BCBS Consultation Paper

Revisions to the minimum capital requirements for market risk

June 2018

Industry Response

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20 June 2018

Mr. William Coen
Secretary General
Basel Committee on Banking Supervision
Bank for international Settlements
CH-4002 Basel
Switzerland

Re: Consolidated Response to the revisions to the minimum capital requirements for market risk (FRTB)

Dear Mr Coen,

The International Swaps and Derivatives Association, the Global Financial Markets Association and the Institute of International Finance ("the Associations") welcome the opportunity to provide comments on the latest Basel Committee on Banking Supervision (BCBS) consultation paper (CP) on the Fundamental Review of the Trading Book (FRTB).

We would first like to sincerely thank the BCBS and its Market Risk Group (MRG) for their continued engagement with the industry, as well as their consideration of the Quantitative Impact Study (QIS) feedback, resulting in this targeted consultation and required revisions to the FRTB standard. The changes proposed in the CP improve the standard's operational robustness, mitigate potentially adverse impacts, and address many of the issues with the initial calibration of the FRTB standard particularly for the standard rules.

We also very much appreciate the BCBS's work on revising, and significantly improving, the methodology for the profit and loss attribution test (PLAT). The proposals to enhance the PLAT are demonstrative of the constructive engagement between the MRG and the industry over the past year. The industry believes that continuing such engagement in the months ahead can lead to further enhancements to the market risk standard, and industry is pleased to present its views and recommendations on these matters.

In relation to the PLAT, the industry would question the need to determine the exact thresholds now as opposed to calibrating them based on real portfolio data in order to ensure their true effectiveness before the framework goes live. We re-iterate our recommendation to allow for a two-year implementation period, which should be followed by two years of real data monitoring to conclude the threshold calibration.

The industry also appreciates the alternatives proposed in the CP regarding the non-modellable risk factor (NMRF) calculation, including the introduction of Alternative 2 for bucketing risk factors for the modellability assessment, and the alternative capitalisation for idiosyncratic equity risk factors. However, based on additional QIS work, the capital associated with the NMRF framework is still excessive, and to such an extent that it will significantly disincentivize banks from building the internal models and providing liquidity in products that will be most impacted by the NMRF framework. We therefore firmly believe that significant further revisions are needed to prevent this component of the framework from becoming disproportionate and overly punitive.

In order to inform our comments regarding the anticipated impact of the FRTB rule, the industry has conducted an in-depth QIS with input from 33 globally/ locally significant financial institutions[1] who have considerable trading book activities. Overall, the aggregate results of the study indicate that FRTB capital for the trading desks under the IMA is 3.21 times larger than the capital based on current IMA rules. The increase is mainly driven by the NMRF capital charges under the new rules, which is 4.66 times the Expected Shortfall (ES) component of the FRTB IMA capital.

These results demonstrate a significantly higher NMRF impact than in previous industry QIS results, where banks relied on a number of simplifications and assumptions due to data and infrastructure limitations. This QIS reflects a more comprehensive analysis undertaken on NMRFs, including modellability assessments using the appropriate granularity of risk factors and use of available internal and vendor transaction data. To highlight a few points in the study:

- the Rates and Equity asset classes contribute 37% and 24% of the NMRF capital respectively.
- NMRF capital is reduced by 13% based on the CP proposal for equity idiosyncratic NMRF (Box 3); and
- by 50% under the alternative aggregation approach included in the industry response for non-credit/equity NMRF assuming a correlation value of 0.5;
- and by 21% assuming a 3-in-90 observations max gap rule for the modellability test.

Further results of this exercise will be provided separately, due to confidentiality and public disclosure restrictions. We will refer to this separate submission as required throughout this comment letter.

In this response to the CP, the industry present a comprehensive overview of all the key areas across the standardised and the internal model approaches and our recommendations where further consideration is warranted to avoid hampering market making activities that have a significant role in the development and smooth operation of the global capital markets. We would also re-iterate our recommendation for the exemption of sovereigns from the floor in the trading book in order for the calibration of sovereign risk to be consistent across the trading and banking book boundary.

In the following section, we summarise our key recommendations, accompanied with our reasoning, while bearing in mind the BCBS's objectives. We also note that we have not included any comments for the securitization section of the Standardised Approach, despite its calibration remaining a significant industry concern, as we understand this will be evaluated in a separate workstream.

1. Standardised Approach

The revised Standardised Approach (SA) addresses many shortcomings of the earlier standard, which the Committee has acknowledged was more conservative than intended. The industry strongly supports the proposals to increase the risk sensitivity of the standardised approach and to make it a credible fall-back to the IMA.

The industry welcomes proposals in the CP addressing several important elements, including risk weights, FX triangulation, correlation scenarios, curvature shocks and curvature aggregation. The proposals on structural FX are also welcomed, however the industry believes that further changes are necessary to ensure that supervisory authorities interpret the rules consistently, so that banks can deploy best practices in managing their structural FX exposures.

[1] The study is based on the banks' BCBS monitoring submissions and additional data on areas where the templates did not have sufficient granularity. A subset of the banks contributed to NMRF analysis which included input from Bloomberg, ICE, Reuters, CME and LSEG.

Our additional recommendations are based on the principle that FRTB should be calibrated to deliver a broadly unchanged level of capital across the industry (weighted average or aggregate bank basis) and in addition, SA should be approximately 1.5x as conservative as the IMA. This principle is derived from both our discussions with members of the BCBS and their public comments, and would avoid further reduction in bank market-making capacity, along with ensuring that the SA remains a credible fall-back to IMA.

We strongly suggest that any amendments to the standard, should be subject to review during the continuous Basel monitoring exercises (as opposed to a single QIS) and we encourage the BCBS to address any issues that are identified through the coherence and calibration work programme.

As mentioned previously, the Industry's recommendations fall into 2 categories: those where the CP specifically sought feedback and those that have not been addressed expressly but nevertheless warrant attention. We therefore list below our key priority areas for both categories below.

FX Curvature

The CP acknowledged the potential double count effect in the FX curvature calculation where none of the underlying currencies of a particular FX instrument is the institution's reporting currency. While the industry welcomes the proposal in the CP, we re-iterate our previous recommendation to address the FX asymmetry with respect to reporting currency by allowing institutions to calculate its FX curvature capital in an alternative currency, and then convert it to the reporting currency using the spot rate and in addition recommend an enhancement of the 'Box 1' proposal.

As part of the QIS exercise, the foreign exchange risk SBM curvature charges are reduced by 27% under the CP proposal in Box 1 (X=2).

In addition, the industry believes that a few further enhancements to the standardised approach framework are critical to avoid any hampering of global capital market activities. These recommendations deal with the elements of:

- *Capture of positive gamma;*
- *Curvature for Linear Instruments;*
- *Defaulted Position Capitalisation;*
- *RRAO on interest rate yield curve options and variance derivatives;*
- *Correlation Trading Portfolio (CTP) Capital treatment*; and
- *Risk Weight treatment of Covered Bonds*.

The comment letter provides detailed explanation of each of these elements, the reasons they need to be addressed and the rationale behind industry's recommendations.

2. Internal Models Approach

Profit and Loss Attribution (PLA)

The industry welcomes the revisions to the PLA test and significant enhancements to the framework including more appropriate treatment of data alignment, improved test frequency requirements, revised test metrics and an enhanced Penalty Function.

The CP included two proposals in regard to the model eligibility test metrics - Spearman Correlation with either Kolmogorov-Smirnov (KS) or Chi-squared. The industry conducted a survey to collect members feedback and the results were marginally in support of the KS test, but we evidenced strong support for the Chi-squared metric as well.

It is crucial that the determination of appropriate thresholds for PLA is based on tests using real portfolios. Therefore, the industry strongly recommends that the regulators review the thresholds once banks are able to develop the system capabilities to reliably produce risk theoretical and hypothetical P&L.

In addition, the industry remains concerned about the lack of a ceiling in the proposed IMA aggregation formula and offers two alternatives to address the industry concerns.

Non-Modellable Risk Factors (NMRF)

NMRF is the primary concern and source of uncertainty in the FRTB framework as NMRFs could account for a disproportionate amount of the market risk capital requirements under internal models and generate significant volatility in the capital requirement. If the methodology is not appropriately defined, it could result in significant overcapitalisation, poor capital alignment with the underlying risks and will ultimately undermine the viability of IMA. Based on the latest industry analysis, it seems that the conservativeness of the NMRF charge is driven by all aspects of the framework i.e. identification, capitalisation and aggregation.

NMRFs will result in a very large and volatile capital which will exhibit pro-cyclicality (since the number of NMRFs will increase in periods of stress and lower liquidity), leading to capital pre-positioning. In addition, as underlying portfolios change, the artificially induced volatility of the NMRF capital charge will mask changes in RWAs driven by changes in the level of economic risk. Clearly, such an outcome leads to economic inefficiency due to idle capital and/or misallocation of resources as banks allocate the capacity elsewhere despite client demand.

In order to calibrate NMRF capital appropriately, there will have to be "degrees of freedom" to control the contribution of NMRFs to the total IMA capital charge. We recommend a number of different options, including a simple correlation parameter that can be adjusted to allow some diversification amongst the NMRF population (i.e. for those not already assigned a zero correlation e.g. idiosyncratic risk for credit and equity).

In addition, we note the updated language in the CP on "*sufficiently liquid and observable to be amenable to modelling*". We note that liquidity is already addressed very specifically in the liquidity horizon rules, and the results of the risk factor eligibility test (RFET) will not always be congruent with the horizon rule. Other sources of data, used in arriving at observability for positions, should be folded into the permitted evidence. As an example, firms have developed valuation and independent price verification processes that can be leveraged for this purpose, rather than narrowly focusing on one of many measures of liquidity and observability. At a minimum, we believe collateral valuation data, subject to certain constraints described herein, should be permitted as they provide good evidence of

"observability". As an additional degree of freedom, we also note the introduction of Annex D which, if amended according to our recommendations, could provide to supervisors a useful tool and flexibility to address unexpected results of the RFET process to ensure risk factors that should have been classified as modellable are designated properly.

Given the uncertainty in the outcome of NMRF, both in terms of day one impact, and how NMRF will fluctuate over time, we urge the Committee allow for these degrees of freedom to mitigate against unanticipated occurrences and unintended consequences that may arise at implementation or through the economic cycle.

Bucketing

The CP proposed that one of two different bucketing approaches should be used as part of the RFET. The industry is supportive of the bucketing approach and provides detailed recommendation that leverages upon alternative two as proposed in the CP with necessary enhancements.

Seasonality

As we have previously documented, the RFET as currently prescribed results in a significant number of risk factors failing to meet the requirement and therefore excluded from IMA. In the industry response we provide available evidence that points to the necessary changes to mitigate this impact.

3. Scope of market risk capital requirements

The CP addresses a number of outstanding conflicts in the January 2016 text, which mandated the banking book list of instruments as the start of the trading book classification process. However, the industry remains concerned about the operational requirements, complexity and potential rigidity in instrument designation, as well as downside effects in funding and liquidity activities resulting from the revised boundary.

There are still a number of areas where we believe further change, or additional guidance would be required

- Treatment of structural FX positions;
- Equity investments in funds;
- Net short credit/ equity in the Banking Book;
- Underwriting in securities;
- ALM mandate; and
- Trading desk requirements.

4. Simplified alternative to the standardised approach

A key objective of the BCBS proposal is to support those jurisdictions that wish to apply the Basel framework, thus furthering international harmonization of prudential capital standards. The industry recommends that the Simplified Alternative can be applied at a legal entity level within each jurisdiction, which will encourage participation in, and development of, emerging markets. Further the industry believe that the indicative criteria are un-necessary and should be deleted, because the conservatism of the Simplified Alternative, and the supervisory discretion, provide adequate safeguards to regulators. We also stress that the scaling factors are very conservative and a downward revision is required to avoid creating a significant deterrent to small scale trading operations.

Conclusion and Next Steps

The Associations welcome the significant progress achieved in the CP in improving and clarifying a number of important elements of the market risk capital rules. However, we believe that in a few key areas as described above, further revisions are needed to better align capital with the economic risk and to enable banks to continue serving their customers as market makers across a variety of capital markets products.

We appreciate the opportunity provided by the BCBS to review and provide feedback to the CP. The Associations in close collaboration with our member organisations stand ready to maintain our constructive engagement with the regulatory community and look forward to the opportunity for further constructive dialogue.

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1. Standardised Approach (SA)

The Standardised Framework has been revised to address the prior shortcomings of not being sufficiently risk sensitive. The industry strongly supports the attempts to increase the risk sensitivity of the standardised approach and to make this a credible fall-back to the internal model approach and fully support refining the framework for those selected components that are still perceived as non-risk sensitive.

1.1 Revisions to the treatment of liquid FX pairs

The industry supports the proposed revisions allowing FX triangulation to determine liquid FX pairs not explicitly listed in the rules. This will ensure consistency and a level playing field for delta and vega FX risk under the SA. The example cited in the latest guidelines is that of EUR/BRL which, though not explicitly in the list, should be treated as liquid given liquid FX pairs: USD/BRL and USD/EUR.

1.2 Revisions to correlation scenarios

The proposed revised specification for the low correlation scenario with the flooring element addresses industry concerns about the potential adverse impact of the January 2016 Market Risk rule. This is particularly relevant for delta basis risks which typically exhibit high correlation in scenarios driving capitalisation, based on historical observations.

1.3 Revisions to capital requirements for non-linear instruments

The industry supports the proposed revisions to:

- Apply consistent scenarios for risk factors belonging to the same bucket
- Flooring to avoid sudden jumps in curvature capital

In addition, the industry notes the Committee's proposal to explore alternative ways of applying consistent shocks, e.g. by defining "sectors". However, the industry have been unable to test the impact of the proposal and therefore do not recommend adding this condition to the rules without further validation.

1.3.1 FX Curvature

The industry continues to advocate for a level playing field in FX curvature capital charges, which in the current FRTB framework would yield different results for the same economic risk purely due to the Bank's base reporting currency.

The industry welcomes the recognition by the BCBS of the double counting issue affecting FX curvature capital charge. However, the BCBS proposal in the CP (Box 1) does not address the issue of asymmetry in the FX capital charges and could in its current form yield unintended consequences such as broken hedges.

Although the industry appreciates that the Box1 treatment is optional, a slight enhancement has been discussed among industry members wherein the division by the scalar X could be extended to all options provided additional curvature sensitivities are computed on the reporting currency itself, which could offer more comparable capital outcomes than Box1 and may somewhat alleviate the issue of broken hedges.

The industry conducted a survey that highlighted the need to address the issue related to asymmetry in the FX capital with a preference to combine this solution with an enhanced version of the Box 1 proposal presented in the CP for the double count issue. It should be noted that Box 1 or the modified Box 1 must remain optional given that the proposed treatment might not necessarily reflect internal risk management practices.

Industry Recommendation:

The industry acknowledges the proposal in the CP, but proposes to re-iterate its previous recommendation to address the FX asymmetry with respect to reporting currency, along with an enhanced version of Box 1:

1. The industry maintains its proposal to address the FX asymmetry with respect to reporting currency by allowing institutions, subject to supervisory approval, to calculate its FX curvature capital in an alternative base currency and then convert it to the reporting currency using the spot rate. This institution will need to demonstrate to its supervisor that this method provides an appropriate risk representation for its portfolio. This would allow for reduced variability in FX curvature charges and a level playing field in the FX markets among all banks

2. While maintaining the optionality of the Box 1 proposal, the industry recommends to enhance the box 1 proposal by amending the Box 1 proposal to:

   131. For FX and equity curvature risk factors, the curvature risk weights are relative shifts ("shocks") equal to the delta risk weights. For FX curvature, where none of the underlying currencies of a particular FX instrument is the reporting currency, any resulting curvature sensitivities may be divided by a scalar [X]. If a bank opts to apply this discretion, it must do so consistently for all FX instruments where none of the underlying currencies is the reporting currency. **Alternatively, and subject to supervisory approval, a bank may apply this discretion consistently to all FX instruments provided curvature sensitivities are calculated for all currencies, including the reporting currency itself.**

To capture delta appropriately in an alternative currency, the procedure would be similar to Curvature, with a simple initial adjustment to the portfolio that does not alter its FX risk profile against the reporting currency. See Appendix 1 for details.

1.4 Revisions to risk weights

The proposed reduction in SA risk weights for GIRR (20%-40%) and Equity/FX (25%-50%) is a positive development and in line with historical stress periods. The assessment to quantify the impact of the proposed revisions and to test the risk weighting ranges (low to high) as proposed in the CP forms part of the industry QIS[2].

[2] The numbers will be provided separately to regulators, due to confidentiality and public disclosure restrictions

1.5 Other clarifications: treatment of multi-underlying options and index instruments

The CP has provided additional clarifications with respect to residual risk add-on exemptions and delta, curvature and vega risk treatment for index and multi-underlying options in Annex A. The industry welcomes the additional clarification provided on the treatment of multi-underlying options and index instruments subject to a look-though approach.

1.6 Additional Items related to the Standardised Approach

The industry would like to take this opportunity to re-iterate a few remaining outstanding issues related to the SA rules and to highlight a new CTP related issue that has arisen from a recently issued FAQ. Considering the fundamental changes that institutions will have to introduce as part of the FRTB implementation, we strongly believe that the framework needs to be proportionate and risk sensitive to avoid any perverse incentives or unintended consequences especially when the banks have to decide which businesses to further invest and grow, and which businesses to contain based on capital consumption. The industry believes the below points should be addressed to avoid hampering key market making activities that have a significant role in the smooth operation of the global capital markets.

1.6.1 Curvature: Positive Gamma / Delta-Curvature disconnect:

There is a disconnect between delta and curvature capital charges for portfolios with long gamma protection, resulting in loss of hedging benefit and overcapitalisation of well hedged portfolios. It is important to note that a positive gamma hedge generates gains for both up and down moves and consequently, while we understand the desire to not introduce additional complexity, the industry has recommended a simple fix for this issue i.e. long gamma offset to delta capital charge to recognize long portfolio protection.

Industry Recommendation:

The industry proposes a simple solution of the following type to overcome this disconnect:

Adjusted delta capital = max { Unadjusted delta capital – k * curvature gains, 0 }

where k < 1, is a multiplier specified by the regulators

1.6.2 Curvature for 'linear products':

There is no option to include linear instruments alongside instruments with optionality in the curvature charge even where these instruments are part of the same trading/hedging strategy. Many banks manage their gamma risk holistically and this should be recognised in the SA. Indeed, for long-dated credit or rate instruments (such as plain vanilla rate swaps, bonds or bond future) that are commonly used for hedging, convexity embedded in the discounted cash flows constitutes a hedge which is not recognized as such in the current rules.

Industry Recommendation:

Firms should have the option to include all instruments in its curvature capital charge where they form part of a dedicated Trading and Hedging Strategy instead of only being able to include "instruments with optionality" in its curvature charge.

