposure, as pv01 is general industry practice and is routinely applied to portfolios with bond options, IROs and swaptions as well as their underlying instruments. One industry association support the unified treatment of bond options and interest rate options, given it is what is done for a management perspective. It is not foreseen any implementation issue. One respondent considers the proposal does not necessarily improve consistency and therefore is in favour of the right to choose between either the calculation of gamma and vega of bond options depending on the bond price or on the yield-to-maturity. According to this respondent, a bond option is not the same as an interest rate option which justifies the use of different formulations. Conversely, the existing formulation is consistent with the basic principle in the pricing of options consists in the dependence on the price of the underlying. Finally, they find difficult to understand why this change in the mathematical formula should lead to an increase in regulatory capital requirements. One firm notes that in the internal model, the price of the option / the warrant is no longer assessed on the basis of the price of the underlying – instead it is being assessed depending on the yield-to-maturity of the underlying.	modification of the current Basel Framework. The EBA does not believe that being able to choose between an 'interest rate based approach' and a 'bond price based approach' on a position by position basis would be a sound approach. This would permit a selective choice of the methods in order to minimize own fund requirements.

Q7. How many hybrid options does your portfolio account for in terms of number of options and notional amounts (i.e. options which can be assigned to more than one underlying type as defined above)? Should the RTS specify the treatment of these hybrid options?	Quanto equity options are the only hybrid options one respondent holds under standard rules. They are similar to the corresponding equity option except that the client prefers to receive the pay-off in a different currency from the underlying equity; therefore they are a hybrid of equity and FX risk. They account for only 5% of the equity options held by this respondent by notional amount. Another respondent answers that this type of products represents only a marginal portion of its standard perimeters. Another respondent considers that the hybrid risk is a lower risk therefore does not believe a treatment should be specified for hybrid options. One respondent asks if the treatment of hybrid options (options referring to more than one underlying) can be specified in greater detail.	Even if hybrid options represent only a marginal portion of options porfolios, the EBA believes that a treatment for these positions should be specified. It seems appropriate to treat hybrid options, in a simplified manner, as baskets of options written on different underlyings.	Point (c) is added in Article 1(5).
Q.8 Do you agree with the rationale behind the exclusion of this provision contemplated in the Basel accord in the RTS? If not,	The majority prefer not to exclude the provision contemplated in the Basel accord in the RTS. One respondent argues the aggregation of time bands should not only be an option for "significant option traders"; but it should be available to all banks applying the scenario matrix method. Such an approach would be consistent with the principle of proportionality. In banks' trading practice, hedging transactions are being	EBA believes that the arguments in favour of an aggregation of time bands are not fully convincing: - allowing the aggregation of time bands for significant option traders would not be consistent with the proportionality principle; - extending the aggregation of time bands to all banks would reduce the conservativeness of the scenario approach.	No change.

please provide arguments in favour of its implementation.	carried out across different time bands meaning that the number of time bands defined will correspond directly to the degree of the underlying risks. If sophisticated firms have limitations to their internal models and they may need to apply the scenario approach in some circumstances. In this case the aggregation of times bands would be appropriate if the proposed time bands are not suitable or would result in a disproportionate amount of complexity in implementation. One respondent considers that although the proposed approach is intended to be a simplification; it is not necessarily easy to implement.		