



Discussion Paper on the Implementation in the European Union of the revised market risk and counterparty credit risk frameworks

Public Hearing

5 February 2018 | London

Context & Objectives

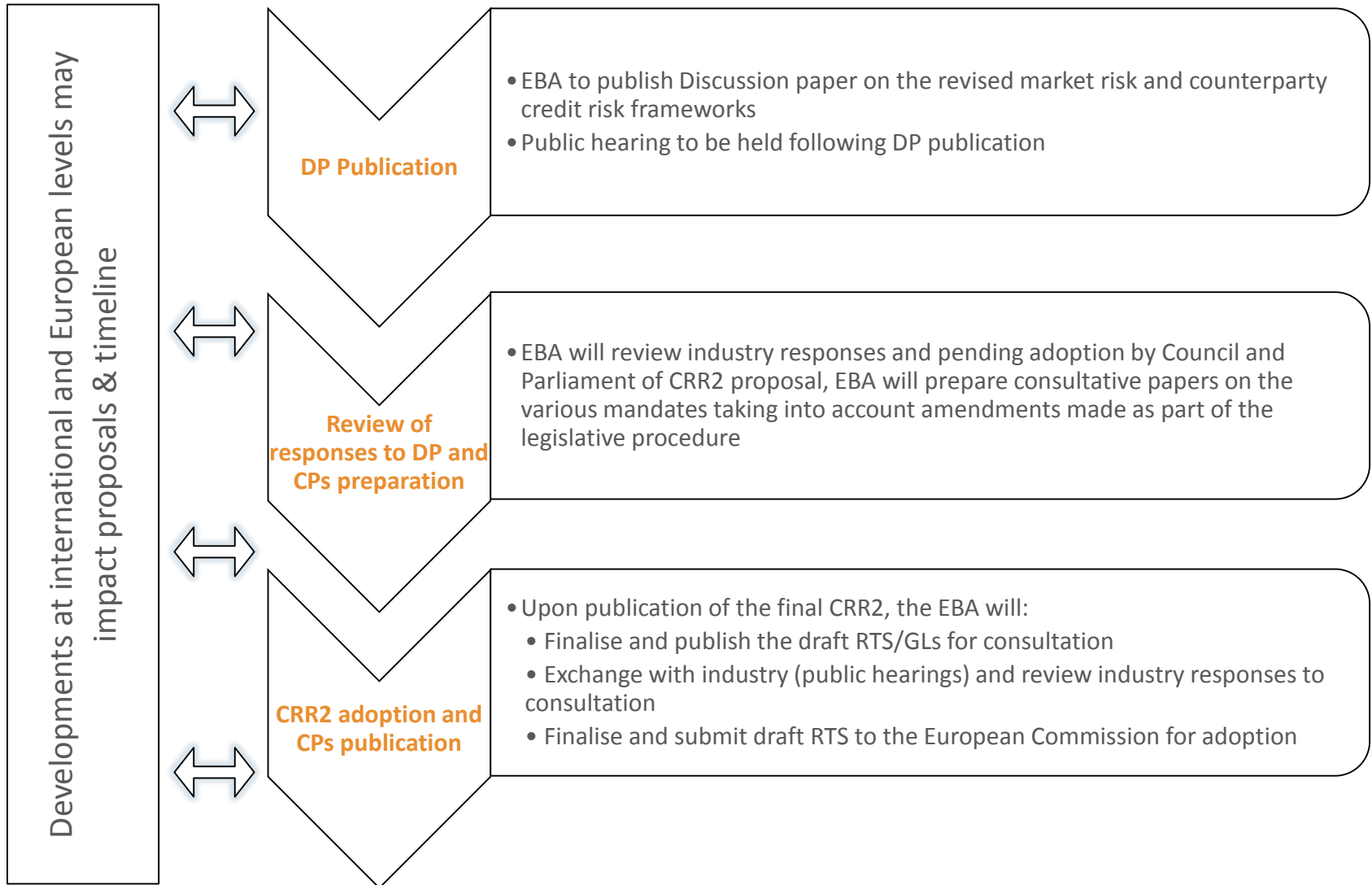
Key Dates:

- **31 March 2014:** the BCBS publishes standards on the Standardised Approach for measuring Counterparty Credit Risk exposures (SA-CCR).
- **14 January 2016:** the BCBS publishes standards on minimum capital requirements for market risk (the 'Fundamental Review of the Trading Book' – FRTB).
- **3 November 2016:** the EBA publishes its Report on the response to the European Commission's Call for Advice (CfA) on the revision of the market risk and counterparty credit risk frameworks.
- **11 November 2016:** the European Commission publishes a comprehensive legislative proposal to review the CRR/CRD IV. This package also includes the introduction of the SA-CCR and FRTB in EU regulation, and takes into account some EBA Recommendations put forward in the EBA's response to the Commission's CfA.
- **18 December 2017:** the EBA publishes its Discussion Paper (DP) on the implementation in the EU of the revised market risk and counterparty credit risk frameworks. The consultation runs until 15 March 2018.