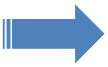
1.6.3 Defaulted Position Capitalisation:

Defaulted positions are generally traded on price (as opposed to rate/spread). For defaulted issues, price changes may not be driven by credit spreads or swap rates. Hence, the sensitivities to a change in credit spreads or swap rates may no longer be appropriate for modelling the P&L. Since the product has already defaulted the outstanding risk relates to the recovery of the cash flows and the timing of such recovery. Further, current SA rules are not very specific around capitalisation of defaulted/ price based positions:

- FRTB SA DRC rules prescribe:
  - 100% risk weight for defaulted exposures, equivalent to 100% PD for defaulted exposure
  - Either 75% LGD for senior exposure or 100% LGD for non-Senior exposures
- FRTB SA Sensitivity Based Method doesn't provide any guidance with respect to price based positions, including how to treat their recovery risk

To illustrate the issue, we provide an example below:

Notional	100
Price	10
Seniority	Non-Senior/Equity
Rating	Defaulted



JTD = Max(LGD * Market Value, 0) = Max(100% * (100*0.1), 0) = 10
DRC = Risk Weight * JTD = 100% * $10 = **$10**
SBM (Equity) = Risk Weight * Delta = 70% * $10 = **$7**
Possible regulatory interpretation that would lead to a total charge exceeding the max loss.
Total Capital = $17 or 170% capitalised compared to a market of $10

Industry Recommendation:
Defaulted products are generally only subject to recovery risk. Such positions are charged via DRC 100% RW and 75%/100% LGD. The industry recommends having only DRC charge applied.
We further recommend including a provision such as "the capital charge for an individual position may be capped at the maximum loss that can potentially incur."

1.6.4 Residual Risk Add-On on variance derivatives and interest rate yield curve options

RRAO, in general, is risk-insensitive and penalizes well-hedged portfolios. The industry re-iterates its concerns related to the double counting of capital charges, for example; volatility or variance derivatives, which are subject to the maximum 1% RRAO. Moreover, the industry is concerned with the excessive RRAO charge for interest rate (IR) yield curve options and spread options. IR yield curve options are widely used as hedging tools against interest rate curve exposure by clients such as pension funds, life insurance companies, corporates, asset managers, etc. and the RRAO charge could increase significantly their cost of hedging. We recommend revising down the RRAO charge for such instruments.

Industry Recommendation:
The industry re-iterates a simple solution:
1. For variance derivatives: a reduction of RRAO charges to 0.1%
2. For interest rate yield curves options: a reduction of RRAO charges to 0.01%, defining a risk-sensitive notional, or an allowance to recognize positions that materially hedge the price risk of the exposure subject to RRAO.

1.6.5 CTP Capital treatment

The Correlation Trading Portfolio (CTP) is a credit business focused on issuance of synthetic credit securitizations, with the aim of providing vanilla credit market returns to investors, tailored for risk appetite – either leveraged for a higher risk/return profile (junior tranches) or de-leveraged for lower risk/return (senior tranches). Unlike traditional securitization markets, synthetic securitizations use market traded CDS in the underlying collateral pool, and so can be valued and risk managed based on the underlying risk drivers.

The benefits of this market include greater liquidity for the CDS market, and increased investor base for the corporate debt market, and ultimately, improved funding conditions for corporate issuers.

The current rules produce uneconomic overall capital outcomes, for both a) DRC and b) SBM, and will introduce contrary risk management incentives as capital is not aligned with risk exposure.

a. DRC (Jump-To-Default and Default Risk Weight)

The industry is concerned with the current proposed treatment of the CTP Default Risk Charge calculation and outstanding methodology flaws that do not reflect the risk of these exposures.

i. Computation of Jump-to-Default: JTD

The FRTB rule incorporates the ability to decompose tranches into single name exposures to calculate JTD at the single name level which is welcomed. Ability to decompose tranches to single name exposures is hugely important to enable a risk sensitive capital calculation – without this, there is no offset from hedges, and hedging activity is actually capital additive. However, it is not clear how the following should be interpreted nor implemented in practice (extract from paragraph 169)

"In such cases, the decomposition into single-name equivalent exposures must account for the effect of marginal defaults of the single names in the securitisation, where in particular ***the sum of the decomposed single name amounts must be consistent with the undecomposed value*** *of the securitization"*

It is not clear what this means, or specifically how this should be achieved. Industry discussions produced two possible interpretations, both of which result in uneconomic and risk insensitive capital outcomes:

1. Scale all single name JTD's proportionately such that their sum is equal to the tranche notional. Examples in Appendix 2 (A2.1) demonstrate that such scaling of JTD's can result in:
    a. Zero capital for a portfolio with substantial default risk
    b. Non-zero capital for a portfolio with no default risk

2. Only allocate JTD to single names until tranche notional is exhausted. For junior tranches, this would involve only capitalising the default risk on a handful of the names in the underlying portfolio – for a 0-3% equity tranche on a 125 name portfolio, 6 defaults will exhaust the tranches. Which names should the JTD be allocated to, and in which order? Choosing any one of them is an arbitrary choice, and leaves the majority of the risk uncapitalised. Finally, we note that this interpretation is inconsistent with the approach taken everywhere else in FRTB-SA, where all sensitivities (Delta, Vega, Curvature and JTD) are always calculated in isolation, and not conditional on any other event.

ii. Default Risk Weight & Buckets

Paragraph 170 details the risk weights to be applied, and prescribes the use of banking book risk weights

for tranches. However, this is not possible for tranches which have been decomposed to single name JTD's under the approach outlined in paragraph 169 (a). There is no guidance on which Risk Weight to apply to decomposed single name JTD's. There are two possible approaches here:

1. The risk factor is the default event of a single name reference entity, which is the same risk factor as in the non-securitisation framework – so it is appropriate to use the same non-securitisation risk weights. This approach is risk sensitive, and applies a consistent risk weight to the same risk factor across tranches and non-tranches.
2. Apply the banking book risk weight of the tranche to all the decomposed single name exposures in that tranche. This approach seems deeply flawed, as the same risk weight will be applied to different names of different credit quality if they are in the same tranche. Yet the same name will get different risk weights in different tranches – when the risk factor is the same. Further, the risk weights will differ from those used on the same names in non-tranches. This inconsistency will produce uneconomic capital outcomes.

For the reasons outline above, the industry proposal is to use the same risk weights as in the non-securitisation framework on decomposed single name exposures.

Paragraphs 171 – 172 detail the buckets to be used for index products only. However, there are no instructions provided for bespoke tranches, NTD baskets, or single name CDS.

Paragraph 172 "*Bespoke securitisation exposures should be allocated to the index bucket of the index they are a bespoke tranche of*" seems to fundamentally misunderstand what a bespoke tranche is; it is a tranche based on a bespoke portfolio of names, and is unrelated to any index.

In general, there are no instructions on how to apply risk weights and bucket decomposed single name exposures.

Industry Recommendation for changes to DRC:

The industry therefore suggests a simple rewrite, with no introduction of new concept or complex formula but simply clarifying:

1. CTP securitisations should be decomposed to single name equivalent exposures;
2. The default risk weight as described in the non-securitisation methodology should be applied; and
3. Bucketing and capital charge calculation should follow the non-securitisation approach.

It would resolve the issues listed above, and remove the need for complex replication/offsetting rules. Further, as the risk factors (corporate/sovereign default) are the same risk factors as in the non-securitization DRC, following the same methodology is appropriate.

The industry's proposed rewrite of the text can be found in Appendix 2

Using the previous examples, we can observe consistent and economic capital charges calculated – see Appendix 2 (A2.2) for details.

b. SBM

i. Delta

Response to FAQ 1.6 Q2 (Appendix 4) seems to imply that for the purpose of CSR, indices and index tranches may not be decomposed in single name exposures while bespoke tranches may.
It would imply that:

- Netting of sensitivities from almost identical index positions is not allowed. For example, in CDX NA IG, there are only 2 different names between series 28 and 29 and therefore not recognising any netting benefits is overly conservative. Similarly, netting of sensitivities stemming from non-index products with sensitivities of index products is prevented, despite there generally being a high degree of overlap in the underlying single names of the bespoke tranches and the corresponding index.
- This fundamentally breaks the hedge relationship between index and non-index products and across indices with only minor differences in composition to the extent that risk-reducing hedging activity increases capital charges.
- As per paragraph 63(a), the risk factor is defined along two dimensions, the "relevant underlying credit spread curves" and vertices. This language is consistent with 60(a) for non-securitization risk factors where clearly the relevant underlying credit spread curve refers to the constituent. As such, the FAQ response appears to contradict the definition of the CSR CTP risk factors in paragraph 63(a).
- The bucket to which an index product should be mapped to is unclear for risk weight and aggregation purposes.

ii. Curvature

Please refer to Section1.6.2 in relation to our broader curvature recommendations. Similarly, CTP are affected by the exclusion of convexity from so-called "linear" instruments such as CDS from the curvature charge, which results in a punitive one-sided capital charge. The convexity on CDS can be a significant component of the non-linearity of the CTP.

At the extreme, "Full Capital Structure" trades (which are exact replications of a portfolio of CDS due to buying all the tranches in a structure) receive a curvature charge, **while the exactly replicating hedge portfolio does not.**

iii. RRAO

In addition to the general points on RRAO around the lack of risk-based offset, the CTP suffers adversely on "Full Capital Structure" trades where a collection of tranches (the "Full Capital Structure") receives an RRAO charge despite being a replication of a portfolio of Vanilla CDS.

In particular, where the Full Capital Structure of tranches is fully hedged with the replicating Vanilla CDS portfolio, this creates a zero-risk position, but one that **still produces a significant RRAO** charge.

Moreover, such positions are **explicitly excluded from other regulatory measures, such as the Leverage Ratio**.

Industry Recommendations for changes to SBM and RRAO:

1. Delta CSR - To maintain a consistent framework, the industry suggests continuing to allow decomposition and netting for index products, consistent with the definition of CTP risk factors.
2. Curvature: The industry reiterates its recommendation in section 1.6.2, whereby firms should have the option to include "linear" instruments in its curvature charge where they form part of a dedicated Trading and Hedging Strategy alongside "instruments with optionality".
3. RRAO: Following the spirit of other regulatory measures, the industry proposes that where a position of a collection of tranches is economically equivalent to index or single name CDS position(s) on a non-tranched pool, then those tranches should not be subject to the RRAO charge.

1.6.6 Covered Bonds treatment – Risk Weight selection

A covered bond is structured as such that it benefits from (i) the credit quality of the debt issuer and (ii) enhanced credit protection versus senior unsecured bonds. Historically, covered bonds have exhibited tight credit spreads and low volatility. Furthermore, covered bonds are characterized by a

double recourse to both the cover pool and issuer, ring-fenced assets in case of insolvency, and a strong legal framework which reinforces their strong rating and market liquidity, which has proven to be resilient in times of market stress. This reflects the additional credit enhancements through guarantees and/or over-collateralisation, making them significantly less risky than both RMBS and the unsecured debt of their issuers.

We strongly believe that the current capital treatment is excessive and in multiples of the largest historical credit spread moves. If holding inventories in these instruments is disincentivised by disproportionate capital requirements, it would most likely lead to reduction in banks' ability to provide liquidity to this important mortgage funding market. This in turn would reduce the liquidity of the overall market, reduce overall economic lending capacity and increase cost of borrowing for end-users.

	99% Percentile 40-day credit spread move	Largest Historical 40-day credit spread move	SBA Risk Weight	SBA RW vs Largest Historical move	2014 Market size (G€)
German Covered Hypo	43bp	58bp	400bp	6.90x	402
German Covered Oeff	45bp	63bp	400bp	6.35x	
Danish Covered	43bp	82bp	400bp	4.88x	375
French Covered Str	42bp	58bp	400bp	6.90x	325
French Covered Leg	58bp	70bp	400bp	5.71x	
Spanish Covered Sing	131bp	144bp	400bp	2.78x	308
Spanish Covered Pool	116bp	138bp	400bp	2.90x	
Swedish Covered	37bp	73bp	400bp	5.48x	210
Italian Covered	90bp	114bp	400bp	3.51x	131
Irish Covered	143bp	158bp	400bp	2.53x	38
Portuguese Covered	235bp	312bp	400bp	1.28x	34

As exhibited on the table above, for the largest European covered bonds markets; Germany, Denmark and France, the proposed SBA risk weight at 400bp is **several times** the 99% percentile and largest 40-day credit spread moves.

Industry Recommendation:

The industry continues to support a more risk sensitive approach with the highest credit quality starting at 75bps and scaling up to 200bps for the lowest credit quality within the investment grade band.

2. Internal Models Approach (IMA)

2.1 P&L attribution (PLA) test

The industry welcomes the new proposals for the PLA test which include significant enhancements to the framework:

- Allowing amendments to the input parameters and subsequent alignment of data to be used between HPL and RTPL;
- The frequency of the test updated to run quarterly with an updated observation window of the preceding 12 months;
- Revised test metric for the model eligibility test;
- The introduction of a Penalty Function to reduce volatility of capital requirements.

2.1.1 PLA test: Input data

The industry welcomes the revisions to the definitions of the Hypothetical P&L (HPL) and Risk Theoretical P&L (RTPL) to permit the alignment of input market data to avoid issues with respect to timing and sources of data used in the separate calculations.

The industry would like to bring to the attention of the BCBS a specific topic related to the requirement that the same HPL must be used in both PLA test and the backtesting test the same HPL must be used (page 26 in the FRTB CP March 2018):

> *"The PLA assessment compares the RTPL with the HPL – the HPL used should be identical to the HPL used for backtesting purposes."*

The industry is of the strong view that this requirement unintendedly weakens the power of the PLA test, and that there is a strong case for allowing the HPL used in the PLA test to differ from the HPL used in backtesting. Before we provide our reasoning, let us recall the purpose and desired characteristic of the PLA test, as formulated in the CP:

1) *Page 26: "The PLA assessment is designed to measure the materiality of simplifications in banks' risk management models driven by missing risk factors and differences in the way positions are valued compared with their front office systems.*
2) *Page 5: "If the risk management model includes all risk factors and uses the same valuation techniques as used by the models used for the reported daily P&L, then the RTPL will match the HPL."*

In order for the PLA test to fulfil these two objectives, the industry and MRG have already agreed the need for input data alignment in RTPL and HPL, and the BCBS has incorporated it in the current CP. However, an unintended consequence of the statement "the HPL used should be identical to the HPL used for backtesting purposes" is that it could re-introduce data misalignment into the PLA test. This is because the hypothetical P&L used for backtesting purpose is the hypo P&L coming from Finance ("Finance hypo P&L"), and it can be written as follows:

Finance hypo P&L = Raw FO hypo P&L + Finance hypo P&L adjustments

where, the finance hypo P&L adjustments are fair value adjustments (VA) applied by the Finance departments within financial institutions as part of their Independent Price Verification (IPV) mandate.

These fair value adjustments by construction are not in the RTPL since they are not related to either risk factor coverage or risk pricing. Hence by requiring banks to compare "Finance hypo P&L" to RTPL in the PLA test, the desired PLA properties as stated in bullets (1) and (2) would be diminished. Consequently, the only hypo P&L that allows for a consistent comparison to the RTPL is the "raw FO hypo P&L", or in other words, the hypo P&L which is a direct output from the FO valuation models, adheres to the data alignment principle, and does not include any adjustments made by the Finance departments.

Industry Recommendation:
We recommend to amending the sentence as follows:

"The PLA assessment compares the RTPL with the HPL ~~– the HPL used should be identical to the HPL used for backtesting purposes~~**.- the HPL used need not be identical to the HPL used for backtesting purposes and can exclude adjustments made by the Bank's Finance department"**

This provides banks the possibility to use raw FO hypo P&L for PLA purposes, and continue to use Finance hypothetical P&L for backtesting purposes. From a BCBS perspective this proposal achieves the desired outcome of both the PLA test and backtesting meeting their objectives.

In addition, note that our proposal does not generate any incremental complexity. i.e. from an operational point of view it is not an issue for banks to provide both Finance hypo P&L and raw FO hypo P&L since the latter is already produced on a daily basis for internal controls and sign-off purposes .

The industry also wishes to address the additional requirements in the CP to execute the PLA test in parallel without data alignment (page 27, forth bullet):

> *"Banks must provide assessments on the effect these input data alignments would have on the RTPL and the PLA test. To do so, banks need to compare RTPL based on HPL-aligned market data with the RTPL based on market data without alignment. This comparison must be performed when designing or changing the input data alignment process and upon the request of the supervisors. "*

Industry Recommendation:
We recommend to amend the text as follows:

"Banks must provide assessments on the effect these input data alignments would have on the RTPL and the PLA test. To do so, banks need to compare RTPL based on HPL-aligned market data with the RTPL based on market data without alignment. This comparison must be performed when designing or changing the input data alignment process and upon the request of the supervisors. **Banks who can demonstrate to their local supervisor that the way they have implemented the PLA test achieves the goals of the PLA test[3] are exempted from this requirement."**

[3] The PLA assessment is designed to measure the materiality of simplifications in banks' risk management models driven by missing risk factors and differences in the way positions are valued compared with their front office systems.

2.1.2 PLA test: Metrics

The frequency at which the PLA test is to be conducted is now quarterly using the preceding 12 months of data which addresses concerns over the originally proposed monthly window for both testing and sampling.

The CP highlighted two metric proposals - Spearman Correlation with either Kolmogorov-Smirnov (KS) or Chi-squared. The industry conducted a survey to collect members' feedback and the results were marginally in support of the KS test, although we saw strong support for the Chi-squared metric as well.

These proposals have been presented and discussed by the industry using simulated portfolios which include some features of practical relevance. The portfolios used were designed to cover a wide range of performance. Preliminary analyses suggest that under many realistic assumptions KS and Chi-squared metrics behave similarly (with the current thresholds):

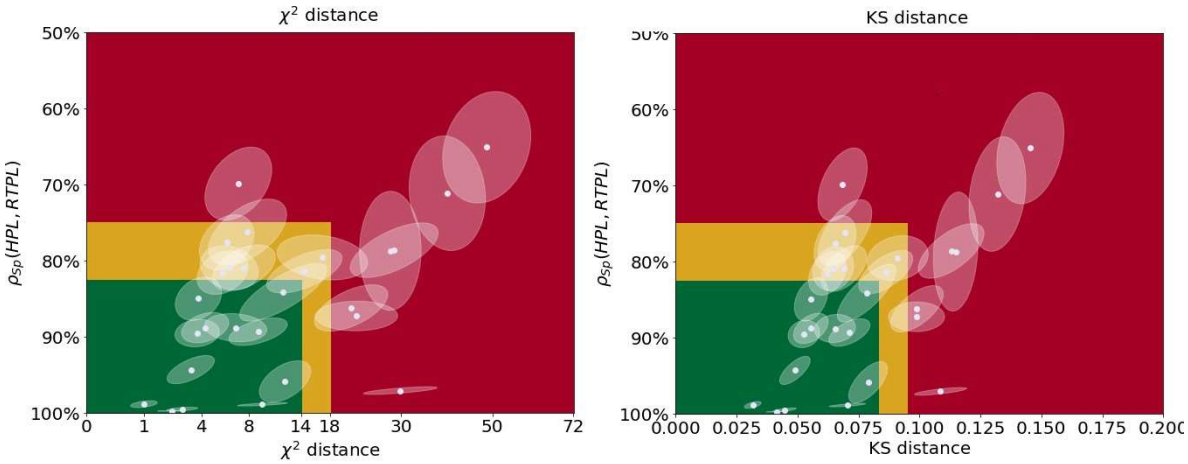


Figure 1: Results of the tests on 27 simulated portfolios constructed using realistic assumptions and no bias (HPL and RTPL are both supposed to have zero mean.) Each dot corresponds to one portfolio, and the corresponding ellipse contains around 40% of the realized metrics values (each portfolio gives varying results due to random sampling errors.)

However, it is possible to find situations where they diverge. In particular, KS has more potential to lower type II error, while Chi-Squared to reduce type I error.

More details are given here. The metrics are both affected by how correlated HPL and RTPL are and by how similar their distributions are. Here, this latter aspect is summarized in the items 'Bias' and 'Volatility over-/underestimation', respectively.

- **Correlation**: Even supposing that HPL and RTPL follow the same exact distribution, both KS and Chi-Squared metrics will not be identically zero unless HPL and RTPL are also perfectly correlated. Simulations (based on identically distributed Gaussian variables) show that as the two vectors become more and more independent, Chi-Squared becomes easier to pass. In the limit where HPL and RTPL are i.i.d., the probability to be in the amber (resp. red) zone for KS is, as reported, 35.7% (resp. 20.9%). For Chi-Squared, it is $1 - \mathrm{X}_4\left(\frac{14}{2}\right) = 13.6\%$ (resp. $1 - \mathrm{X}_4\left(\frac{18}{2}\right) = 6.1\%$). However, in the range of relatively high correlations between RTPL and HPL (e.g. $\rho > 75\%$, to be able to pass the Spearman rank test as currently defined in the CP) the two metrics give very similar results if HPL and RTPL follow the same distribution.

- **Volatility over-/underestimation**: KS and Chi-Squared distances are supposed to capture differences between the distributions of HPL and RTPL.
    - When the RTPL underestimates risk, the two metrics typically give comparable results.
    - When the HPL overestimates risk, this is not always the case. Indeed, KS is symmetric by definition, so over- and underestimation are treated equally. As designed, Chi-Squared is not, because the cut-offs of the five bins depend on HPL values. Experimentally, Chi-Squared test is easier to pass in this situation, although only slightly.
- **Bias**: This is the main source of difference between KS and Chi-Squared distances, and it is not highlighted in any of the portfolios in Figure 1. With the current thresholds, Chi-Squared allows for a bias of up to 18% of the standard deviation while having 50% chances to pass (*if all the other conditions are ideal*.) KS is much stricter in this respect; the corresponding allowed bias would be less than the half, as the next plot shows.

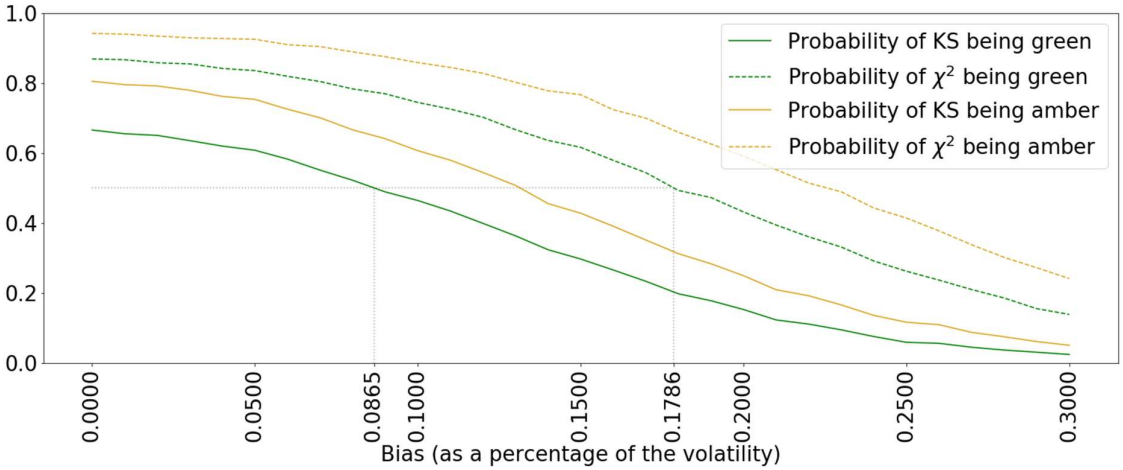


Figure 2: Probability of being in the green (resp. amber) zone for KS and Chi-Squared tests with current thresholds, when HPL and RTPL are simulated as Gaussian random variables with unit variance and perfect correlation (i.e. $RTPL = HPL + \mu$ is just a constant shift). This unrealistic scenario should therefore be considered as the upper limit of what is allowed for bias. In this case, the amber zone for KS is actually much stricter than the green zone for Chi-Squared.

The following plot compares the results of KS and Chi-Squared tests, together with the current thresholds, in the two cases where the measures differ (measurable volatility overestimation or bias). In both cases HPL and RTPL have been simulated as Gaussian variables with very high (90%) correlation. On the left, they have the same variance and a bias of 20% of the standard deviation; on the right, there is no bias but RTPL overestimates the volatility by 25%.

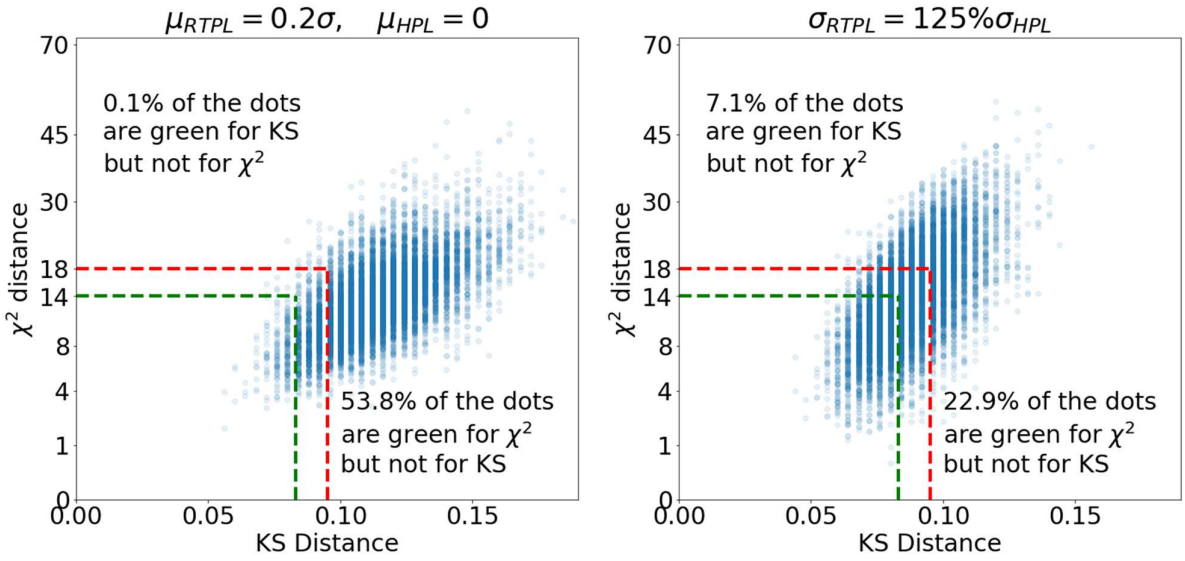


Figure 3: Comparison of KS and Chi-Squared results over many simulated Gaussian vectors. The bias is the main source of divergence between the two measures. The other two possible situations (RTPL less volatile than HPL, or lower correlation between RTPL and HPL) are not reported here, and they give virtually identical probabilities of passing for the two metrics.

Industry Recommendation:
The industry conducted a survey requesting banks to confirm their preferred choice for the metric. The results of the survey showed a marginal preference for KS, but strong support for Chi-Squared as well.

It is evident from the analysis and the survey performed by the industry and as the plots indicate, the most critical point does not concern the choice of the test, but rather their thresholds which are addressed in the next section.

2.1.3 PLA test: Thresholds

The industry recognises the necessity for finalising the PLA test thresholds, however to achieve this there is a need for a monitoring period using real portfolios to determine the appropriateness of the calibration and, potentially, recalibrate.

It is clear that the thresholds should be significantly lower than those proposed thresholds in the CP because, as demonstrated in the industry analysis, the proposed thresholds are too stringent (KS/Chi Squared thresholds should be higher and the Spearman Rank threshold should be lower). Indeed, the penalty function is failing its purpose in mitigating desks jumping from green to red at the current calibration, as the simulated figures in the previous sections show (all desks are simulated using the same strategies, but out of random noise they always jump from red to green and conversely).

The following three plots are obtained via simulation by starting from a pair of "ideal" HPL and RTPL vectors (normal random variables with 90% correlation) and varying only one of the three parameters at a time (correlation, volatility ratio, or bias). The amber and red thresholds are calibrated, in accordance with backtesting indications, as the levels making 4.99% and 0.01% of the desks belonging to the amber and red zones.

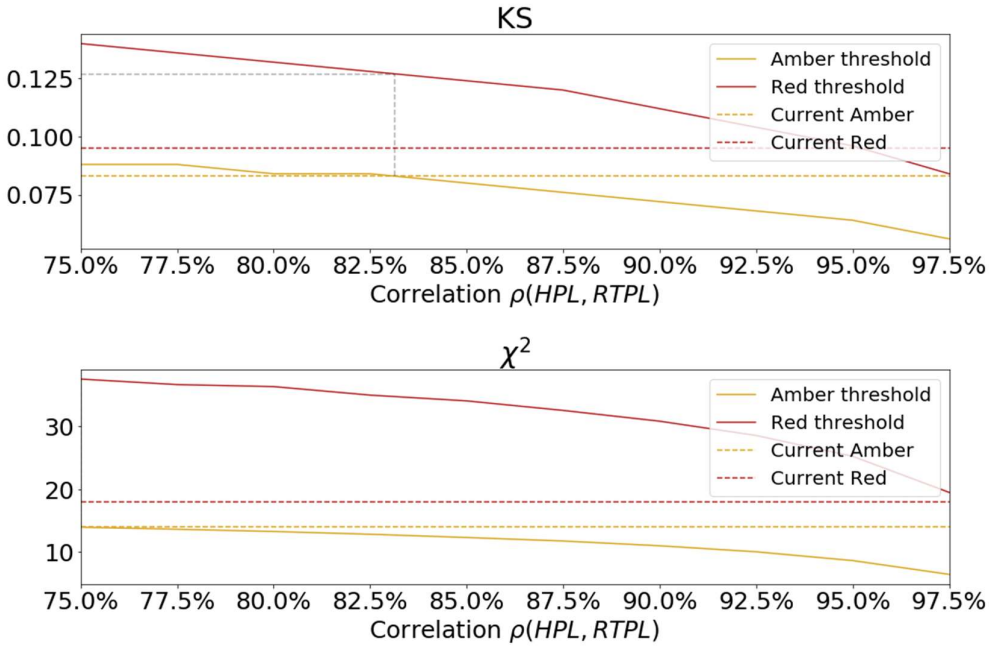


Figure 4: Amber (95%) and red (99.99%) thresholds derived from confidence intervals when HPL and RTPL are simulated as Normal random variables with varying correlation between them. The dashed lines are the current thresholds, for comparison.

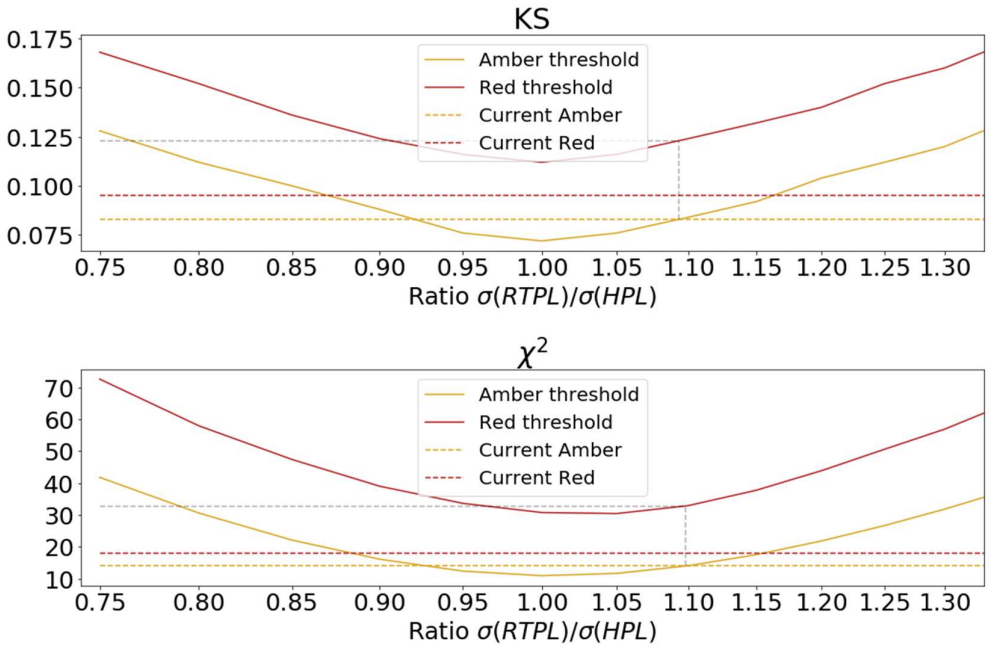


Figure 5: Amber (95%) and red (99.99%) thresholds derived from confidence intervals when HPL and RTPL are simulated as centred, 90% correlated Gaussian vectors with a varying degree of under- or overestimation of the volatility. The dashed lines are the current thresholds, for comparison.

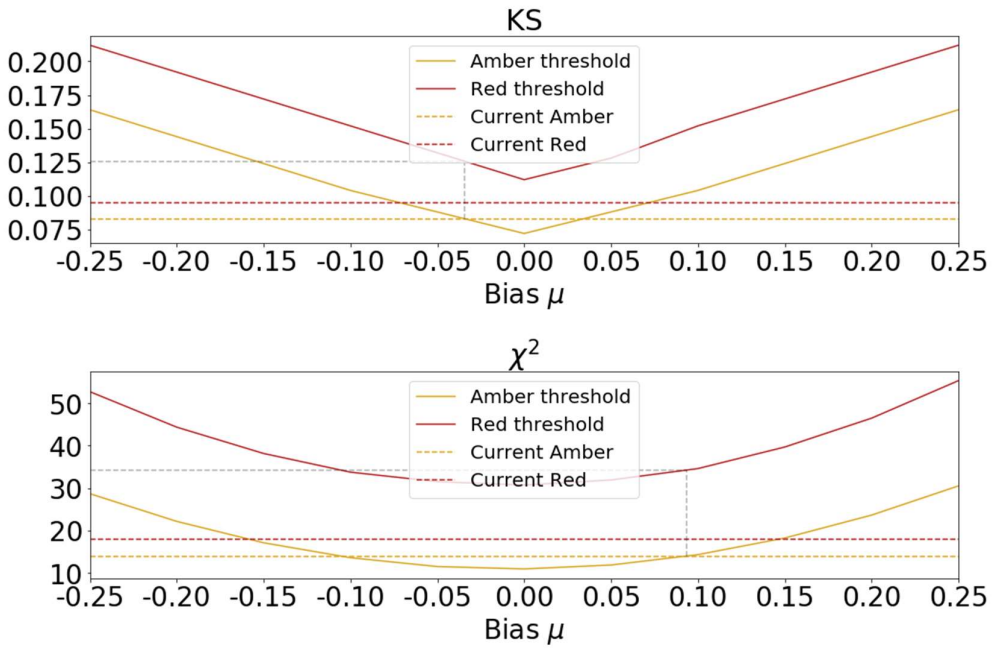


Figure 6: Amber (95%) and red (99.99%) thresholds derived from confidence intervals when HPL and RTPL are simulated as 90% correlated Gaussian vectors with same volatility but some non-zero bias (expressed as percentage of the standard deviation.) The dashed lines are the current thresholds, for comparison.

The plots highlight that the gap between the amber and red zone (solid lines) should be much higher than the values it is currently set at (dashed lines.)

For spearman rank, the correct thresholds cannot be determined using simulated examples because these portfolios are typically generated while controlling for correlation and it is too complex to simulate the interaction and dynamics between all of the market variables that impact real world portfolios. However, while the industry currently lacks the real portfolio data to recommend absolute thresholds, we wish to note that from a qualitative/expert judgment perspective, the current thresholds proposed in the CP seem quite stringent. For example, since desk level RTPL/HPL are not products of a single model, but rather combinations of several product or risk factor specific models, all of which have numerous inputs and independent sources of variability, consistently achieving > 75% correlation at the desk level for real portfolios may be quite difficult. Similarly, as the industry has highlighted in the past, there are also various operational bases and noise for real portfolios whose impact can be unpredictable and volatile including well hedged desks (see Appendix 3). Consequently, the industry stresses that the absolute thresholds should only be calibrated using actual portfolio data during the monitoring period.

Industry Recommendation:

The industry recommends;

1. The amber zone for KS / Chi-Squared metrics, as well as both amber and red zones for spearman rank correlation, should be set during a monitoring period using data from real desks.
2. The thresholds should be significantly lower than those proposed thresholds in the CP because, as demonstrated in the industry analysis, the proposed thresholds are too stringent (KS/Chi Squared thresholds should be higher and the Spearman Rank threshold should be lower)
3. The Amber zone should be sufficiently widened to avoid volatile capital requirements.

2.1.4 PLA test: Penalty function

The CP states that a desk that falls into the red zone will only be able to move back away from Red when all PLA test metrics are green. This differs to the treatment in backtesting which allows a portfolio to move from being in the Red zone back to Amber when metrics fall inside the Amber zone. The lack of symmetry would result in inconsistent and volatile capital requirements which are contrary to the purpose of the traffic light approach and would not reflect model improvements made by a firm sooner when metrics fall-back to amber.

Industry Recommendation:
The industry proposes a symmetrical traffic light approach that permits trading desks to switch from red to amber to green, similar to how desks in the green zone switch from green to amber to red and consistent with the backtesting framework.

2.1.5 Traffic light formula

The industry welcomes the introduction of the traffic light framework and the inclusion of an amber zone in the CP which should lead to less volatile capital outcomes. However the industry remains concerned that the revised aggregate capital charge does not institute a cap at SA capitalisation for all desks. The industry continues to argue that the addition of a ceiling on the proposed formula in paragraph 194 of the consultative document is necessary for the following reasons:

1. To address capital spikes arising solely from the loss of diversification benefits as a result of the breaking-up of a bank's trading book population into IMA-eligible and ineligible sub-portfolios. This disaggregation impact resulting from passing/failing the IMA eligibility tests is not always related to changes in the underlying risk drivers of the portfolio and should not be reflected in capital; and
2. To prevent pro-cyclicality of total capital requirements. In particular, we anticipate that NMRF may substantially increase in times of stress driven by reduced liquidity and, as such, would increase the overall IMA charge relative to the same desk capitalised via SA.

Therefore, the industry continues to believe that the best way to achieve this is through a simple modification of the current formula in paragraph 194:

$$ACC = IMA_{G,A} + k * max\{0, SA_{G,A} - IMA_{G,A}\} + C_U$$

To the following formula which includes a minimum function:

$$ACC = \boldsymbol{min}\left\{IMA_{G,A} + k * max\{0, SA_{G,A} - IMA_{G,A}\} + C_U; \boldsymbol{SA_{all\ desks}}\right\}$$

The cap acts to limit the diversification effect and would contribute towards more predictable capital outcomes, improving the viability of IMA and, as such, providing incentive for banks to improve their models.