Objectives of the DP:

- Raise and discuss at an early stage some of the most important technical and operational challenges to implement the FRTB and SA-CCR in the EU.
- Provide preliminary views on how the implementation issues could be addressed, with particular focus on 8 issues (2 on SA-CCR and 6 on FRTB).
- Propose a roadmap and prioritization for the development of the regulatory deliverables on the FRTB and SA-CCR included in the CRR2 proposal.
- Seek early feedback from the stakeholders on the proposals.

The Process & Next Steps



Mandates for EBA on SA-CCR & FRTB in the CRR2 proposal



- EBA is in charge of specifying the details of technical parts of SA-CCR & FRTB where Basel standards lack details or are under review.
- SA-CCR: 3 RTS mandates
 - 1) RTS on mapping of derivative transactions to SA-CCR risk categories *[Article 277(6)]*
 - 2) RTS on corrections to supervisory delta *[Article 279a(4)]*
 - 3) RTS on specification of 'large and concentrated commodity derivative portfolio' *[Article 280e(3)]*
- FRTB: 2 GL, 12 RTS mandates, 2 Reports
 - 1) GL on meaning of 'exceptional circumstances' to reclassify TB positions *[Article 104a(1)]*
 - 2) RTS on treatment of banking book positions subject to FX risk or Commodity risk *[Article 325(8)]*
 - 3) RTS on risk weights for positions in CIU *[Article 325k(3)]*
 - 4) RTS on instruments subject to residual risk add-on (RRAO) *[Article 325v(5)]*
 - 5) RTS on gross jump to default amounts *[Article 325x(8)]*
 - 6) RTS on Emerging markets and advanced economies *[Article 325aq(3)]*
 - 7) RTS on assessment methodology *[Article 325ba(8)]*
 - 8) RTS on extraordinary circumstances *[Article 325ba(9)]*
 - 9) RTS on specification of liquidity horizons for the IMA *[Article 325be(7)]*
 - 10) RTS on specification of P&L calculations for backtesting and attribution tests purposes *[Article 325bg(9) and Article 325bh(4)]*
 - 11) RTS on determination of extreme scenario metrics applicable to non modellable risk factors (NMRF) *[Article 325bl(4)]*
 - 12) GLs on Internal Default Risk Model *[Article 325bn(2)]*
 - 13) RTS on PDs and LGDs under Internal Default Risk Model *[Article 325bq(12)]*
 - 14) Report on appropriateness of the level of own funds requirements for market risks *[Article 501b(2)]*
 - 15) Report on certain aspects of own funds requirements for market risks *[Article 519a(1)]*

Proposal Roadmap and Prioritization for the Development of the Regulatory Deliverables on FRTB and SA-CCR

Prioritisation	Regulatory products
Phase 1: Main SA-CCR regulatory products and FRTB IMA regulatory products implementing essential parts of the revised regulation for the internal model approach	SA-CCR – mapping of derivative transactions to risk categories SA-CCR – corrections to supervisory delta FRTB – backtesting and P&L attribution requirements FRTB – NMRF stress scenario risk measure FRTB – IMA liquidity horizons FRTB – treatment of non-TB positions subject to FX or commodity risk
Phase 2: FRTB IMA regulatory products including assessment methodology, model changes and extraordinary circumstances, and main FRTB SA regulatory products	FRTB – extraordinary circumstances allowing disregarding of backtesting and P&L attribution FRTB – revisions to RTS on assessment methodology and model changes, including PDs and LGDs under default risk charge FRTB – residual risk add-on
Phase 3: Remaining implementation-linked regulatory products	FRTB – risk weights for positions in collective investment undertakings (CIUs) FRTB – emerging markets and advanced economies FRTB – gross jump to default amounts
Phase 4: Regulatory products whose substance will be derived from the monitoring of the application of the revised frameworks	FRTB – trading book boundary FRTB – report on appropriateness of the level of own funds requirements for market risks FRTB – report on certain aspects of own funds requirements for market risks

Issue: one of the key steps for computing the counterparty credit risk own funds requirement under the SA-CCR is the mapping of each derivative transaction to one or more than one of the five risk categories (IR risk, FX risk, credit risk, equity risk, commodity risk).

Proposal: the DP proposes a three-step approach for the designation of a derivative transaction to a risk category:

1st step: **a qualitative approach** would identify derivative transactions that have **clearly one primary risk driver**, thus being easily mapped to the corresponding risk category; this step would be based on a **prescribed list of product types** and is meant to provide **proportionality** in the assessment, i.e. the mapping of ‘simple’ derivative transactions should be straightforward and not require the computation (and comparison) of sensitivities.

2nd step: **a qualitative and quantitative approach** would require a **more detailed assessment** of those derivative transactions that are not immediately allocated through the first step. First, institutions would be required to qualitatively identify all the risk drivers of the derivative transaction. Then, institutions would be required to perform an **assessment of materiality** in order to identify material risk drivers. **Quantitative inputs** would be required to be used, typically sensitivities and potentially volatility. This assessment would lead to the **allocation to one or more than one risk category, reflecting the material risk driver(s)**.

3rd step: **a fallback approach**, in case the assessment in the second step does not allow to determine which of the risk drivers are material, would simply allocate the derivative transaction to all the risk categories corresponding to all the risk drivers (material or not) of the transaction. Nevertheless, In order to limit the number of risk categories to which a single derivative transaction could be allocated, **a cap limiting the allocation of a derivative transaction to a maximum of three or four risk categories could be introduced**.

➤ **What are stakeholders’ views on the approach proposed?**

SA-CCR – Mapping of derivative transactions to risk categories (2)

1st step

Proposed list for the mapping of instruments to the risk category for the simplicity assessment:

Risk category	Primary risk driver	Examples and relevant conditions
Interest rate	Interest rate curve in the respective currency	IR swap; IR future; Forward rate agreement; IF underlyings are in the same currency as the settlement currency AND options on such instruments whose payoff depends only on interest rates or inflation
Foreign exchange	Foreign exchange rate of the respective currency pair	FX forward; FX future; FX swap; AND options on such instruments whose payoff depends only on FX rates
Equity	Equity prices and payouts	Equity future; equity index future; equity forward; equity swap; IF underlyings are in the same currency as the settlement currency AND options on such instruments whose payoff depends only on equity prices and dividends
Credit	Reference entity	CDS single name or index IF underlyings are in the same currency as the settlement currency AND options on such instruments whose payoff depends only on credit quality or spreads
Commodities	Commodity price with respect to the relevant commodity type (i.e. energy, metals, agricultural goods, climatic conditions and other commodities)	Commodity future; commodity forward; IF underlyings are in the same currency as the settlement currency AND options on such instruments whose payoff depends only on commodities

➤ What are stakeholders' views on the allocation to be performed in the 1st step?

2nd step

Possible options on how to determine the materiality of risk drivers:

- **Option 1:** one simple solution could be to determine a threshold above which any risk driver whose associated sensitivity is higher than X% of the sensitivity of the main risk driver is deemed material.
- **Option 2:** assess the relative contribution of each sensitivity with respect to the total. Multistep approach:
 1. compute all the n sensitivities $(s_i)_{i=1}^n$ and sum their absolute value to obtain S_n .
 2. rank all n sensitivities s_i ($1 \leq i \leq n$), from the greatest to the smallest in absolute terms, to obtain a monotonic decreasing sequence of entries a_i ($1 \leq i \leq n$), where $a_1 = \max(|s_i|, \dots, |s_n|)$ i.e. the greatest absolute term, and where a_2 , is the second greatest term and so on.
 3. compute the ratio between the sensitivity with the greatest absolute value, a_1 , and S_n , i.e. $\frac{a_1}{S_n}$. If the ratio $\frac{a_1}{S_n} \geq Y\%$, there is only one material risk driver associated with a_1 , otherwise if the ratio $\frac{a_1}{S_n} < Y\%$, proceed further to step 4.
 4. Go down to the second highest absolute a_2 value and compute the ratio $\frac{(a_1+a_2)}{S_n}$. If the ratio $\frac{(a_1+a_2)}{S_n} \geq Y\%$ and if a_1 and a_2 belong to the same risk category, then allocate the trade to this risk category. If the ratio $\frac{(a_1+a_2)}{S_n} \geq Y\%$ and if a_1 and a_2 belong to two different risk categories, then allocate the trade to the two risk categories. If the ratio $\frac{(a_1+a_2)}{S_n} < Y\%$, continue further down the list computed under 2) until reaching the l th sensitivity where l ($2 < l \leq n$) is the minimum integer such that $\frac{\sum_{k=1}^l a_k}{S_n} \geq Y\%$.
- **Option 3:** by taking into account also the volatility, we could use Option 1 or 2 based on s^*RW instead of s only, while arguing that the FRTB SA risk weights are parameters supposed to capture the expected volatility of a kind of underlying.
- **Option 4:** A more advanced method could be to use the SA-CCR PFE. The idea would be to calculate the PFE for all risk categories and either:
 - assess the materiality of sensitivities to a risk class relatively, by comparing PFEs with the highest PFE (similarly to Option 1); or
 - assess the materiality by considering the coverage of total PFE (similarly to Option 2).

➤ What are stakeholders' views on the possible options considered for the purposes of the 2nd step?

SA-CCR – Corrections to supervisory delta

Issue: in the current context of negative rates, the incompatibility of negative rates with the supervisory delta formula established in the SA-CCR framework needs to be addressed.