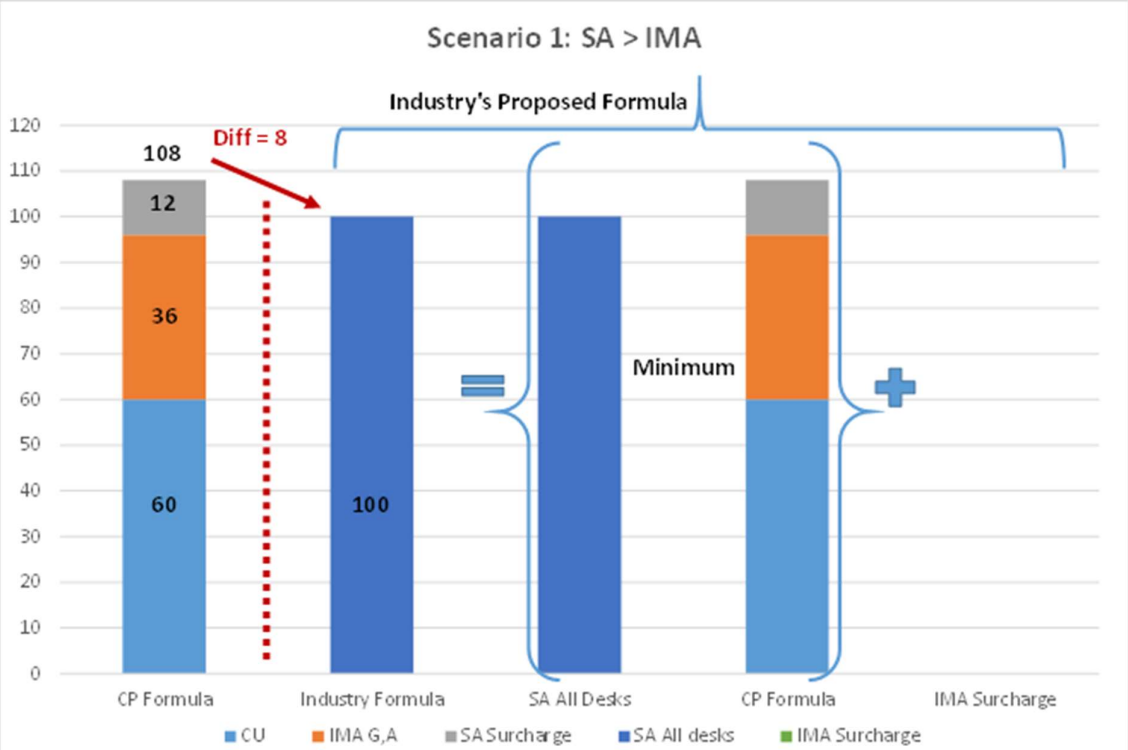
However, the industry understands previous reservations to applying an absolute cap at SA as proposed above. The regulatory concern is that in the case where IMA charges exceed SA charges when calculated for an identical portfolio, the higher capital requirement should be reflected in the total capital charge. To address this regulatory concern while still capping the impact from the loss of diversification benefits, the industry recommends the following formula for capping IMA as an alternative:

$$ACC = \boldsymbol{min}\{IMA_{G,A} + k * max\{0, SA_{G,A} - IMA_{G,A}\} + C_U;\ \boldsymbol{SA_{all\ desks}}\} + \boldsymbol{max}\{\boldsymbol{0}, \boldsymbol{IMA_{G,A}} - \boldsymbol{SA_{G,A}}\}$$

The first term is identical to the industry's preferred formula which provides a simple cap as mentioned above. The additional second term introduces a surcharge capturing the extent to which IMA is higher than SA for the green and amber portfolios. The easiest way to illustrate how this revised formula ("Industry's proposed formula") compares to the one from the consultative document ("CP formula") is by looking at two scenarios:

- Scenario 1: $SA_{G,A} > IMA_{G,A}$ (presumed normal scenario)
- Scenario 2: $SA_{G,A} < IMA_{G,A}$

Specific assumptions for scenario 1:
SA / IMA = 1.67 (i.e. SA is 67% higher than IMA for the identical portfolio)
Relative number of IMA eligible desks: 50%



Scenario	Values
$SA_{All\ desks}$	100
$SA_{G,A}$	60
$IMA_{G,A}$	36
C_U	60
k	0.5

Walkdown	Charge	Component
CP Formula	**108**	
IMA Benefit	24	$=MAX(0, (SA_{G,A} - IMA_{G,A}))$
SA Surcharge	-12	$=MAX(0, (k)(SA_{G,A} - IMA_{G,A}))$
Lost Diversification	-20	$=(SA_{G,A} + C_U) - (SA_{ALL})$
SA All Desks	**100**	
IMA Surcharge	0	$=MAX(0, (IMA_{G,A} - SA_{G,A}))$
Industry's Formula	**100**	

In the above example where SA exceeds IMA, banks benefit from a lower IMA charge compared to SA for green and amber desks, however this benefit is offset in the CP formula by the interaction of several components. Decomposing the formulas, we identify the components contributing to the difference between the proposed CP capital charge of 108 and the industry's proposed formula resulting in charge of 100 which is equal the total SA charge ($SA_{All\ desks}$). The three driving factors are:

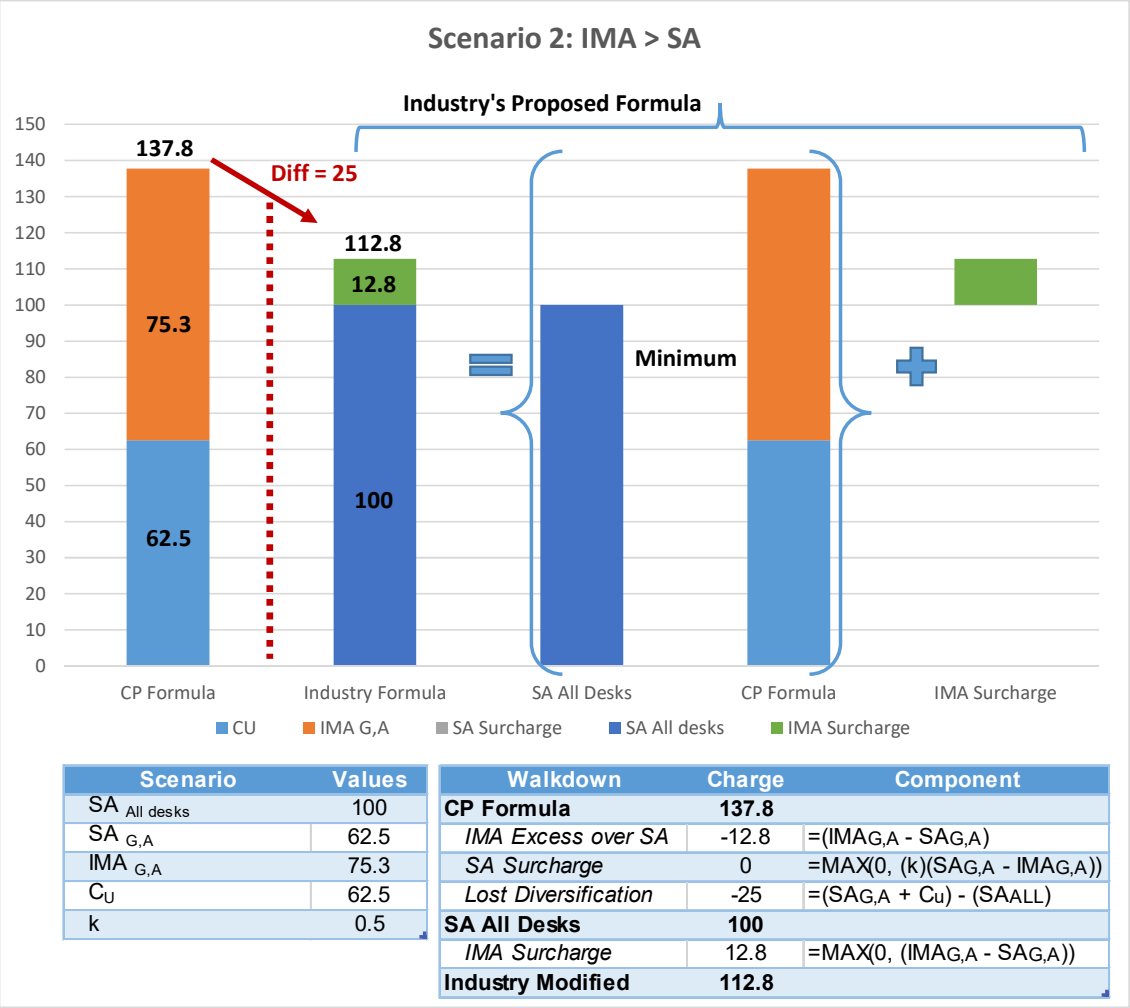
- Net IMA Benefit compared to SA: The gross IMA benefit is 24 ($SA_{G,A}$ -$IMA_{G,A}$). However, this is reduced by the SA surcharge as a result of 50% of the desks being assigned to the amber zone (k*max(0; $SA_{G,A}$ – $IMA_{G,A}$)). Compared to an all SA approach, the net benefit from IMA is 12.
- Loss of Diversification Benefit: In addition, the net IMA benefit is further offset by the loss of diversification benefits inherent in the fact that portfolios are split according to IMA-eligibility and no diversification is available between the two sets (C_U + $SA_{G,A}$ – $SA_{All\ desks}$ = 20).
- IMA Surcharge: Given that IMA is lower than SA, the surcharge is zero.

The net effect of +12 in net IMA benefit and -20 in lost diversification causes the proposed CP formula to be 8 higher than both $SA_{All\ desks}$ and the proposed industry's formula, given IMA surcharge equals 0. The lower charge resulting from the proposed industry formula compared to the proposed CP formula is justified for the following reasons:

- The net IMA benefit is 12 as per above, therefore if the impact from lost diversification was excluded, the capital charge should be 12 lower than $SA_{All\ desks}$ (100 – 12 = 88). However, the loss of diversification increases the charge by 20 to a total of 108. Given that the loss of diversification is a result of a split into sub-portfolios based on IMA-eligibility and not a reflection of underlying risks, this component should be excluded from capitalisation to the extent possible.
- The gross IMA benefit is 24 as per above. This is offset by a loss of diversification benefits of 20 resulting in a net benefit prior to the SA surcharge of 4. As per the proposed CP formula the SA surcharge would increase the charge to 108, 8 above the $SA_{All\ Desks}$ charge. It does not appear sensible that the SA surcharge, which is intended to capture SA charges above IMA, should increase the total capital charge to a level above $SA_{All\ desks}$.

While the proposed industry's formula does not eliminate the effect of losing diversification benefits, it at least limits it. At all times it ensures adequate capitalisation of the underlying risks.

Specific assumptions for scenario 2:
Assumptions are identical to scenario 1 apart from
SA / IMA = 0.83 (i.e. IMA is 20% higher than SA for the identical portfolio)



Scenario	Values
$SA_{All\ desks}$	100
$SA_{G,A}$	62.5
$IMA_{G,A}$	75.3
C_U	62.5
k	0.5

Walkdown	Charge	Component
CP Formula	**137.8**	
IMA Excess over SA	-12.8	$=(IMA_{G,A} - SA_{G,A})$
SA Surcharge	0	$=MAX(0, (k)(SA_{G,A} - IMA_{G,A}))$
Lost Diversification	-25	$=(SA_{G,A} + C_U) - (SA_{ALL})$
SA All Desks	**100**	
IMA Surcharge	12.8	$=MAX(0, (IMA_{G,A} - SA_{G,A}))$
Industry Modified	**112.8**	

In the case where IMA exceeds SA, the total capital requirement per the CP formula will be higher than $SA_{All\ desks}$. A portion of the difference appropriately captures the excess IMA charges over SA charges for the same portfolios (i.e. $IMA_{G,A}$ - $SA_{G,A}$) which is 12.8 in the above graph. However, an additional portion is made up of lost diversification benefit (25). As a result the proposed CP formula would produce a capital charge of 137.8, i.e. 100 + 12.8 + 25. The industry's proposed formula addresses the diversification issue by capping the first term at $SA_{All\ desks}$ and adding back an "IMA surcharge" accounting for the degree to which IMA is higher than SA, i.e. 100 + 12.8 = 112.8. In this scenario where IMA exceeds SA, total capital charges under the industry's proposed formula equals the sum of $SA_{All\ desks}$ and the IMA surcharge. The difference between the CP formula and the industry's proposed formula is exactly equal to the diversification benefit loss shown in the table to equal 25, while both formulas appropriately capture the higher IMA capitalisation ($IMA_{G,A} – SA_{G,A}$ = 12.8). This demonstrates that the industry's formula is able to isolate the diversification issue while addressing the regulatory concern around an absolute cap at $SA_{All\ desks}$.

While the industry's proposed formula represents an extension from the formula specified in the CP, it does not make it more complex. Each of the components in the industry's proposed formula are utilized in existing aggregation functions, and therefore can be easily computed based on existing calculations.

Industry Recommendation:

The industry suggests revising the proposed aggregate capital charge formula (paragraph 194) to introduce a cap at $SA_{All\ desks}$ as per below:

$$ACC = \boldsymbol{min}\{IMA_{G,A} + k * max\{0, SA_{G,A} - IMA_{G,A}\} + C_U;\ \boldsymbol{SA_{all\ desks}}\}$$

If this simple cap is not acceptable to regulators given the requirement that IMA should be allowed to be higher than SA, the industry proposes the following alternative:

$$ACC = \boldsymbol{min}\{IMA_{G,A} + k * max\{0, SA_{G,A} - IMA_{G,A}\} + C_U;\ \boldsymbol{SA_{all\ desks}}\} + \boldsymbol{max}\{\mathbf{0}; \boldsymbol{IMA_{G,A} - SA_{G,A}}\}$$

2.1.6 NMRF in the context of Backtesting

The Industry is concerned about the complexities of the use of NMRF in backtesting, the CP states that the "desks risk management model must be used to calculate the risk theoretical P&L (RTPL)" and further notes per the glossary a desks risk management model "includes all risk factors that are included in the bank's ES model with supervisory parameters and any risk factors deemed not modellable by the supervisor in Step 3, and which are therefore not included in the ES model for calculating the respective regulatory capital charge, but are included in NMRFs."

This is different to the current CRR2 (EU Commission's proposal for implementing the FRTB in Europe) language in *Article 325bg 5* which indicates exclusion of NMRF from backtesting "An overshooting shall mean a one-day change in that portfolio's value that exceeds the related value-at-risk number calculated by the institution's internal model in accordance with the following requirements:

(b) scenarios of future shocks shall apply to the risk factors of the trading desk's positions referred to in Article 325bh(3) and which are considered modellable in accordance with Article 325bf;"

The impact of excluding NMRF from VaR and /or ES should not be considered lightly as this has significant operational complexities, and different national implementations could represent major global inconsistencies in capital requirements.

The BCBS 2016 text (appendix B.111) which notes that backtesting exceptions shown to relate to NMRF, where the capital add-on for the NMRF is greater than the loss, can be discarded.

Furthermore, the FAQ 2.4 Q2 (Appendix 4) outlines the procedure for discarding a Backtesting exception related to (a single) NMRF but the practicalities are not very clear, especially if the NMRF SES is expected to cover the entire loss for the desk and not just the NMRF part, and furthermore it does not address the likely scenario of many NMRFs jointly contributing to the loss.

Industry Recommendation:

The industry proposes to extend the permission to disregard backtesting exceptions to all risk factors capitalised via NMRF stressed add-on, since adequate capitalisation should get the same recognition.

The industry proposes to discard a (99% VaR) breach and require instead that:

Daily Loss ≤ VaR + Aggregation of all scaled SES-charges from current period

where the agregation of SES-charges needs to include all stressed add-on charges for all individually capitalised risk factors for the desk (or bank) level that are not included in VaR, and the VaR and daily loss are also the corresponding values for the desk (or bank), respectively.

The aggregation of the scaled SES add-ons would then follow exactly the same aggregation mechanism used for capital purposes (e.g. straight sum or square root of sum of squares, etc.) that has been justified by the bank.

We propose square root scaling in terms of liquidity horizons, which is in line with the liquidity horizon scaling in expected shortfall, times the ratio of ES[current rolling one year]/ES[stressed period] to rescale the SES charge to the current volatility regime. We also propose that the frequency of calculation of the scaling factor be monthly.

For a 97.5% VaR-breach, a similar formula holds, where one would use an appropriate version for SES; to be a 97.5% VaR equivalent.

The Industry has further discussed and provided recommendations on the more explicit requirements around 'what is included in Expected Shortfall' and 'what is included in NMRF' as noted below;

a. VaR, Expected Shortfall Calculation & NMRF

Background:

- There will be a mixture of risk factors that are categorised as NMRF and attracting an SES capital charge.
- Some risk factors that are NMRF will have daily data for scenario generation, will pass Annex D data principle requirements but simply would not have passed the NMRF liquidity tests. These would be included in any desk risk management model for internal risk assessment. Let's define these as Type A NMRF.
- Other risk factors that are NMRF will have sparse data and would not be suitable for inclusion in an ES or VAR model as they do not have daily data or of sufficient quality to be in scenario generation required for ES/VAR model. Let's define these as Type B NMRF.

Problem:

- Excluding type A NMRFs from risk factors from the VaR model would diminish the risk sensitivity and risk capture in the model.
- By deliberately degrading the model by this process makes the gap between what is included in HPL and what is included in the model wider than it needs to be, and makes one of the key model eligibility tests i.e. backtesting less powerful as a model test. This is more likely to give unreliable results as a scope mismatch has been forced into the model.
- By deliberately degrading the model there is a higher likelihood that items that are hedging each other no longer offset each other in the VaR calculation. i.e. sometimes referred to as broken hedges
- Additionally the likelihood of having inconsistent scenarios that could lead to arbitrage violations and calibration issues increases by deliberately excluding part of some risk factor moves.
- Exactly for the same reasons, it would be sensible to align ES scope to the VaR one. A capital penalty would still be applied via SES charge on the NMRF Type A, but including these risk factors in the ES would prevent additional capital penalty from broken hedges.

Industry Recommendation:

Firms should be allowed to include NMRF Type A into the VaR model (and therefore into the backtesting VaR). This would avoid issues highlighted and improve quality and usefulness of the VaR Model. Moreover, for consistency, firms should be allowed in those instances to include NMRF Type A in the ES model. A capital penalty would still be applied via SES charge on the NMRF Type A that would penalise the low liquidity as measured by the RPO observations.

If a backtesting exception can be explained via Type A or Type B NMRFs, and if the relevant SES charges (with proper scaling as discussed in prior section) are sufficient to cover the gap between P&L and VaR, then the breach should be discounted.

b. Modellable Risk Factors in SES calculation

The industry has identified another issue relating to the fact that curves and surfaces are not being treated and shocked as whole objects.

Broken hedges and arbitrage violations can occur when only a subset of the risk factors (i.e. non-modellable) within a curve or surface are shocked and the others (i.e. modellable) are not. In order to prevent these broken hedges or arbitrage violation causing overly conservative double counting between ES and SES capital charges - we propose allowing the option of including modellable risk factors in the SES calculation.

Industry Recommendation:

Firms should be allowed to include modellable risk factors in the SES charge - for curves and surfaces - when, as a result of not including them, broken hedges between non-modellable and modellable risk factors (or arbitrage violations) occur.