Proposal: the EBA proposes to allow the use of a λ shift in the context of the Black-Scholes formula to move the interest rate into positive territory. λ represents the presumed lowest possible extent to which interest rates in the respective currency can become negative, and the same λ parameter should be used consistently for all interest rate options in the same currency; it is intrinsically dependent on the level of interest rates in a jurisdiction, therefore it is jurisdiction specific. In addition, the λ parameter should be set as low as possible. Potentially, banks could be allowed, subject to supervisory review, to set a lower value than λ if it suits their specific portfolio.

Supervisory delta	Bought	Sold
Call options	$+\Phi \left(\frac{\ln \left(\frac{(P_i + \lambda_j)}{(K_i + \lambda_j)} \right) + 0.5 * \sigma_i^2 * T_i}{\sigma_i * \sqrt{T_i}} \right)$	$-\Phi \left(\frac{\ln \left(\frac{(P_i + \lambda_j)}{(K_i + \lambda_j)} \right) + 0.5 * \sigma_i^2 * T_i}{\sigma_i * \sqrt{T_i}} \right)$
Put options	$-\Phi \left(\frac{-\ln \left(\frac{(P_i + \lambda_j)}{(K_i + \lambda_j)} \right) - 0.5 * \sigma_i^2 * T_i}{\sigma_i * \sqrt{T_i}} \right)$	$+\Phi \left(\frac{-\ln \left(\frac{(P_i + \lambda_j)}{(K_i + \lambda_j)} \right) - 0.5 * \sigma_i^2 * T_i}{\sigma_i * \sqrt{T_i}} \right)$

By nature, λ is expected to change, reflecting movements in interest rates in a jurisdiction. In order to promote consistency in the implementation across the EU, the EBA considers that the regulation should set a reference value for λ . Two options could be considered:

- The λ parameters could be set in EBA RTS for each EU currency and regularly updated.
- Banks could be required via EBA RTS to reflect the market convention for the λ parameter, i.e. the λ values that are quoted on the relevant market; this would make the update of the RTS irrelevant, as the λ value would be automatically adjusted by the market for the relevant jurisdiction.

➤ **What are stakeholders’ views on the corrections to supervisory delta and on how to set the λ parameter?**

Issue: one of the main objectives of the implementation of the new minimum capital requirements for market risk is a revised boundary between the trading book (TB) and non-trading book (also referred as banking book – BB). The new boundary requirements still allow, in exceptional circumstances, the reclassification of instruments between the two books.

In the classification of instruments the following elements should be considered:

- Presumptive lists of instruments that should belong to either the TB or BB
- Presence of ‘trading intent’
- In the event of conflict between a list and the institution purpose, it is expected the list prevails
- While items in the TB presumptive list could still be included in the BB, items in the BB list should not be assigned to the TB
- In case of potential conflict of interest between the two lists, the BB criteria should prevail
- Lack of liquidity should not per se be a reason to move instruments outside the TB, e.g. illiquid CTP positions should remain in the TB

However changes in the circumstances of the position may imply a reclassification from TB to BB or vice versa, and this should occur only in exceptional circumstances. In addition reclassification of a position may be performed only under permission from the Competent Authority. It is therefore relevant to identify which are exceptional circumstances for the reclassification of positions between the two books.

Proposal: the EBA is of the view that it would be more relevant to include a notification process to the EBA of the cases where permission has been granted, including sending to the EBA the written evidence provided by the institution. This would provide a good starting point for developing Guidelines at a later stage.

➤ **What are stakeholders’ views on the exceptional circumstances that may warrant a reclassification?**

FRTB – Treatment of non-TB positions subject to FX or commodity risk

Issue: the FRTB retains the existing requirement of the market risk framework to capture FX risk and commodity risk arising from BB positions using the market risk capital requirements. While such positions should be treated as if they were held on a ‘notional’ trading desk within the trading book, no additional specifications are provided.

Proposal: in practice, the implementation of notional trading desks is not straightforward, and the EBA raises a number of issues that remain open:

- **identification and valuation of banking book positions subject to FX and commodity risk:**
 - Do banks experience any problems in identifying those positions?
 - How are the positions valued (e.g. capacity to mark-to-market), and how frequently?
- **structure, composition and qualitative requirements of notional trading desks:**
 - How many notional trading desks should be allowed (e.g. one for FX positions and one for commodities positions)?
 - May notional trading desks incorporate also trading book positions?
 - Are there qualitative requirements for trading desks that should NOT apply to notional trading desks?
- **application of the quantitative IMA requirements to notional trading desks:**
 - Should backtesting and P&L attribution requirements NOT apply to notional trading desks?
- **What are stakeholders’ views on how to determine the own funds requirements for market risk for non-trading book positions subject to FX or commodity risk and the implementation of notional trading desks?**

FRTB – Residual risk add-on (RRAO)

Issue: the residual risk add-on (RRAO) aims at capitalising risks stemming from ‘exotic underlyings’ or ‘other residual risks’ that are not covered in the Sensitivity-based Method (SBM) or default risk charge (DRC) under the Standardised Approach. It is therefore relevant to specify in more detail what is an exotic underlying and which instruments are exposed to other residual risks.

Proposal: The EBA suggests that instruments that (i) reference an exotic underlying or (ii) bear other residual risks to be identified on the basis of the definitions set out in points (d) and (e) of paragraph 58 of the FRTB and to be transposed in either the level 1 text or in the RTS:

- (i) An instrument references an exotic underlying where its underlying exposure is sensitive to risk factors not captured under either subsection 1 of Section 3 or paragraph 1 of Article 325w;
- (ii) Instruments bearing other residual risks shall include:
 - a. instruments subject to the vega and curvature risk own funds requirements set out in Section 2 whose payoffs cannot be perfectly replicated as a finite linear combination of plain vanilla options referencing a single underlying;
 - b. securitisation positions and n-th-to-default credit derivatives assigned to the CTP in accordance with Article 104(7), excluding positions assigned in accordance with Article 104(9).

In addition the EBA should keep the possibility to address via RTS unexpected cases, either unforeseen by the definitions or where those definitions fail to ensure a sufficient level of harmonisation or clarity. This would allow the EBA to **both include or exclude** particular sets of instruments from the RRAO capital charge.

In particular, the EBA could develop in the RTS:

- i. a (non-exhaustive) list of instruments that would be considered in the scope of the RRAO, or
- ii. a set of criteria that would help to identify such instruments, or
- iii. a combination of a list and criteria

FRTB – Residual risk add-on (RRAO) (2)

Proposal non-exhaustive list of instruments that would be considered in the scope of the RRAO (in addition to those captured by the definitions for instruments subject to RRAO):

- (a) Path-dependent options
 - (b) Forward start options
 - (c) Compound options
 - (d) Chooser options
 - (e) Binary options or options with discontinuous payoffs, including, for example, digital options
 - (f) Shout options
 - (g) Best-of options and worst-of options
 - (h) Bermudan options
 - (i) Quanto options
 - (j) Multiunderlying or basket options with delta sensitivities of different signs.
 - (k) Options subject to behavioural risk, i.e. depending on the behaviour of agents, which may be affected by factors other than pure financial gain, such as elements related to remaining maturity and size of the loan, demographical features and/or and other social factors. In that case, a residual risk charge will apply only:
 - when the option lies with a retail client;
 - where a significant amount of these instruments with prepayment risk is held in the trading book;
 - when the behavioural risk for those instruments is considered material (the materiality of behavioural risk would be assessed based on the criteria embedded in the guidelines on corrections to modified duration for debt instruments under Article 340(3) of Regulation (EU) 575/2013).
- **What are stakeholders' views on the instruments that should be (or should not be) in the scope of the RRAO and on the approaches considered to develop the RTS?**

Issue: to ensure harmonised application of the revised market risk standards, it is important to specify how liquidity horizons shall be determined under the IMA, including:

- (i) a ‘mapping’ of trading book positions to risk factors**
- (ii) categorisation of liquid currencies for the Interest Rate category
- (iii) categorisation of liquid currency pairs for the FX category
- (iv) definition of large and small capitalisation for equities

Proposal:

- (i) Mapping risk factors to risk factor categories and subcategories of Table 2 of Article 325be(7) of the CRR2 proposal is a key step in the assignment of a liquidity horizon to each risk factor.

Since Table 2 of Article 325be(7) is already quite specific, there may be little added benefit from increasing the risk factor granularity by adding further subcategories to all existing subcategories. At the same time, it is not possible to come up with a mapping of all possible risk factors to the broad risk factor categories and subcategories.

The mapping could be achieved by:

- increasing the granularity of some risk factor categories as well as some subcategories in the CRR2 table, specifying for these new elements the corresponding liquidity horizons/length of liquidity horizons;
- prescribing some specific rules for mapping risk factors to already established risk factors categories or giving further guidelines for some type of risk factors.

FRTB – IMA liquidity horizons (2)

Issue: to ensure harmonised application of the revised market risk standards, it is important to specify how liquidity horizons shall be determined under the IMA, including:

- (i) a ‘mapping’ of trading book positions to risk factors
- (ii) categorisation of liquid currencies for the Interest Rate category**
- (iii) categorisation of liquid currency pairs for the FX category**
- (iv) definition of large and small capitalisation for equities

Proposal:

(ii/iii) The most liquid currencies for the Interest Rate risk category were specified in the FRTB standards based on the 2013 triennial BIS survey on OTC interest rate derivatives. Specifically, those currencies for which net OTC interest rate derivative contracts with an average daily turnover of more than USD 30 billion were observed were classified as ‘liquid’ in the FRTB standards.

Similarly, the most liquid currency pairs are established based on the 2013 triennial BIS report of global foreign exchange market turnover. In this case currency pairs with an average daily turnover of more than USD 45 billion were classified as ‘liquid’ in the FRTB standards.