Note that this recommendation's improvement can only be realised if the granularity of SES component recommendation is adopted. (see NMRF capitalisation section)

2.2 Non-modellable risk factors (NMRF)

Despite a couple of alternative proposals in the CP on bucketing and aggregation of idiosyncratic equity risk factors, the industry strongly believes that the overarching issue of highly punitive NMRF capital charges still persists. NMRFs remain the key contributor to the IMA capital charge and they create significant disincentives for the institutions to advance adoption of the IMA. Considering the complexities and dynamic nature of the global trading portfolio, we are very concerned about this unintended consequence of discouraging advanced approaches, and therefore action is required to mitigate the NMRF capital impact by revising the aggregation methodology and other means we detail below.

2.2.1 Process for satisfying modellability requirements and expectations for internal model calibration

This section presents the industry response and recommendations for the following:

a. *Representative trades for RPO*
b. *Modellability bucketing*
c. *Data used in ES model*

a. *Representative trades for RPO*

The CP states:

"*Any "real" price that is observed for a transaction should be counted as an observation for all of the risk factors for which it is representative".*

The CP introduces new language to define what is meant by representative. In introducing the new definition the ability to map a single trade to several risk factors can be severely curtailed and therefore makes the NMRF test harder to pass than under the BCBS 2016 text. In particular the language "*where the bank is able to extract the value of the risk factor from the value of the real price*" is open for interpretation possibly leading to significant capital variations between banks.

In practice most transactions will be meaningfully impacted by more than one risk factor, e.g. a plain vanilla swap will be impacted by several tenor points of swap curve, an equity option will usually depend on the underlying price, the dividend yield, a repo rate and various implied volatility risk factors. It is usually not possible to "uniquely" derive all of these risk factor value from a single real price observation on a particular day. It is not clear how the new CP requirement would have to be interpreted and which risk factors could be evidenced by transactions that are impacted by various risk factors

In this regard, we note that market data is often applied in different layers. For example, in credit markets there can be spreads to generic indices and then spreads on instruments to these indices. Likewise for volatility surfaces, the primary volatility is often the at-the-money (ATM) volatility and then the strike offset spread is applied in addition to this. It is reasonable to apply modellability rules in different layers as well so that for instance all credit instruments that make up a sector/region index evidence modellability for that market data factor. Equally for options all strikes should be able to be used to evidence the modellability of the ATM since in a layered market data approach the ATM is an input to options of all strikes.

Industry Recommendation:
The language of "extract the value of the risk factor" should be modified to make it less restrictive and not contradict the idea that a single trade can evidence multiple risk factors.
Suggested change in bold: *A "real" price is representative for a risk factor of a bank* ***where the bank is able to justify that the risk factor is an important component of the value of the real price, e.g. by illustrating that a transaction has a meaningful sensitivity to a particular risk factor.***

b. Modellability Bucketing

The CP proposes two alternatives for risk factor bucketing for risk factor eligibility test (RFET) in the latest FRTB consultation:

- Alternative 1: Bank specific RTPL/PLA aligned risk factor bucketing and
- Alternative 2: Standardised, regulatory prescribed buckets across all risk factor types.

These alternatives are separately considered in the context of the maturity dimension and the strike dimension below.

i. Maturity Dimension

Alternative 1 uses a one-to-one mapping between ES granularity and the buckets. This gives firms the ability to improve the outcomes of the modellability test by using a less granular ES model. However, the constraints of the PLA test – requiring firms to have a very granular ES model to align with front office P&L model – will make it difficult to operationalise. For example, even the current ES models that institutions employ are generally very granular in the maturity dimension, hence using Alternative 1 would create excessively granular bucketing for the modellability test. The effect of excessive bucketing granularity would lead to significant model test failure rates and associated capital effects.

Alternative 2 avoids penalising firms for having more granular ES models by not requiring the same level of granularity between RFET and PLA Test. The proposed version of standardised buckets is effectively a more granular version of SBA. For example, swaption volatilities in the proposal have 11 tenor buckets and this is compared to five vertices for swaption tenors in the SA

The use of liquid maturity point for vertices used in SBA makes sense for SBA, however when designing buckets that span a maturity range it is better for the end points of the ranges not to fall on liquid maturity points. We therefore suggest the ranges are defined in months so that they can be set to avoid the liquid maturity points

The CP requests commenters who prefer Alternative 2 to make proposals for buckets that are at least as granular as the buckets used in the SA. Below the industry recommends a proposal for the maturity dimension which is broadly in line with the SA granularity; in some cases is more granular and in other cases slightly less granular. Where it is less granular it gives justification. It also addresses the issue of end points falling on liquid maturity points.

Industry Recommendation:

On bucketing maturity dimension, the industry supports the use of Alternative 2 method but proposes the following modifications:

1. The following maturity buckets for IR & FX & commodity: 0 month up to 4 months; longer than 4 months up to 13months; longer than 13 months up to 25months; longer than 25 months up to 66 months; longer than 66 months up to 132 months; longer than 132 months up to 260 months; longer than 260 months up to 384 months; longer than 384 months.

This uses 8 buckets compared to 10 Vertices in SA for main IR curves and only a single bucket used for FX basis curves and inflation curves.

2. Specified buckets for swaption tenor dimension: 0 month up to 21 months; longer than 21 months up to 108 months; longer than 108 months up to 384 months; longer than 384 months.

This uses 4 buckets compared to 5 vertices in SA. In the case of swaptions many buckets are expected to use the 3 dimensions of tenor/expiry/strike as compared to SA that just uses 2 dimensions.

3. The following maturity buckets for equity & credit: 0 month up to 7 months; longer than 7 months up to 25 months; longer than 25 months up to 66 months; longer than 66 months up to 132 months; longer than 132 months.

This is 5 buckets and SA has 5 Vertices

4. The following expiry buckets for option expiries: 0 month up to 7 months; longer than 7 months up to 25 months; longer than 25 months up to 66 months; longer than 66 months up to 132 months; longer than 132 months. This is 5 buckets and SA has 5 vertices.

Dimension	**Modifications to Alternative 2** (Maturity Buckets in Months)							
Swaption Tenor	0-21	21-108	108-384	>384				
IR/FX Maturity	0-4	4-13	13-25	25-66	66-132	132-260	260-384	>384
Equity/Credit Maturity	0-7	7-25	25-66	66-132	>132			
Option Expiry	0-7	7-25	25-66	66-132	>132			

In addition, banks should have the flexibility to assess modellability using ES granularity where granularity used in the model is coarser than the standardised buckets (subject to demonstrating such to their supervisor).

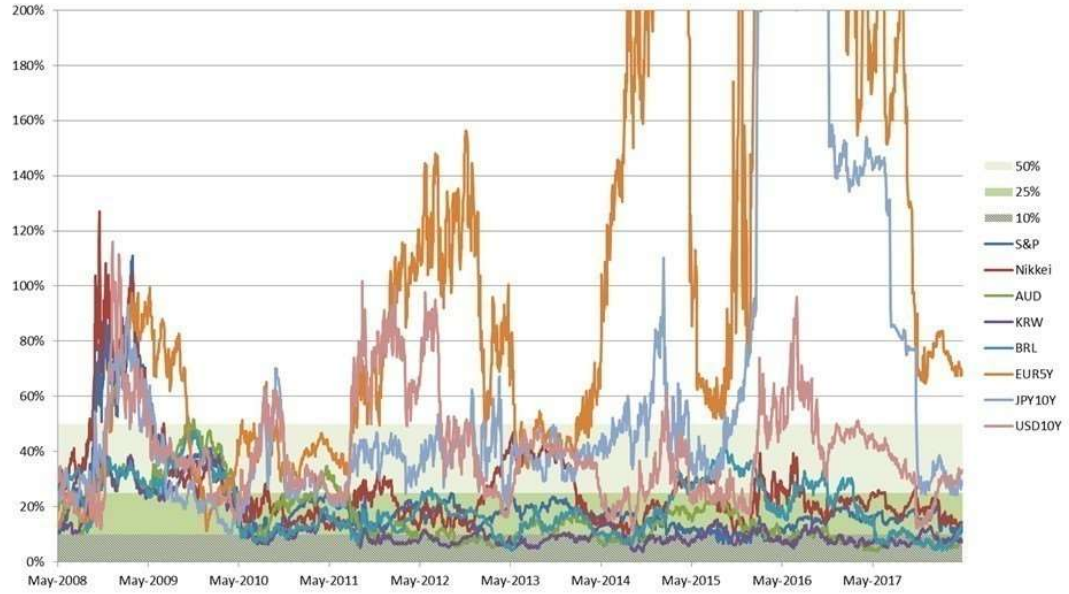
ii. Strike Dimension

Alternative 2 deviates heavily from the rest of the SA (which has no strike buckets) by creating 9 strike buckets. Using 9 strikes effectively creates several buckets for options. For example, an equity option would have 6 x 9 = 54 buckets (6 maturities x 9 strikes) after maturity and strike are considered. This is a very granular view and can even be more granular than internal valuation and risk models.

Standard models used for volatility modelling of the moneyness are usually based on 3 factors (level, skew, convexity). The design of the buckets as a % of ATM can be out of line with the design of strike dimension in internal models. There is the potential for modellability results to be quite unstable as markets rise and fall from the strike dimension viewpoint as this will be moving faster than the maturity dimensions.

The following chart shows the historic level of risk factors as measured from April 2017 through April 2018. This is for Equity (Nikkei, S&P), FX (AUD, KRW, BRL) and Rates (EUR 5Y, JPY 10Y, USD 10Y). The risk factor ranges cover a wide range of strike buckets for one year.

The examples shown above can be extended to a longer history: the chart below shows the Max {100% - MinRatio, MaxRatio -100%} over the preceding year for each of the risk factors. We see that it is almost certain that each risk factor will move through several of the proposed strike buckets within a year, thereby passively generating numerous NMRFs by risk factor moves.



The proposal made previously to split strike into two buckets (ATM and OTM) provides good mitigation against this, while reducing the number of strike buckets provides mitigation to some extent as well. Despite the appeal of the simple two bucket approach for strikes a compromise proposal is for three buckets.

Industry Recommendation:

The industry's proposed solution for bucketing on the strike dimension (three strike buckets):

1. Align the strike dimension to generic risk factors used in internal models (level, skew, convexity).
2. This can be achieved by splitting the strike dimension up into three areas: High strike, ATM, low strike.
3. The definition of the ATM corridor for each market is defined by firms with some high level guidance in the FRTB.
4. All trades irrespective of strike for a maturity bucket contribute to the modellability of ATM.
5. Parameters relying on OTM observations require both high and low strikes to be modellable.

c. Data used in ES model

The CP introduces a new requirement that if the data used in the ES model has not met the principles as set in Annex D to the satisfaction of the supervisor, then the risk factors should be excluded from the ES model and capitalised as a non-modelled risk factor.

If this automaticity has been worded deliberately, this effectively creates a completely new modellability test (above and beyond the NMRF framework) that can result in risk factors becoming non-modellable. Creating this extra hurdle to push further risk factors through the SES calculation framework creates extra operational complexity.

There should be no automatic classification of risk factors as non-modellable if principles in Annex D are not satisfied. Rather, Annex D principles should be used to assess a firm's modelling standards and in exceptional cases, should be used to refine the outcome of the RFET. For example, risk factors that

meet requirements in Annex D, but fail RFET, should be given further consideration by the firm's supervisors for possible re-classification to modellable.

Industry Recommendation:

The industry recommends removing any automatic classification based on Annex D principles. However if the BCBS believes there should be a link between Annex D and NMRF, then Annex D should be used in exceptional cases to identify where the results of the RFET are not congruent with the modelling and data standards For example, risk factors that pass modelling standards in Annex D but fail RFET should be given further consideration by the firm's supervisors for possible re-classification to modellable. As noted earlier, this would give a much needed additional degree of freedom to supervisors after the rule is finalised to deal with unanticipated outcomes.

2.2.2 Risk Factor Eligibility Test (RFET)

The modellability of risk factors are impacted by variations in trading patterns. In particular this frequently results in risk factors failing the one-month gap rule. A key presumption in the current modellability assessment criteria is to equate liquidity with a minimum level of monthly supply and demand for traded products. However, in reality we observe a significant amount of volatility in these supply/demand patterns and they are driven by a number of different factors such as macro events, seasonality/cyclicality, industry & sector specific developments etc.

These fluctuations are not necessarily repeatable in terms of their patterns (i.e. time of occurrence and length), but collectively they pose a challenge to the max gap criteria when it is applied to a short horizon such as 30 days. This problem is further exaggerated when the criteria is applied at the risk factor level, e.g. even in cases where a given currency pair or swaps on a particular curve may have consistent monthly trading activity as a whole, that trading activity may be considerably more volatile for specific ranges of strike buckets or tenors.

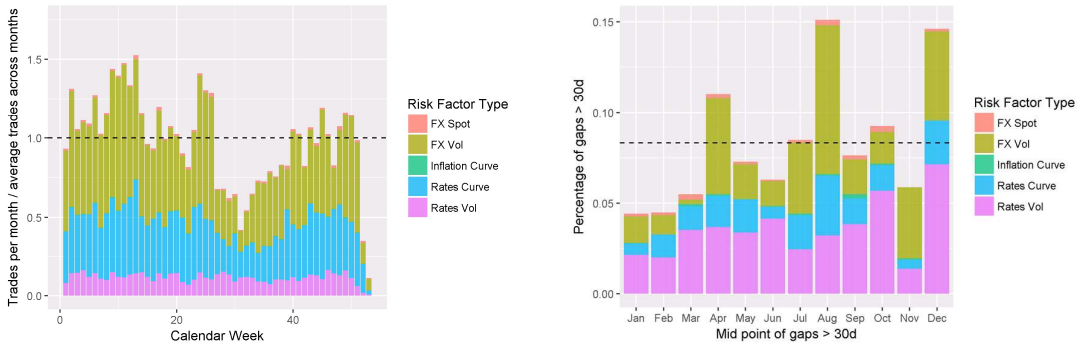
The CP requests that concrete evidence be provided to substantiate the impact of the NMRF framework on seasonal markets, and the industry welcomes the opportunity to re-iterate its previous response on this topic and support this with additional evidence as requested.

a. Seasonal Trends

It is observed that overall transaction volumes decrease significantly during certain periods of the year and correspondingly there is an increase in the largest gaps are evident for risk factors across the asset classes.

While all asset classes are impacted, some seemingly liquid risk factors are non-modellable using "1 in 30" , for example, the 10-year by 1-year points of the USD and EUR swaption surface as well as large parts of the GBP swaption volatility surface.

• **Declining transaction volumes during summer and in December…**	**…lead to concentration of largest gaps these time periods**



b. Products and Markets affected by seasonal trends

There are numerous risk factors which are considered "liquid" but for which passing the modellability test is not assured, even when tested at the SA maturity bands. For example:

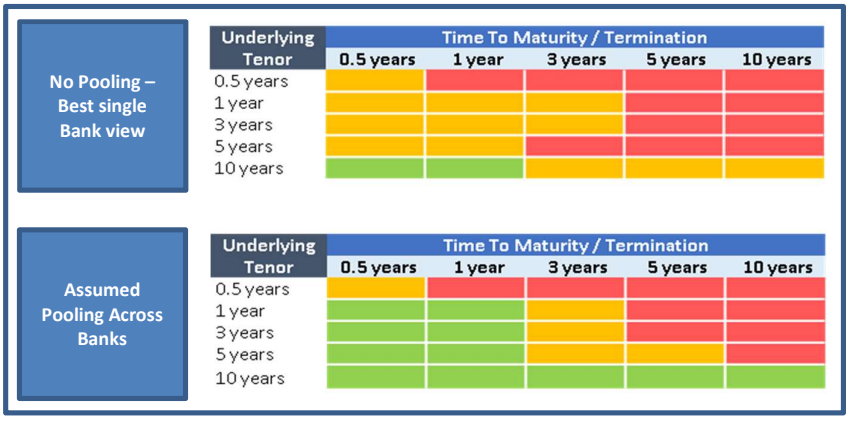
- **Emerging Markets**
  - Interest rate curves: swap, cross currency, OIS, and Libor basis
  - IR Volatility: Outside the G4 currencies
  - Foreign Exchange Volatility: At the money
  - Credit: Sovereign CDS modellability (e.g. CEE, LatAm, Asia, Africa)

Lower than expected modellability outcomes have been observed within:

- **Developed Markets**
  - Term structure: While there is widespread low modellability at the longer end (five years & beyond) of the curve (rates, FX, and equities), material pockets of non-modellability can also persist at the shorter end.
  - Credit: Canadian bonds and and sovereign CDS.

Interest Rates

For GBP Swaptions, using the SA maturity buckets means that it is difficult to prove modellability for the entire grid. This example is an analysis of pooled trade data across a cohort of banks.



Equities

To be proven modellable, dividend risk factors would require dividend futures and swaps. For these, only certain indexes trade actively on these products.

Products	Time To Maturity / Termination				
	0.5 years	1 year	3 years	5 years	10 years
Dividend Swap					
Borrow Cost on single names					
Single Name Equity Options (ATM)					
Single Name Equity Options (OTM)					

Foreign Exchange

FX option trades are likely to be used to prove the modellability of volatility related risk factors. Subject to pooling of data, it is expected that options for the more liquid currency pairs will be modellable at the money and for shorter tenors. Modellability will decrease for less liquid currencies, out of the money positions and longer dated tenors.

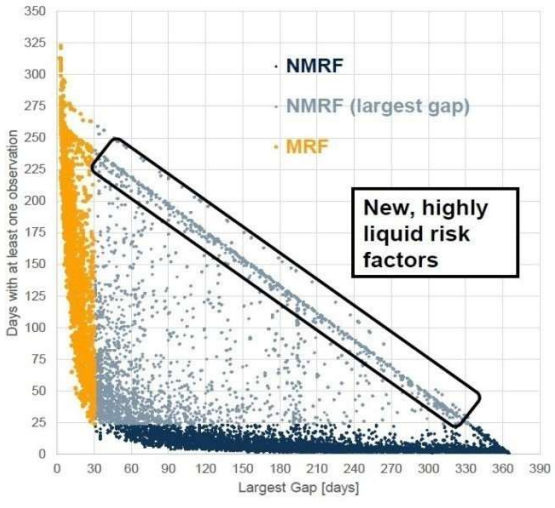
Currency Pair		Time To Maturity/Termination				
		0.5 years	1 year	3 years	5 years	10 years
GBP/JPY Volatility	ATM					
	OTM					
AUD/NZD Volatility	ATM					
	OTM					
USD/CNH Volatility	ATM					
	OTM					
JPY/CHF Volatility	ATM					
	OTM					
THB/USD Volatility	ATM					
	OTM					
HUF/CHF Volatility	ATM					
	OTM					

The analysis provided by the industry demonstrates an imbalance between the two modellability criteria. Specifically, the maximum period between consecutive observations (the "30-day gap" rule) dominates the minimum number of observations per year (the "24 observations" rule). The data provided shows that liquid risk factors are prone to various effects including macro events, seasonality/cyclicality and industry / sector specific developments.

Furthermore, a failure on the "30 day gap" rule will take twelve months to be resolved, whereas a failure on the observation count rule may be resolved in a much shorter timescale.

c. New Issuances

Many new equity and fixed income issuances & instruments share the characteristics of having more than 24 observations in a given year, but they still fail the "30-day gap" rule. This non-modellability outcome for highly liquid risk factors warrants addressing.



As shown in many examples, the 30-day gap rule in the current version of the BCBS paper will generate drastic cliff effects for many risk factors with reasonable trading frequency. This is even more significant for the operational implementation and monitoring of the evolution of real price gaps: these will need to be monitored for a very large number of risk factors (tens of thousands for most large banks), with full real-time information flow between Risk, Capital Management and Trading operations. Given the amount of data and timeline required for the monitoring of the 30-day gap rule it will be inevitable that risk factors will be deemed non-modellable by a gap opening unexpectedly, with no potential remedy and become subject to a punitive capital add-on for at least one year.

As an alternative to the 3 in 90 observability proposal, a simple way to soften such cliff effects would be the introduction of an "a weighted average tail gap" in the evaluation of the real price frequency. Instead of a single tail gap determining the status of a risk factor, a suitable average over the last observed gaps should be used – this would allow recovery from an observed gap if the relevant risk factors has further observations in the following periods, while still checking for a reasonable frequency of price observations to evidence its modellability status.

A risk factor is non-modellable if the weighted average gap is above 30 calendar (21 business) days.

$$Weighted\ Avg = \sum \left(G * \frac{G}{T} \right)$$

Where,

$$weight = \frac{G}{T}, G = Gap\ size\ between\ observation\ days\ , T = Total\ days\ in\ window$$

This definition is based on the idea of examining the entire distribution. A risk factor that has a maximum gap of 31 days, because of seasonality, but trades very frequently throughout the rest of the year, should not in principle be considered an NMRF.

The weighted average criterion facilitates solving this problem while staying within the general spirit of the NMRF rules, by drawing a relationship between gaps and the number of transactions throughout the year. The weighting allows us to measure the significance of each gap, effectively emphasizing large gaps so as not to completely ignore the impact of illiquid periods;

If the risk factor is unable to prove sufficient liquidity in the form of multiple smaller gaps, the criteria remains conservative and appropriately deems the risk factor non-modellable.

Industry Recommendation:

To address these issues and introduce more balance between the modellability criteria the industry recommends the RFET criteria be modified to

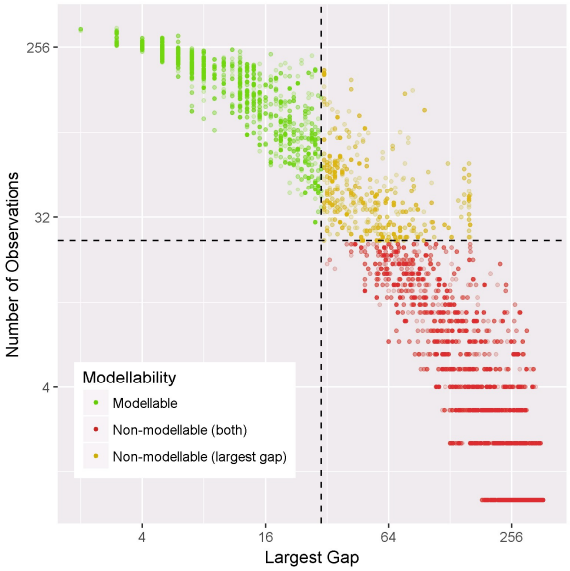
Option 1: Allow for 3 observations during a 90-day period and retain the 24 observations per year.

Option 2: Replace current criteria with weighted average gap < 30 days.

New issuances would still fail these criteria and hence we recommend that the observation window for new issuances start on the first day of trading.

We summarise key findings of a recent analysis - based on a slightly simpler version of the standardised bucketing proposed in the CP.

The data set contains pooled data from available trade repositories for rates (curves and vols) and FX (spot and vol). The data covers period June 2016 – July 2017 and contains all risk factors for which at least one observation was found (independent of the bank's positions)



Key observations:

- Overall ~20k risk factors were investigated that have at least one price observation during the observation period
- Green dots (29%): Majority of modellable risk factors are very liquid (on average >150 observations per year)
- Red dots (58%): Illiquid risk factors with less than 24 observations per year.
- Yellow dots (13%): Somewhat liquid risk factors (on average 1 trade a week)
- We refer to seasonal risk factors as the yellow risk factors that would pass “3 in 90”, but fail “1 in 30”
- If these risk factors were to become modellable, it would increase the number of modellable risk factors by >40%

d. Products which fail the eligibility test

The unintended consequences of the stringent eligibility test will result in many products becoming 'non-modellable'. In response to the request for evidence of risk factors that are considered to have adequate liquidity and observability in stress periods, we provide a list of products by asset class [4] which fail using the '1 in 30 rule', but would become modellable using '3 in 90 rule' (which is the Industry recommendation).

These are products which are perceived to be regularly tradeable and the non-modellable outcome is contrary to the amount of liquidity and volume size seen throughout an annual period. It is important to note that this list is not exhaustive. The specific risk factors which relate to these products and fall under NMRF vary across different maturities and strike levels. Notably only a subset of risk factors or individual assets that relate to these products would become modellable for a given observation period.

Interest Rates	**Description**
Interest Rate Swaps	AED, AUD, BHD, CAD, CNH, CNY, DKK, HKD, IND, KRW, NZD, NOK, SEK, SGD, QAR
Interest Rate Options	AUD, EUR, HKD, GBP, KRO, KRW, USD, ZAR
Inflation Bonds	UK RPI, US CPI, CPX TEMU
Forward Rate Agreement	CHF, CZK, NOK
IR Cross Currency Swaps	AED, HUF, KRO, KZT, RUB, TRY, TWD, ZAR

Credit	**Description**
Government Bonds	Austria, Greece, Ireland, Netherlands, Slovakia, Slovenia, Denmark, Finland, Czech Republic, Korea, Mexico
Single Name Credit Default Swaps	Various Issuers

Equity	**Description**
Equity Single Name	Various Issuers
Equity Single Name Options	Various Issuers
Equity Div Future	Nikkei
Equity Swap	S&P 500, Nikkei
Equity Index Options	MSCI, FTSE, Nikkei, S&P 500, Eurostoxx

Foreign Exchange	**Description**
FX Spot	CAD / CNH, DKK/RUB, EUR/RSD, SGD/ZAR,USD/XAU
FX Options	AUD/JPY, CHF/USD, CNY/USD, EUR/JPY, GBP/USD, GBP/JPY, HKD/USD, JPY/KRW,RUB/USD
Non-Deliverable Forward	AUD/IDR, CAD/BRL, EUR/PEN, USD/VND, EUR/KRW, EUR/BRL

[4] A more detailed list can be found in Appendix 5

2.2.3 Collateral Reconciliation

For the reasons set out below, the industry believes that it is reasonable to include prices from banks' collateral reconciliation process in the RFET (in addition to transactions and committed quotes).

- Collateral reconciliation is an established and mature process that has tangible economic consequences – i.e. the movement of collateral between counterparties. It constitutes a genuine risk mitigation activity.
- When there is no dispute, there is agreement on market price between counterparties with opposite economic interests.
- Whilst it is true that margining happens at the netting-set level, daily reconciliation is performed at the **trade level**. Further, there are well-developed and widely-used vendor systems that facilitate trade-by-trade analysis.
- The process is underpinned by existing regulation – e.g.: EMIR (Article 11) and Dodd-Frank (see CFTC 17 CFR Parts 23 & 140)
- Although perhaps not the same indication of liquidity that a transaction represents, the pricing used in collateral reconciliation will always have an economic impact. This contrasts with committed quotes where the indication of liquidity is, strictly speaking, contingent.
- Typically, for a given instrument there can be multiple counterparty prices available. Also, in contrast to transaction data, it provides daily tracking of prices over a period.
  There is a risk that, over time, NMRF charges disincentive activity in markets where the benchmark instruments are currently very liquid. When a benchmark instrument transitions to being "off-the-run", the probability of the associated risk factors becoming non-modellable increases. This in turn could result in a negative feedback loop that ultimately reduces liquidity in the given market. Use of collateral reconciliation prices would mitigate this risk.

By way of background, for bi-laterally cleared contracts, the daily trade reconciliation process follows this workflow:

- The relevant trade portfolio data is extracted from the front-office risk systems (the price data typically being subject to Product Control oversight)
- Netting sets are produced by counterparty
- Reconciliation is performed on the trade population:
  - Matching is performed on the contract terms (notional, currency, maturity date, etc)
  - PV (to within threshold) is matched
  - Disputes are then followed up. Note: typically there are a high number of disputes at day 1 (circa 30%) but the majority these are resolved within 2 days - with aged disputes being closely tracked.

To ensure that such data is suitable for the RFET, a governance framework would be established. Specifically, restrictions and hurdles should apply such that the data is equivalent to the already accepted sources of RPO's (i.e. transactions and committed quotes):

- Data must be available at the trade level
- Trade terms must match across counterparties
- Trade level PV should match to within a threshold
- For a given instrument there must be a minimum number of counterparties providing data

Industry Recommendation:
The industry proposes to extend the universe of real price observations (RPOs) acceptable for the RFET to include the instrument prices used in the collateral reconciliation process – subject to certain restrictions.

2.2.4 NMRF Capitalisation

The NMRF capitalisation under FRTB, as it stands, uses a series of simplified assumptions and adds layers of conservative assumption on top of each other. We believe this approach is unlikely to result in an appropriate outcome, especially given that the upper bound on the final capital outcome is not well defined. This is quite different from the ES and SBA capital calculations in the rest of the FRTB framework.

As the NMRF population is expected to be material we believe it is critical for the BCBS to review both the key assumptions at the component-level (i.e. the granularity and liquidity horizons of SES components) and the aggregation formula across all components to achieve a balanced and better calibrated NMRF framework. This more holistic approach would benefit the consistency in global adoption of the new requirement and most importantly, improve the risk sensitivity of the overall calculation. We are concerned that a simple aggregation of a small number of risk components (as seen in today's Risk-not-in-VaR framework) is not comparable to a wider range of risk factors which are simply deemed as not "liquid" enough (per the intent of the NMRF).

Therefore, whereas the CP focused on just one area for comment in the aggregation of equity idiosyncratic risk, our response to the CP will focus on all key items that are critical to the NMRF framework.

The industry will quantify the impact of the below alternatives as part of the industry QIS[5].

A. *Granularity of SES component capital calculation*

The stressed SES calculation for curves and surfaces on single risk factor level could lead to arbitrage violations and calibration artefacts that can result in hedge breaks. Treating curves and surfaces in an economically consistent way as single objects in the SES calculation could mitigate these effects.

As such, we raise a very important point on the granularity at which non-modellable risk factors should be capitalised. The total SES capital charge has a significant sensitivity to how the granularity is defined and it has not yet been specifically outlined. We believe the granularity of capitalisation of NMRFs with temporal and strike dimensions, (eg. curves and surfaces) requires careful consideration.

The possible granularities could be:

i. ES granularity
ii. Real Price Observation (RPO) bucket granularity
iii. Curve and surface granularity (aka. Risk factor object)

Option i) is very granular and is highly dependent on each banks risk factor representation, e.g. some banks may use 25 discrete tenors to model a curve and some banks may use 10. It would penalise more granular risk factor representations and also introduce variability of NMRF capital charges across banks, which we do not believe was the intention. Furthermore, this granularity combined with conservative aggregation schemes will give results very far away from standard risk management calculations. This will also impact the total SES capital despite not having an impact on the observability when using Alternative 2.
Option ii) is a slight improvement on Option i) due to the fact that there is less dependency on internal representation of risk factors, however, it still suffers from relatively high granularity of SES

[5] The numbers will be provided separately to regulators, due to confidentiality and public disclosure restrictions

calculations and also a different stressed scenario for each bucket within the same curve or surface is very unrealistic outcome compared to real historical stressed scenarios.

Option iii) is more in line with actual risk management and closely interconnected risks would be calculated together in a single stress scenario for each curve or surface. For example for GBP swaptions all volatilities that were NMRF would be stressed together for a single SES component. Doing this would also reduce the number of components entering into the SES aggregation formula, which was one of the root causes of the unrealistically high SES capital charges. Another advantage of this option that there is that no additional calibration or correlation assumptions required to take into account the dependencies within curves or surfaces, as they are already reflected in SES scenario implicitly.

Industry Recommendation:

The industry proposes to set the granularity for curves and surfaces at risk factor object level, i.e. option iii) as described above.

Note: Calculating the SES capital component at curve/object level would result in multiple RPO buckets being used for one SES component capital calculation. Therefore a method needs be a documented by banks of how they combine the Liquidy Horizon (LH) from multiple RPO buckets into a single LH horizon that is used for the Curve/Object SES calculation/stress. An operationally simple approach to implement would be to take the weighted average liquidity horizon where greater weighting is given to the RPO buckets with more RPO observations – this avoids the LH calculation being dominated by less liquid buckets where there will be less risk and is operationally simple.

B. *Liquidity Horizons in SES component calculation*

Max gap is used as an input to the SES component calculation in the rules. This adds in an extra dimension to the capital penalty whereby the larger the gap the larger the penalty. It adds an extra level of conservatism by using the extremal operator in each individual case.

- It is an element of capital penalty calculation where a worst case is being applied component by component. Using a worst case for every step of the capital penalty results in conservative assumptions compounding on each other. Avoiding the use of extremal operator would still give differentiation on the basis of the RPO observations without adding conservatism in this step on the calculation.
- Any seasonality issues seen in observability rules get compounded by impacting this component of capital calculation as well.
- There is no fall-back approach to use in the situations where there is no modellability assessment available. In practice we do not expect some data for some risk factors and bucket combinations and also it is not economic or practical to continually pull data for those risk factors which we expect to be perpetually NMRFs.
- Finally, despite apparent simplicity it does create operational complexity and it would be preferable if this could be simplified for use in practice.

Hence, the industry is currently assessing two alternatives for the liquidity horizon to be used in SES calculations:

a) Average Gap: Penalises based on average liquidity across the year (versus far end of tail max gap), and accounts for market events/seasonality effects by taking into account the average gap during the year
b) ES Liquidity Horizons: Both conceptually and operationally simple since it does not introduce any new variables or calculations

Industry Recommendation:
1. change operator from Max Gap to average Gap LH = Max (ES_LH, Average Gap)

OR

2. Use the ES LH for the corresponding Risk factor per the table in para 181(k), i.e. SES LH = ES LH

C. Impact of NMRF Single Stressed period

The industry supports a stress period to be calibrated in line with the Firm-wide expected shortfall, rather than individually for each risk factor. This will drive more consistency and comparability of the NMRF charge across the industry.

The requirement to determine a unique stress period for every non-modellable risk factor in the SES capital calculation results in a significant level of conservatism and very high levels of operational complexity. Using different stress periods being used for each non-modellable risk factor is very unrealistic when compared to real stress scenarios observed in history (i.e. in a similar time period). Also, operationally, we anticipate the requirement to price transactions sensitive to one or more NMRFs over a set of shocks calibrated using different time periods will result in a very complex implementation of the calculations.

Industry Recommendation:
The industry proposes to set the stress period equal to that outlined by the expected shortfall methodology.

D. Impact of NMRF idiosyncratic equity risk

The industry welcomes the development with respect to idiosyncratic equity NMRFs and the proposal in Box 3 of the CP to revise Paragraph 190 subject to materiality assessment. The aggregation of idiosyncratic equity NMRFs based on zero correlation assumption is consistent with credit idiosyncratic NMRF, and is in line with previous industry recommendation.

Industry Recommendation:
The industry supports the BCBS's revision of Paragraph 190 as suggested in Box 3 of the CP. The aggregation of idiosyncratic equity NMRFs based on zero correlation assumptions, consistently with credit idiosyncratic NMRF.

Based on the industry's analysis, we expect a significant number of risk factors to be non-modellable both for credit and equity. While the idiosyncratic risks associated with individual risk factors are mostly uncorrelated to other idiosyncratic risks factors, a statistically significant correlation will be measured for a small set of risk factor pairs. Given the large number of correlating risk factors among all NMRFs, the industry expects the impact of these significant correlations on the portfolio risk to be negligible.

Industry Recommendation:
Rather than having to demonstrate that each idiosyncratic credit and equity NMRF is uncorrelated to all other idiosyncratic credit or equity NMRFs, the industry recommends ensuring that on a portfolio level an adequate capital charge is calculated.

E. BA CVA aggregation approach

The difficulty in NMRF rule making is that the availability of real prices is not static. Data pooling is in its early stages and there is still a lot of uncertainty on what can be delivered and how big the NMRF evidencing problem is going to be given all the technical, operation, legal/confidentiality issues.
The industry supports the spirit of the NMRF - we should ensure good quality data is used as input into the model. However, we are also very concerned that due to the rigidity of the rule and the uncertainty around evidencing that (i) the NMRF charge has the potential to overwhelm other components of IMA and (ii) the NMRF charge could become a major source of variation of IMA from time to time not reflective of actual risk.

Regarding the treatment of NMRFs unrelated to credit or equity idiosyncratic risk factors, the proposal is to use a constant correlation aggregation in the same way as for the standardised BCBS Basic CVA (BA-CVA) approach.
Citing the same argument in the CVA aggregation used for the basic approach for CVA, this is to recognize the fact that **the NMRF risk to which a bank is exposed is less than the sum of NMRF SES's**, given that these NMRFs are typically not perfectly correlated – particularly given the fact that each NMRF is allowed to be represented as a MRF proxy plus a NMRF basis.
The aggregation with a constant correlation ρ instead of a straight sum would also mitigate the sensitivities of the overall NMRF charge to the various uncertainties discussed above, thus allowing changes in the IMA charge to be primarily driven by actual risk changes. However in the interest of simplicity, the industry is also proposing an alternative simple weighted average approach.

Industry Recommendation:

The industry believes the Committee should allow for aggregation of equity idiosyncratic risk with zero correlation and has provided 2 alternative equations

Option 1: Modify the last term of the aggregation formula as follows:

$$\text{SES} = \sqrt{\sum_{i=1}^{I} ISES_{NM,i}^2} + \sqrt{\sum_{j=1}^{J} ISES_{NM,j}^2} +$$

$$\sqrt{(\boldsymbol{\rho} * \sum \boldsymbol{SES's\ of\ all\ other\ NMRFs})^2 + (\mathbf{1} - \boldsymbol{\rho}^2) * \sum (\boldsymbol{SES's\ of\ all\ other\ NMRFs})^2}$$

- $\boldsymbol{\rho}$, as a correlation parameter calibrated to an appropriate level which could be less than 1.

Or Option 2: as potentially a more straightforward weighted average approach per below

$$\text{SES} = \sqrt{\sum_{i=1}^{I} ISES_{NM,i}^2} + \sqrt{\sum_{j=1}^{J} ISES_{NM,j}^2} +$$
$$\boldsymbol{k} * \sum \boldsymbol{SES's\ of\ all\ other\ NMRFs}) + (\mathbf{1} - \boldsymbol{k}) * \sqrt{\sum (\boldsymbol{SES's\ of\ all\ other\ NMRFs})^2}$$

- $\boldsymbol{k}$ is prescribed by the regulators and can be calibrated to either a) reflect an average level of correlation across non-modellable risk factors, or b) to reflect an expected level of NMRF capital

This provides forward looking flexibility in providing a procedural tool to regulate the impact of NMRFs.