The DP suggests to use the same data from the triennial survey to select the most liquid currencies and currency pairs but it is questioned the level of the threshold to be used in the context of EU markets and the frequency of this assessment.

It is also discussed the possibility of allowing the ‘triangulation’ of liquid currency pairs to form additional liquid currency pairs (e.g. if USD/BRL is liquid and so is USD/EUR, then EUR/BRL is deemed liquid by way of triangulation).

FRTB – IMA liquidity horizons (3)

Issue: to ensure harmonised application of the revised market risk standards, it is important to specify how liquidity horizons shall be determined under the IMA, including:

- (i) a ‘mapping’ of trading book positions to risk factors
- (ii) categorisation of liquid currencies for the Interest Rate category
- (iii) categorisation of liquid currency pairs for the FX category
- (iv) definition of large and small capitalisation for equities**

Proposal:

(iv) Regarding the distinction between large and small capitalisation for equities, the EBA has conducted some empirical analysis to assess whether or not the threshold of USD 2 billion set out in the FRTB standards is appropriate for EU markets, and the tests showed that there are many differences across MS in terms of market capitalisation.

The DP suggests keeping an absolute threshold to distinguish between large and small capitalisation but potentially opens the door to also using relevant national indexes to make this distinction. Following this approach, entities belonging to one of those national indexes could automatically be considered large caps.

Another option would be to leverage on the ESMA ITS on main indices and recognised exchanges pursuant Article 197(8) of the CRR. This solution would see all equities in the indices provided by ESMA to be considered large cap.

➤ **What are stakeholders’ views on the proposals regarding (i) the ‘mapping’ of trading book positions to liquidity horizons, (ii/iii) the categorisation of liquid currencies for the IR and FX category, and (iv) the definition of large/small cap?**

Issue: under the FRTB, backtesting will carry on relying on actual and hypothetical P&L while the new P&L attribution (PLA) test - aimed at assessing the completeness of risk factor coverage and the accuracy of valuation functions used as part of risk models - will be based on the comparison of the hypothetical P&L and the risk-theoretical P&L. Clarifying the definitions of those three different P&Ls is a prerequisite for a smooth implementation of the new IMA under the revised market risk framework.

Proposals:

- Due to still ongoing discussions on the detailed specification of the PLA test requirements, the DP does not discuss for the time being the exact nature of the test that could be performed, or the extraordinary circumstances under which an institution may be permitted to carry on using its internal models despite not satisfying backtesting or PLA requirements.
- The definition of hypothetical P&L is considered to be identical for both backtesting and PLA tests.
- The DP put forward proposals related to the calculation and composition of the hypothetical P&L, actual P&L and risk-theoretical P&L (see next slide)
- The DP discusses the issue related to the definition of ‘time effect’ and of ‘Net Interest Income’ (NII), and three options are considered:
 - **Option 1:** use the generic term ‘P&L due to the passage of time’, include the passage of time in actual P&L and exclude the passage of time from the hypothetical P&L
 - **Option 2:** use a generic term for the ‘P&L due to the passage of time’, include the passage of time in the actual P&L and to make the time effects consistent (i.e. included or excluded) in both hypothetical and risk theoretical P&L
 - **Option 3 and 3bis:** define NII and exclude it from both actual and hypothetical P&L. The rest of the time effect (i.e. time effect after removal of the NII) would be included in the actual P&L. For the hypothetical P&L, two variants could be considered, the inclusion of the time effect after removal of the NII in the hypothetical P&L (Option 3), or consistency between hypothetical and risk-theoretical P&L (Option 3bis), like in Option 2.

FRTB – Backtesting and P&L attribution requirements (2)

	Actual P&L (for backtesting)	Hypothetical P&L (for backtesting & PLA test)	Risk-theoretical P&L (for PLA test)
<i>Intraday trading</i>	Included	Excluded	Excluded
<i>P&L due to the passage of time</i>	Included	Consistently included or excluded	Consistently included or excluded
<i>Fees and commissions</i>	Excluded	Excluded	Excluded
<i>Pricing models & risk factors</i>	Should be computed using the same pricing models as the ones used to compute the daily P&L, including all the risk factors used by the F/O. NMRF should be included	Should be computed using the same pricing models as the ones used to compute the daily P&L, including all the risk factors used by the F/O. NMRF should be included	Should be computed using the risk factors and valuation engines of the risk model. It takes into account all risk factors that enter the risk management model (i.e. risk factor inputs of the ES and NMRF)
<i>Systematic exclusions of Valuation Adjustments (VAs)</i>	<ul style="list-style-type: none"> - VAs for which a separate regulatory capital treatment has been specified (e.g. CVA) - VAs which are deducted from CET1 (e.g. AVAs) 	<ul style="list-style-type: none"> - VAs for which a separate regulatory capital treatment has been specified (e.g. CVA) - VAs which are deducted from CET1 (e.g. AVAs) - VAs that are updated at a less than daily frequency - VAs which cannot be calculated at desk level are only considered at ‘top of the house’ level 	Should be identical to those for the hypothetical P&L
<i>Criteria for inclusion of Valuation Adjustments (VAs)</i>	<ul style="list-style-type: none"> - All VAs that are related to market risk, irrespective of their frequency’s calculation, unless agreed with the CA. However VAs not calculated at desk level would only be included for backtesting at the ‘top of the house’ 	<ul style="list-style-type: none"> - VAs updated daily and not excluded above, unless agreed with or provided by the CA - VAs taken into account in the daily VaR 	Should be identical to those for the hypothetical P&L