2.3 Expected Shortfall – Liquidity Horizons

The industry believes capping the LH for a risk factor "at the maturity of the related instrument" should be an option, and not a requirement. Using the word "should" in last sentence of para 181(k) contradicts with the rest of that paragraph, especially with allowing to increase the LH of a broad risk factor category at the desk level to avoid breaking of hedges. In short, as currently written, on one hand the paragraph implies that the prescribed LHs are to be treated as floors**,** and on the other hand, it talks about capping that floor**.** In addition, if mandatory in all cases, this capping requirement will create added operational/computational burdens to implement the requirements. Hence the industry believes that the word "should" in the last sentence of para 181(k) needs to be replaced with "may" in the final rule text.

Also, the FAQ 2.2 Q4 and Q5 (Appendix 4) responses requiring that LH for multi-sector indices should be determined using the weighted average LH of the constituents is problematic. Not only does it impose further operational and computational burdens, but can also lead to situations where even one constituent of an IG index being downgraded will result in the weighted average LH to become slightly greater than 20 days, and at that point, the LH of the entire index will have to be switched to the next highest LH, i.e. 40 days

Industry Recommendation:

1. In the last sentence of Para 181(k), "Furthermore, liquidity horizons may be capped at the maturity of the related instrument"
2. For multi-sector indices, where possible, allow assignment of the liquidity horizon without decomposition.

3. Scope of market risk capital requirements

The CP addresses a number of outstanding conflicts in the Jan 2016 text, which mandated the banking book list as the start of the trading book classification process, through the following positive amendments and clarifications:

- Removal of the inference that "instrument that is managed on a trading desk" must be "included in the trading book" (para.13c in the Jan 2016 text).
- Clarification on the use of the mandatory BB list as the start of the T/B classification process by adding additional reference to para 15 in the revised para 12&13.
- Clarification on "trading –related repo-style transaction" (new footnote under para. 16e) and "securities underwriting commitment" (para 13c & 3.1- Q4) are also helpful.

However, there are still a number of areas where we believe further change, or additional guidance is required.

3.1 Treatment of structural FX positions

The industry believes that structural FX positions can span trading and banking books, as well as to monetary and non-monetary items. In our view, the position that is of a non-trading and structural nature depends on a management choice realised by the top management of the bank, independently from whether standard approach or internal models are used to calculate the risk weights. These decisions are agreed in the Asset and Liability Management Committee (ALCO) and formally documented. In our view, the ALCO process should be used/leveraged also for regulatory purposes to agree the appropriate structural FX hedging policy.

Banks can opt for different kinds of strategies when dealing with the FX risk of so called structural FX positions, the amount of the structural position to be excluded depends on the strategy followed to hedge this risk. We believe that the firm's specific current or target value of the structural FX position at a consolidated level should be considered as the starting point from which to define the magnitude of remaining open position to be kept by currency to minimize capital ratio sensitivity. The FX risk position to be considered "structural" includes the FX risk arising from investments in consolidated (including branches) as well as unconsolidated entities and corresponding hedges. In this regard, it would be unhelpful if the determination of the net FX position and structural FX exclusion should depend on specific supervisory capital ratios and/or the approach used for the calculation of risk weighted assets. Similarly, the concept 'deliberately taken', also include 'deliberately not closed' or 'maintained'. Banks' internal specific processes are designed to determine the amount of positions that are deliberately maintained to protect impact from structural FX positions to its capital ratio. Therefore, the framework should be sufficiently flexible for the supervisors and firms to accommodate the banks' specific strategy to hedge the FX risk of structural FX positions.

With regards to the revisions to the draft FRTB rules, we believe that the structural FX section was not adequately considered in the earlier process and as proposed, would have significantly restrict banks' ability to manage structural FX risk without a real prudential reason for doing so. The revisions to the framework, as stipulated in the CP are a step in the right direction. However, below we propose a few additional changes that would better align the regulatory structural FX exemption mandate with industry best structural balance sheet management practices.

Proposed response to CP on Structural FX – Paragraph 4

We are very supportive that branches are now mentioned in the text and as well the clarification on risk position definition, scope and maximum amount. Having said that we would like to suggest further

amendments on four key items: 1) scope of the risk position, 2) scope of exclusion, 3) pre-approval requirements and 4) restrictions on hedges.

1) Scope of the risk position

The exclusion from capital underpinning is derived by the recognition that banks need to be able to FX risk manage the regulatory capital ratios. Hence, in our opinion it is less relevant how the necessary FX position is built up, whether it is from investments, corresponding FX hedges to adjust the FX risk arising from investments or from other sources. For example, at the parent company's individual level, the investment in a subsidiary is registered at historic cost. At the consolidated basis, once the elimination of the investment versus equity has taken place the assets/liabilities stemming from the subsidiary are integrated with the parent company's. In this regard, there are no specific instruments, but there are positions (assets, liabilities, derivatives) denominated in the foreign currency and that should be subject to structural FX calculations.

However, the way the FX position is built-up matters for the FX hedging strategy. For example, FX revaluation arising from subsidiaries is partly or not at all taxable whereas the FX revaluation of branches or local positions unrelated to equity investments is fully or partly taxable. Since the tax effect has an impact on the consolidated equity, it is likely to impact on the ratios and the FX strategy may take tax-related issues into consideration. As a result, some FX positions may be grossed up to reach the desired FX sensitivity to the structural FX positions.

The BCBS has not specified the treatment of participations in subsidiaries that are registered at historic cost in the parent company's individual financial statements. In this regard, it should be clarified in the text that participations denominated in foreign currencies which are accounted at historic cost in the individual financial statements should not bear any market risk capital charge. These participations are not listed nor marked to market daily and there's no clear view on how these participations should be considered within the FRTB. Furthermore, the FX risk position that can be excluded, referred to as structural FX, includes the risk arising from investments in consolidated and unconsolidated entities as well as the hedges. The current wording appears to split this up into two subparagraphs a) and b). Based on the above justification, we propose to amend paragraph 4a as follows:

Industry Recommendation:
4a) The risk position is taken or maintained either for the purpose of hedging partially or totally against the potential that changes in exchange rates could have an adverse effect on its regulatory ratios (e.g. insolvency ratio, leverage ratio or other regional requirement such as stress based requirement) or as a result of foreign currency functional subsidiaries or branches having their balance sheets converted from the foreign currency into the bank's reporting currency that is applicable at a consolidated level.

Furthermore, to avoid supervisory divergence on how to interpret what is deemed structural, The industry recommends that *'positions taken to hedge structural FX risk stemming from the origination of foreign currency assets'* is explicitly referenced, as this is a common driver of structural FX risk on local balance sheets. For example, it is common for international banks to provide clients with dollar funded credit from local balance sheets. Where local balance sheets are denominated in currencies other than USD, a structural FX position is created upon origination of the USD asset (providing it attracts RWAs).

With regards to creation of foreign currency assets on local balance sheets, it can be for example a subsidiary with a single balance sheet and a single FX denomination of capital resources. However, it will create structural FX positions when it originates foreign currency assets (providing they attract RWAs) as part of its ongoing business.

Industry Recommendation:
The industry recommends that the creation of foreign currency assets on local balance sheets is explicitly referenced in the BCBS framework to avoid supervisory divergences between jurisdictions.
The industry recommends to amend paragraph 4b) to:
4b) The risk position is of a "structural", i. e. of a non-dealing, nature such as ***(but not exclusively)*** *positions stemming from:*

- ***investments in the below entities, with the net asset value including tangible and intangible assets is considered:***
  - ***affiliated but not consolidated entities (for example associates and joint ventures) denominated in foreign currencies;***
  - ***consolidated subsidiaries and/or branches denominated in foreign currencies***
- ***long-term participations denominated in foreign currencies which are reported in the published accounts at historic cost;***
- ***FX hedges entered to adjust FX exposure arising from such investments;***
- ***FX transactions used to hedge structural FX positions;***
- ***Positions taken to hedge structural FX risk stemming from the origination of foreign currency assets on local subsidiary balance sheets;***
- ***Positions taken to protect subsidiary ratios where functional currency differs from the Group; and***

In addition, any FX transactions used to hedge or adjust the above mentioned structural FX positions.

2) Scope of exclusion
The current text mentions the capital adequacy ratio as the ratio to FX hedge. However, member banks are exposed to various other regulatory ratios (such as the leverage ratio, Pillar 2 requirements) and may internally target a higher ratio than minimum requirements to maintain an adequate management buffer. This is due to the fact that banks have different structures, business mixes and supervisory buffers and therefore require flexibility on which ratio to FX hedge.

Industry Recommendation
We propose to expand the scope to include other regulatory ratios, not only the risk-based capital adequacy ratio by referring in the text more generically to regulatory ratios.
Therefore, we recommend removing the specific language around maximum exclusion in subparagraph c).
4c) The exclusion is limited to the amount of the risk position **as defined under (b)** ~~that neutralises the sensitivity of the capital ratio to movements in exchange rates.~~

4h) The regulatory ratios allowable for structural FX hedging include any regulatory ratios, such as risk or stress-based capital or leverage ratios, or other ratios as agreed with the supervisory authority. In regard of the capital ratio, the FX hedge position to be considered "structural" can be a partial or the maximum FX hedge position that reduces or neutralises the sensitivity of the current or target capital ratio to FX movements (not necessarily the minimum regulatory ratio).

More generally, banks can have different strategies to hedge their structural FX risk either by targeting directly a certain capital ratio or indirectly by targeting directly the FX exposure arising from the structural risk position.

3) pre-approval requirements

Paragraph 4e) defines a pre-approval requirement for the risk position. Since the risk position does changes on an ongoing basis through various factors (e.g. retained earnings, dividend distribution, pension contributions, capital injections, sale of portfolios or businesses, tax changes, adjustment to FX hedges, even FX market moves), some of which are outside the control of the banks, such a pre-approval requirement has to be implemented on conceptual hedging policy level. For example, banks could pre-agree with relevant supervisor a structural FX risk hedging framework, to include any structural FX positions as well as any FX transactions used to hedge structural FX positions, within which broad guidelines are defined and within which the bank can then FX risk manage without further pre-approval requirements.

To illustrate, a bank may choose to hedge a different currency or change the quantum of hedges in a currency. However, none of this would have any impact on the risk management principles for a bank.

Industry Recommendation:

The industry recommends banks to obtain pre-approval requirement on overall principles subject to certain limits such as currency and quantum of hedge. Subsequent approvals should be sought if there is a change in risk management approach or if any limits are breached.

Hence, we would like to amend paragraph 4e) to:

4e) The national supervisor requires a pre-approval of a conceptual risk management framework and strategy on structural FX hedging, which could include high-level guidelines on basis of FX hedge, hedge activity and which ratios to hedge.

4) Restrictions to hedges

Finally, following our previous comments on the dynamic nature of structural FX risk and the fluctuation of the position over time, the requirement to have the hedge in place for the life of the asset or other items, as well as the requirement to exclude the hedge for at least six months would create unnecessary burdens and significantly limit banks' ability to manage structural FX risk efficiently. Necessary adjustments are required for example at year-end when the bank hedges its subsidiaries' profit and loss as well as when any dividends are paid later in the year.

Industry Recommendation:

The industry strongly recommends removing paragraphs 4 g) and 4 f)

3.2 Boundary between the trading book and banking book

The interactions between accounting requirements and supervisory requirements require pragmatism in both interpretation and supervision. As FRTB enhances existing "trading intent"-based accounting recognition with product-based lists of presumptive trading book and mandatory banking book items, the industry remains concerned about the operational requirements to comply with the revised trading/ banking book boundary in cases where accounting rules deviate from such. Therefore, the industry would urge that "*trading intent*" remain fundamental in the trade/banking book classification.

Industry Recommendation:
Industry asks for a more flexible framework removing the absolute prevalence of mandatory lists and would recommend that 'trading intent' of instruments remain as a deciding factor for the classification of the Trading versus Banking Book classification.

We note that the revised paragraph 27 of the CP states that only re-designations (at the bank's discretion) outside those required by complying with paragraphs 12 to 17 are restricted by strict governance rules as per paragraphs 28-29. However, FAQ 3.1 Q2 (Appendix 4) stated that the disallowance of "capital benefits as a result of switching" positions from trading to banking and vice versa is absolute. The industry wants to confirm that the CP language would override the FAQ so that boundary changes that are automatic and outside the control of the bank as a result of paragraphs 12 – 17 would not be subject to paragraph 28-29.

3.3 Equity investments in a fund

The CP introduced additional criteria under paragraph 15a whereby only Equity investments in funds meeting such requirements can be designated to the Trading Book. Whilst the industry welcomes the intent to promote consistency in the trading/banking book designation, we are concerned that introducing such rigidity could lead to reduced investor choice, as re-designating funds that are risk managed and traded in Trading Book today could impact the market-making/product offering across the industry. Therefore, Industry has been consistent on the opinion that funds with either daily prices or those that can be looked through could potentially qualify as trading book instruments given the ability of banks to actively trade in and out and manage the underlying risks of these positions.

Paragraph 15a of the CP sets three eligibility criteria: 1) daily price quote; 2) tracking a non-leveraged benchmark; and 3) tracking difference <1%. The use of "daily real price" and "daily price quote" in paragraph 15a could lead to confusion. We recommend removing the reference of "daily real price" as this terminology has been used in defining NMRF, therefore less relevant to funds where for example, the Net Asset Value (NAV) provided by mutual funds is an executable price but not necessarily one where the institution has conducted a transaction, and which may not have been provided by a vendor or verified through a trading platform or an exchange. Furthermore, implementing the criteria (2) and (3) would potentially result in actively managed funds, which do not necessarily track a benchmark or have a tracking difference higher than the threshold, to be forced into banking book despite them providing transparent pricing and information about the underlying investments that are being held. In addition, it is unclear why the benchmark has to be "unleveraged". Leverage would in no way negatively impact the bank's visibility of the underlying risk dynamics of the fund and can be appropriately reflected in the market risk framework. We believe that the market risk framework is better equipped to capture the risk dynamics of these trading instruments than the banking book framework. Therefore, we recommend these criteria to be re-assessed based on nature of the product.

The industry argues that Trading Book eligibility should apply for liquid fund products executed by market-making desks as evidenced by the daily price criteria. These products (i.e. indices, ETFs, mutual funds/mutual funds derivatives) are driven by client demand where firm's fund exposures are either for purposes of hedging a client transaction or linked to a client transaction secured by such fund positions. From a firm's perspective, there are strategies in place for client facilitation, derivatives hedging and Mark-to-Market valuation, and these are organized through a dedicated trading desk with management reporting and risk function with limits. Proposed rules could inadvertently reduce institutional clients' ability to manage risk via capital markets.

To note, even in mutual fund derivatives market, the role of banks is to facilitate investor access to these fund products. Banks are market makers that create derivative products referencing the funds (or basket of funds) as underlying and delta hedge through buying units of the funds. These funds are highly regulated, registered and monitored by local regulators. They are also subject to stringent hurdles on the manager around diversification of counterparty risk and economic exposure and are subject to stringent liquidity requirements, which reduce their risk and volatility. Whilst such activities are recognized under the current US and EU trading book capital requirement, the CP text remain ambiguous on whether such well-regulated products would be penalized under the FRTB rules.

The industry welcomes the revised CP wording on paragraph 69(a) where firms "may alternatively elect to compute curvature risk charges without performing a look-through". This offers firms flexibility in the SA implementation, whilst remaining conservatively capitalised using the prescribed "short-cut" method. This also reduces the operational burden of implementing a full decomposition, as certain fund products may hold several thousands of individual positions. Therefore, we would encourage the BCBS to consider extending this "alternative" approach for Delta and Vega calculation for funds as well.

Industry Recommendation:

1. Industry asks for reconsideration of the new requirements that Equity investment in Funds (i.e. indices, ETFs, mutual funds/mutual funds derivatives) need to meet to be eligible for trading book. Industry would recommend that a more economic and simpler approach be adopted to allow funds with daily price or look-through to remain in the trading book.
2. We recommend removing the reference of "daily real price" as this terminology has been used in defining NMRF, therefore less relevant to funds
3. If capitalised under SA, Industry would argue that the BCBS could also introduce an additional bucket for 'Indices, Funds, and ETFs' for funds with less frequent look-through (as seen in ISDA SIMM v2.0 methodology), where such fall-back approach would to ensure conservatism in SA capital whilst the instruments could remain on the trading book.
4. Industry would recommend that rules for capitilising fund with less frequent look-through funds should be clarified at the BCBS level to achieve global consistency in interpretation and adoption.

3.4 Net Short Credit/Equity in the Banking Book

Both CP and FAQs retain the mandatory TB classification of "instrument that would give rise to a net short credit or equity position in the banking book" with the original accompanying footnote.
The industry remains concerned that the implementation of this requirement might impose undue operational complexity and in addition, certain details remain ambiguous.
Industry view is that:

(i) Net short credit position is interpreted as the combined credit position of loans and lending related commitments, along with their associated credit hedges in the Banking Book.
(ii) The net short rule should not disincentivize hedging risks in Banking Book, e.g. by splitting hedges: loans and lending related commitments in Banking Book, and hedges in Trading Book. Such a split would lead to incremental capital charges.
(iii) Indeed, both instruments (loan, lending related commitments + hedge) are part of the banking book with no trading strategy, and should be classified as such. Otherwise, the net short rule would result in bringing the banking book hedges into the trading book, which is in conflict

with the credit risk mitigation rules (where these hedges are permitted to remain under the banking book classification).

The industry agrees that non-negligible net short credit or equity positions should be capitalised as Trading Book – complexity will remain in terms of aggregation with other Trading Book positions~~,~~ but not forcing instruments to be re-classified subject to paragraphs 28-29. Managing credit risk or equity risk in the banking book is essential and undue complexity / uncertainty around capital outcomes would disincentivize hedging activity with ultimate consequences to provide financing to the economy.

FAQ 3.1 Q3 (Appendix 4) requires banks to continuously monitor banking book positions for net short credit and equity positions. While we appreciate the intent is to ensure net short positions in the banking book are properly captured and capitalised, continuous monitoring will place significant operational burden for banks especially on positions that remain relatively stable over time.

Industry Recommendation:

1. Industry recommends that the net short rule should not force credit hedges (e.g. CDSs which hedge loans, commitments and other unfunded exposures in the banking book), into Trading Book.
2. Instead, non-negligible net short credit or equity positions should be capitalised as Trading Book – complexity will remain in terms of aggregation with other Trading Book positions~~,~~ but not forcing instruments to be re-classified subject to paragraphs 28-29.
3. Industry also proposes replacing continuous monitoring with an assessment at inception and subsequent periodic monitoring, to balance the operational burden and ensuring adequate controls. Implementation details (definition of non-negligible, frequency of monitoring) should be left for banks to agree with supervisors.
4. Given the definition of "net short credit" will continue to evolve when the BCBS provides further clarification and this is a new concept under FRTB that such positions fit the TB "purpose", we would recommend that paragraph 17 (which allows some deviation subject to regulatory approval) to also apply in this circumstance as we believe that some flexibility would be required by national supervisors.

3.5 Underwriting in securities

With respect of underwriting, it is helpful that the BCBS has scoped out loan underwriting from compulsory trading book treatment. In respect of securities underwriting, the following issue remains. Banks can engage in the primary markets with a range of objectives, sometimes simultaneously:

a. Intent to hold a portion of the issue to maturity in accordance with an internally approved risk appetite. In the case of debt issuances these holdings are likely to be held at amortised cost.
b. Intent to hold the securities as part of the liquid asset buffer of the bank, which may involve sales prior to maturity as part of managing the overall liquidity profile and without primarily having a trading intent. Such activity is usually treated as "hold to collect and sell" under IFRS9 (AFS under US GAAP) and in the case of debt issuances these holdings would be fair valued through Other Comprehensive Income.
c. Intent to distribute to external investors: traditional underwriting activity. These securities are likely to be held as trading assets and fair valued through the profit and loss account.