➤ **What are stakeholders’ views regarding the calculation and composition of hypothetical, actual, and risk-theoretical P&L?**

Issue: when a risk factor has been identified as ‘non-modellable’ it has to be capitalised, outside the Expected Shortfall (ES) and capitalised separately producing a capital charge referred to as ‘stressed scenario risk measure’ (SS). The SS should be calibrated to be at least as prudent as the ES calibration used for modelled risks (i.e. a loss calibrated to a 97.5% confidence threshold over a period of extreme stress for the given risk factor). It is required to specify:

- (i) how to calculate ‘extreme scenario of future shock’ and apply it to the non-modellable risk factors (NMRFs) to obtain the SS, and
- (ii) a fallback approach in case an institution cannot determine an extreme scenario of future shock, or if competent authorities are not satisfied with the extreme scenario of future shock determined by the institution

Proposals: Regarding:

- (i) the DP discusses a prescribed methodology (the ‘**risk factor based approach**’) to calculate this extreme scenario of future shock, which should always be seen as a minimum requirement. Institutions may opt to calculate a more severe shock to their portfolio that requires holding additional capital, where they believe the prescribed methodology is not conservative enough.

The methodology provides a conservative proxy of a 97.5% ES calculation (it is calibrated so that, theoretically, in 90% of the cases it would not underestimate the true ES value). The approach would be more conservative in cases where less data points are observed, to compensate for a potentially higher estimation error.

As an alternative methodology the DP discusses a ‘**direct loss based approach**’, where the standard deviation of the losses of each of the NMRF observation dates is calculated, which is then multiplied by a constant to obtain $ES[loss(r_j)]$ directly. However this approach could be considered to be inconsistent with the mandate in Article 325bl(4) of the CRR2 proposal.

- (ii) the DP explores two possible options for the fallback approach:
 - **Option 1:** a ‘maximum loss’ approach, consistent with the fallback approach currently in the Basel FRTB rules text. This approach may be, in principle, conservative, but the concept of a maximum loss is not well defined for a variety of instruments.
 - **Option 2:** the fallback approach prescribes a specific stress scenario, based on the risk weight of the SBM, that institutions should apply to their NMRFs to calculate the stress scenario risk measure.

(i) The ‘risk factor based approach’ to calculate the stressed scenario risk measure – methodology at a glance:

1) Compute scaled returns:

$$\text{Absolute Returns: } Ret(r_j, t) = Ret(\text{abs}, LH(j), r_j, D_t, D_{t-1}) \stackrel{\text{def}}{=} (r_j(D_t) - r_j(D_{t-1})) \times \sqrt{LH(j)/(D_t - D_{t-1})}$$

$$\text{Log Returns: } Ret(r_j, t) = Ret(\text{ln}, LH(j), r_j, D_t, D_{t-1}) \stackrel{\text{def}}{=} \ln \left[\frac{r_j(D_t)}{r_j(D_{t-1})} \right] \times \sqrt{LH(j)/(D_t - D_{t-1})}$$

2) Estimate the standard deviation of the returns as:

$$\hat{\sigma}_{Ret(j)} = \sqrt{\frac{1}{N - 1.5} \times \sum_{t=1}^N (Ret(r_j, t) - \overline{Ret(r_j)})^2}$$

3) Identify the ‘Calibrated Stress Scenario Risk Factor Range’ (CSSRFR):

$$CSSRFR(r_j(D_t)) = [r_j(D_t) \ominus CS(r_j), r_j(D_t) \oplus CS(r_j)]$$

$CS(r_j)$ is the extreme shock (‘calibrated shock’) calculated so that it is an estimate of the expected shortfall of the NMRF distribution:

$$CS(r_j) \stackrel{\text{def}}{=} C_{ES \text{ equiv}} \times \hat{\sigma}_{Ret(j)} \times \left(1 + \frac{\Phi^{-1}(CL_{\text{sigma}})}{\sqrt{2(N - 1.5)}} \right)$$

4) Compute the stressed scenario risk measure (SS) as:

$$SS_t^j = \kappa_t^j \times \max_{r_j \in CSSRFR(r_j(D_t))} [loss_t(r_j)] = \kappa_t^j \times loss(FS_t[r_j])$$

Where $loss_t(r_j) \stackrel{\text{def}}{=} PV(r_j = r_j(D_t), r_{i \neq j} \text{ fixed}) - PV(r_j, r_{i \neq j} \text{ fixed})$, and $FS_t[r_j] \stackrel{\text{def}}{=} \operatorname{argmax}_{r_j \in CSSRFR(r_j(D_t))} [loss_t(r_j)]$, and κ_t^j is a multiplicative factor specific to the risk factor $r_j(D_t)$ to cater for non-linearity in the loss function:

$$\kappa_t^j \stackrel{\text{def}}{=} \max \left[1, \frac{ES[loss(r_j)]}{loss(FS_t[r_j])} \right]$$

(i) The ‘risk factor based approach’ to calculate the stressed scenario risk measure - outstanding issues:

- Definition of the observation period for each NMRF
 - Types of data acceptable for the observations
 - Additional conditions on the data observed for the NMRF
 - Definition of the liquidity horizon $LH(j)$ for an NMRF
 - Calibration of CL_{σ} (probability of not underestimating the true standard deviation of returns)
 - Calibration of $C_{ES\ equiv}$ (subject to a floor of 3)
 - Calibration of κ_t^j
 - How to define the frequency of the review of the extreme scenario of future shocks
 - Conditions in which supervisors may be dissatisfied with the calculation leading to the application of the fallback
 - Documentation requirements
 - Reporting requirements
 - Calibration of the methodology such that it is sufficiently conservative in comparison with the IMA ES risk measure to avoid incentivising institutions to classify risk factors as NMRF
- **What are stakeholders’ views regarding the proposed methodology to calculate the stressed scenario risk measure?**

(ii) The fallback approach – option 2:

The risk weights of the SBM under the SA could be used as the basis for the prescribed shocks of the fallback approach; the delta and vega risk weights in the SBA are broadly similar to shocking risk factors.

The DP proposes Tables with prescribed shocks for risk factors. The rationale used for determining the prescribed shocks is as follows:

- For underlying (delta) and volatility risk factors, the maximum SA risk weight is used for any risk factors in that broad asset class. Where delta and vega risk weights prescribe a relative shock of 100%, the downside shock is adjusted to be less severe.
- For ‘other’ risk factors, the maximum of delta and volatility stress scenarios for the corresponding broad risk factor category is proposed.

The values presented in the tables in Annex 2 of the DP will be further calibrated against the quantitative results of the methodology under point (i), to ensure that the fallback solution is consistently more conservative.

Similarly as in the methodology to be employed for the purposes of point (i), institutions using the fallback approach may opt to consider a more extreme stress scenario where they believe the shock is inadequate.

- **What are stakeholders’ views regarding the fallback approach to calculate the stressed scenario risk measure?**

Other implementation issues

FRTB – Revisions to RTS on assessment methodology and model changes: all types of internal model approaches should be covered by the revised RTS on assessment methodology, in particular the internal default risk model. In this context, there would be no need to issue Guidelines on the internal default risk model, as this would be directly addressed in the RTS on assessment methodology.

Ideally, discussions on revisions to the RTS on assessment methodology should start as soon as the rules are stable, so that the new models are approved according to updated, harmonised RTS. In contrast, revisions to the RTS on model extensions and changes could be dealt with once the RTS on assessment methodology have been revised.

FRTB – RTS on PDs and LGDs under Internal Default Risk Model: the current RTS on assessment methodology published on November 2016 inter alia set out requirements for the IRC model. It is proposed that these RTS on PDs and LGDs be directly covered under the RTS on assessment methodology that will be revised, as is the case currently.

FRTB – Report on appropriateness of the level of own funds requirements for market risks: the EBA is requested to produce, 2 years after the date of application of the CRR2, a report on the impact of the application of the FRTB SA and IMA, as well as on the opportunity to change the calibration of these approaches. Following this, and dependent on the international regulatory developments and the specificities of the financial and capital markets in the Union, the Commission can decide to prolong or amend the 65% factor envisaged in Article 501b(1) of the CRR2 proposal.

FRTB – Simplified approaches to calculate market risk capital requirements: following the publication of the EBA Response to the European Commission’s CfA on SA-CCR and FRTB published in November 2016, the Commission introduced in its CRR2 proposal a new threshold of EUR 300 million below which the current SA (which is renamed Simplified SA under the CRR2 proposal) may be used.

In June 2017 the BCBS consulted on the reduced sensitivities-based method (R-SbM). In this document, the BCBS proposed a new approach to be used as a simplified alternative for calculating capital requirements for market risk under a threshold to be defined, or a recalibrated version of the Basel II standardised approach to market risk. **In line with the view expressed in the Response to the Commission’s CfA, the EBA reiterates its preference for a recalibrated version of the current SA.**

For the recalibration itself, the EBA considers that the recalibration of the current SA should be carried out based on the FRTB SA, by simply applying a scalar at the risk class level, with a view to keeping a reasonable capital incentive for banks – especially the ones close to the threshold – to move towards the FRTB SA.

➤ What are stakeholders’ views regarding the other implementation issues?



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