Industry Recommendation:
It is only the holdings in (c) – i.e. positions where there is an intent to distribute to external investors and where the positions are fair valued through the profit and loss account – that has the potential to qualify as trading book instrument.
Only securities that are expected to be actually purchased on the settlement date outside (a) and (b) should be classified as trading book instruments during underwriting period and thereafter. Similar considerations would apply to equity underwritings subject to requirements in paragraphs 11, 15 and 16, though in such cases the accounting is likely to be fair value through profit and loss whatever the original intent.

As currently drafted, the rules did not take into consideration scenarios in which banks may hold securities underwritten by themselves in banking book. We propose such portion should be considered as banking book during the underwriting stage and thereafter.

3.6 ALM Mandate: Funding and Liquidity Activities

The industry appreciates the FAQ 3.2 Q2 and Q3 responses (Appendix 4) that movements between Trading and Banking Books are not permitted as they could constitute regulatory arbitrage. However certain ALM activities require significant interaction between banking and trading books

Generally banks designate centralized function to be responsible for measuring, monitoring, reporting and managing banks' liquidity, funding and structural interest rate and foreign exchange risks, as well as executing the banks' capital plan. Such centralized function contributes to the safety and soundness of financial institutions.

Such function extensively interacts with trading business transacting in products such as securities, derivatives, deposits and repo in their banking book portfolios. Neither the IRT treatment (paragraphs 31-39) nor are re-designation (paragraphs 27-30) provisions fully suitable for allowing these ongoing ALM activities being carried out across the TB/BB Boundary.

Industry Recommendation:
We propose an option for banks to have explicit recognition of ALM mandate under pre-defined policy to recognise the need for 'ongoing' transactions to be conducted across the TB/BB Boundary – and exempted for general requirements of instruments moving between regulatory books and internal risk transfer.

However, we propose the following oversight and controls for **ALM related activities**:

- *internal review by senior management and external approval by national supervisors for policies around ALM activities*
- *activities conducted in compliance with bank policy and fully documented*
- *periodic review of arrangements (i.e. annual)*

3.7 Trading desk requirements

We welcome the additional flexibility in the CP to help resolve of the conflicts between FRTB mandates and the way in which banks organize their trading desks. However, the proposals still place significant restrictions on the number of desks that individual traders can be assigned to.

Industry Recommendation:

1. We suggest that these restrictions (i.e. cap of 2 desks that an individual trader can be assigned to) be mindful of business and organizational hierarchy to allow some further flexibility, subject to regulatory approval.
2. We would also ask the BCBS to endorse a supervisory practice whereby local regulators would accept the trading desk structure as agreed with the home regulator of the bank. This is necessary as a bank can only have one organizational structure.

This would help prevent the emergence of parallel "hierarchies", in which externally facing roles were created exclusively to meet FRTB requirements.

4. Simplified alternative to the standardised approach

The proposed revised standards provide a simplified, conservative Basel II scaling factor-based approach (the Simplified Alternative) to deriving market risk capital requirements for use by banks with a smaller or simpler trading books. This option was suggested as a possible approach in the BCBS consultation on the simplified alternative in mid-2017.

Scope/application

A key objective of the BCBS proposal is to encourage and support those jurisdictions that wish to apply the Basel framework and to further the goal of international harmonization of prudential capital standards. Therefore the industry wishes to propose that a jurisdictional application is appropriate for the Simplified Alternative.

Access to the Simplified Alternative would encourage continued participation of larger banking groups in those jurisdictions in which they have moderate market risk activities by limiting their local compliance burden. This would ensure a deeper market for relevant trading products, provide greater liquidity for users of these products and facilitate the development of the capital markets in what, in many cases, will be emerging market economies.

Allowing use of the Simplified Alternative at a jurisdictional level could also benefit certain local supervisors as it will reduce the supervisory burden of assessing compliance with the revised standardised approach when the extent of trading activities of market participants may not, of itself, justify the resource investment in this capability.

Therefore, industry recommends that the Simplified Alternative can be applied at a legal entity level within each jurisdiction. As acknowledged in the CP, the Simplified Alternative is proposed to be more conservatively calibrated than the revised SA, and this provides comfort for regulators that entities using the Simplified Alternative are more than adequately capitalising their market risk exposures. Further, the industry notes that Annex F of the CP includes proposed discretionary powers to supervisory authorities to require compliance of banks with the full SA despite those banks meeting any qualifying requirements. This would ensure that the local supervisor can prevent use of the Simplified Alternative for those banks for which they deem it is inappropriate.

Should this recommendation be accepted, and where a bank adopts the use of the Simplified Alternative in the local jurisdiction (and is permitted to do so by the local regulator), they should also be permitted to use the Simplified Alternative for that jurisdiction's activities in the group's consolidated capital adequacy calculations. This would reduce the compliance burden and avoid a bank having to invest in two separate calculations: one for local purposes and one for consolidated reporting.

Governance

We note that the CP states that "..*the Committee does not propose to specify eligibility requirements on banks which may use this approach*". The industry welcomes this approach and note that the more conservative calibration in combination with the supervisor discretion provide adequate safeguards for regulators with respect to utilization of the Simplified Alternative.

However, the industry is concerned that local regulators may feel compelled to apply the proposed indicative criteria, which are included in the CP, when determining eligibility for the Simplified Alternative. Consequently, we would recommend removal of these indicative criteria from the final standard. In addition to the supervisory safeguards mentioned above, we would add the following

additional rationale, with respect to the specific indicative criteria, behind industry's recommendation to remove the criteria:

G-SIBs: We have recommended earlier that use of the Simplified Alternative should be allowed at the jurisdictional/legal entity level. Should the BCBS agree with this approach then the indicative restriction on G-SIBs should be removed. The local subsidiaries of G-SIBs are those who are most able to participate in the trading markets of developing economies. Hence, they play a vital role in the development of local financial markets of these emerging economies, and their continuing presence should be encouraged. Also, some supervisors impose limitations on the market risk activities of banks in their regions, so that in effect market risk is jurisdictionally constrained. It would seem inappropriate that banks operating in such jurisdictions may be automatically denied access to the Simplified Alternative purely by virtue of their systemic status.

Uses IMA for part of their trading book: The industry has recommended that the Simplified Alternative can be applied at a legal entity level within each jurisdiction. However, retaining this criterion may result in some jurisdictions taking a jurisdictional rather than an individual entity approach in allowing use of the Simplified Alternative. Consequently, by virtue of this criterion, a bank in a developing economy for example, which has just one entity which uses IMA, may have all of its entities in the region prevented from using the Simplified Alternative, with significant potential detriment to the development of that region's markets.

Correlation trading portfolios: Specifying this criterion could exclude banks which use, for example, CDS to hedge the counterparty credit risk of those derivatives which are held for hedging purposes.

Calibration of the scaling factors

While the industry accepts that the trade-off for simplification is a degree of conservatism in the consequent capital requirements, such an approach needs to be proportionate. Industry believes that the proposed calibration thresholds of the Simplified Alternative may be disproportionately conservative.

While only limited analysis has been done to date, the initial results from some banks who are most likely to adopt the Simplified Alternative suggests that at the mid-point of the proposed scaling factors the increase in capital from current Basel II levels is of the magnitude of approximately 95%. At the maximum scaling factor level the market risk capital increase is approximately 120%. These initial results would suggest that the final calibration for each risk class should be towards the low end of the specified ranges set out in the CP. Certainly an increase of double the capital increase under the revised SA would not be in keeping with the stated objective of the BCBS in the CP that the Simplified Alternative should be "*similar to, but slightly more conservative, than the "full" revised Standardised Approach*".

Also, with respect to specific risk factor scales, the industry would make the following recommendations. The general and specific equity risk scaling factor is extremely high at 3.0 – 3.5. In some developing market jurisdictions local supervisors require a bank's exposure to mutual funds be treated as equity exposures. Under the proposed very high scaling factors, such a punitive increase in capital requirements could have a very detrimental effect on the development of the mutual fund sector in these developing economies.

With respect to General and specific interest rate risk scaling factor the industry believes that given the sustained decrease in volatility in interest rate markets, the lower end of the range should be set at 1.25%.

The industry understands that the final calibration of these scaling factors will be determined on the basis of analysis of data provided to regulators. We would encourage appropriate scaling factor ranges be considered and that the final calibration is in keeping with the Committee's stated objective that the Simplified Alternative result in capital outcomes that are 'slightly more conservative' than the revised SA.

Industry Recommendation:

The industry recommends:

1. That banks should be able to apply the Simplified Alternative at the individual legal entity level within each jurisdiction.
2. The indicative criteria should be removed from the final standard as they could be used in a way which restricts access to the Simplified Alternative, with potentially detrimental implications for the markets in developing economies.
3. The scaling factor ranges are conservative and should be reviewed and revised.

5. ANNEX D – Guidance for evaluating the sufficiency and accuracy of risk factors for IMA trading desk models

The latest CP provides new text relating to guidelines for evaluating the sufficiency and accuracy of risk factors for IMA trading Portfolios / Principles for supervisory assessment of data used for expected shortfall models – "Annex D".
The industry is concerned by the unintended consequences of additional modellability criteria under supervisory discretion as part of the guidelines in Annex D as well as the added operational burden implied by some of the new requirements that create very little incremental value.

Industry Recommendation:
The industry recommends removing the additional requirements for modellability and reconciliation with RPOs, and to focus on the current good practices / requirements regarding data quality.
The industry proposes rewording (addition to the currently drafted text are in bold while strikethrough text indicates a deletion), notably for Principle 6 to avoid any ambiguities as per below:

Annex D – proposed rewrite	Rationale
1. Principles for supervisory assessment of data used for expected shortfall models Banks use many different types of models to determine the risks resulting from trading positions. The data requirements for each model may be different. For any given model, banks may use different sources or types of data for the model's risk factors. Banks must not rely solely on the number of observations to determine whether a risk factor **can be included in the expected shortfall model**.~~is modellable~~. The accuracy of the source of the risk factor price must also be considered. In addition to the requirements specified in paragraph 183 (c), the following principles for data used in the model must be applied to determine whether a risk factor that passed the risk factor eligibility test can be modelled using the expected shortfall model ~~or should be subject to a non-modellable risk factor (NMRF) charge~~.	As written, the principles and examples mix the legitimate data quality concerns with modellability / NMRF charge topics, which are already addressed by the existing Standards through the model eligibility tests and SES charge.

Principle 1. *The data used may include combinations of modellable risk factors*. Banks often price instruments as a combination of risk factors that have been deemed modellable. This practice allows for sound pricing interpolations/extrapolations, as well as other transformations of historical observations. As a general principle, interpolation based on combinations of modellable risk factors should be consistent with mappings used for P&L attribution (to determine the RTPL) and should not be based on alternative, and potentially broader, bucketing approaches. Likewise, banks may compress risk factors into a smaller dimension of orthogonal risk factors (e.g. principal components) and/or derive parameters from observations of modellable risk factors, such as in models of stochastic implied volatility, without the parameters being directly observable in the market. **In the event that a bank uses a broader bucketing or a smaller dimension that in the HPL, this must be reflected in the RTPL. On the contrary, when the transformations used do not reduce the granularity or dimension (this is typically the case when the ES model is based on rolling maturity futures built form fixed maturity market date, in the same number), then this should not be considered as a proxy for the RTPL.** ~~Subject to the approval of the supervisor, banks may extrapolate up to a reasonable distance from the closest modellable risk factor. The extrapolation should not rely solely on the closest modellable risk factor but on more than one modellable risk factor.~~ In the event that a bank uses extrapolation, the extrapolation must be considered in the determination of the RTPL.	The industry recommends to avoid possible ambiguities by clarifying that (i) only reduction of granularity/dimension is a proxy with respect to RTPL and (ii) as extrapolation is already captured by RTPL, the concept of 'reasonable distance' is not necessary.
Principle 2. *The data used must allow the model to pick up both idiosyncratic and general market risk.* General market risk is the tendency of an instrument's value to change with the change in the value of the broader market, as represented by an appropriate index or indices. Idiosyncratic risk is the risk associated with a particular **issuer or** issuance~~, including default provisions, maturity and seniority.~~ The data must allow both components of market risk to be captured in any market risk model used to determine capital requirements. If the data used in the model do not reflect either idiosyncratic or general market risk **and if the P&L attribution test confirmed the materiality of the missing idiosyncratic or the general**	Eligibility tests and specifically the P&L attribution (PLAT) aim at capturing the risk factor coverage. NMRF charge is necessary only when required by the PLAT. Additionally, some of the overly prescriptive details should be removed such as 'idiosyncratic' which may be finer/coarser, depending on the bank portfolio and internal modelling.

market risk, the bank must apply an NMRF charge for those aspects that are not adequately captured in its model.	
Principle 3. The data used must allow the model to reflect volatility and correlation of the risk positions. Banks must ensure that they do not understate the volatility of an asset (e.g., by using inappropriate averaging of data or proxies). Further, banks must ensure that they accurately reflect the correlation of asset prices, rates across yield curves and/or volatilities within volatility surfaces. Different data sources can provide dramatically different volatility and correlation estimates for asset prices. The bank should choose data sources so as to ensure that (i~~) the data are representative of real price observations (RPOs);~~ (ii) price volatility is not understated by the choice of data; ~~and (iii) correlations are reasonable approximations of correlations among RPOs.~~ Furthermore, any transformations must not understate the volatility arising from risk factors and must accurately reflect the correlations arising from risk factors used in the bank's ES model.	Principles 3 and 4 require comparison/reconciliation with real price observations, which does not take into account that RPOs incorporate "noise" (timing, bid/ask, XVAs, CSA impacts etc.). Those distortions impact the level and volatility of each price as well as the correlations across prices.
Principle 4. The data used must be reflective of prices observed and/or quoted in the market. ~~Where data used are not derived from RPOs, the bank must demonstrate that the data used are reasonably representative of RPOs.~~ To that end, the bank must periodically **compare** ~~reconcile~~ price data used in a risk model with front office and back office prices. ~~Just as the back office serves to check the validity of the front office price, risk model prices should be included in the comparison~~**.** ~~The comparison of front or back office prices with risk prices should consist of comparisons of risk prices with RPOs, but front office and back office prices can be used where RPOs are not widely available.~~ Banks must document their approaches to deriving risk factors from market prices **and the comparisons of risk prices with front office / back office prices.**	Principle 4 should focus on comparison between risk prices and FO/BO prices.
Principle 5 (…)	No adjustment
Principle 6.	In its current wording this principle is not fully clear regarding the data and risk factors eligible to the reduced

The data used to determine stressed expected shortfall (ES) must be reflective of market prices observed and/or quoted in the period of stress. The data for the stressed ES model should be sourced directly from the historical period whenever possible. There are cases where the characteristics of current instruments in the market differ from those in the stress period. Nevertheless, banks must empirically justify any instances where the market prices used for the stress period are different from the market prices actually observed during that period **(an example is a bond having currently a low duration, and for which the use of its past market data – when its duration was higher – is not appropriate because long term and short term bonds spreads have different volatilities. In this case the bank may use data of a low duration bond of the same issuer)**. Further, in cases where instruments that are currently traded did not exist during a period of significant financial stress, banks must demonstrate that the prices used match changes in prices or spreads of similar instruments during the stress period **(an example is a CDS with 2014 definitions: the bank may use the market data of a CDS with 2003 definitions)**. **<u>Indirect Approach:</u>** In cases where banks do not sufficiently justify the use of current market data for products whose characteristics have changed since the stress period, the bank must omit the risk factor for the stressed period and meet the requirement of paragraph 181 (d) that the reduced set of risk factors explain 75% of the fully specified ES model. Moreover, if name-specific risk factors are used to calculate the ES in the actual period and these names were not available in the stressed period (e.g. an initial public offering occurred two years ago, while the stress period is five years ago), there is a presumption that **the idiosyncratic part of** these risk factors are not in the reduced set of risk factors **(for instance, equities may be modelled on the basis of a factor model. A factor model does allow to extract the systematic risk back to 2007; the idiosyncratic risk of an equity born in 2012 can be modelled back to 2007 by construction)**. Exposures for risk factors which are included in the current set but not in the reduced set need to be mapped to the most suitable risk factor of the reduced set for the purposes of calculating ES measures in the stressed period **(e.g., the risk factor of an new IPO X is not in the reduced set but could be mapped to a risk factor Y contained in the reduced set to meet the requirements of 181 (d) and 181(f) for stressed window calibration).**	set. In order to avoid any ambiguities and to help clarify the intent, we suggest enriching the wording with some examples. Additionally, given the strict P&L test and the sophistication of pricing models used by the front office, particularly for structured products, the cost of utilizing the indirect method of calculating stressed ES is proving very high for some banks, as it essentially triples the number of calculations. For banks that do not have such situation, the indirect approach is quite effective and reduces the need to model time series into the stress period. For banks that are disadvantaged by these costs, and are prepared to defend their time series modelling into the stress period to the satisfaction of the supervisor, the direct approach should be allowed. The indirect approach can then be used as a benchmark but should not be enforced for daily calculations of ES unless the bank opted for the indirect approach.

Direct Approach: **Alternatively, risk factors could enter the reduced set by the mapping described above (e.g. Facebook is globally mapped to, hence proxied by Google), provided the bank can justify the appropriateness of such treatment to the supervisor.** **Banks are requested to calculate stressed expected shortfall measure according to the indirect scaling approach introduced in paragraph 181 (d). A direct calculation approach can be used in case banks can prove to the competent authorities an improved risk representation.**	
Principle 7 ***Proxies in the full set / current period****: The use of proxies must be limited, and proxies must have sufficiently similar characteristics to the transactions they represent.* Supervisors will assess whether methods for combining risk factors are conceptually and empirically sound. Combinations of modellable risk factors are to be considered as proxies **(except for the cases when risk factors themselves refer to multiple names)**. ~~and, in constructing modellable risk factors, proxy use must be limited and proxies themselves must be sufficiently similar to characteristics of the transactions they represent.~~ Proxies must be appropriate for the ~~region, quality and~~ type of instrument they are intended to represent. For example, the use of indices in a multi-factor model must capture the correlated risk of the assets represented by the indices, and **if** the **residual** ~~remaining idiosyncratic~~ risk**s (or a fraction thereof) are deemed modellable and modelled in ES, they do not need to be** ~~must be~~ demonstrably uncorrelated **and correlation should be properly capture in the ES model** ~~across different issuers. A multi-factor model (…) must provide an assessment of the uncertainty in the final outcome due to the use of a proxy. The coefficients (betas) of a multi-factor model need to be empirically based and not determined based on judgment. Instances where coefficients need to be set by judgment generally should be considered as NMRFs~~**.** If risk factors are represented by proxy data in the ES model, the proxy data representation of the risk factor – not the risk factor itself – must be used in the RTPL unless the bank has identified the basis between the proxy and the actual risk factor and properly capitalised the basis **either by including the basis in the ES model (if it is a MRF) or capturing the basis as a NMRF (if it is a NMRF)** ~~as an NMRF~~, ~~I~~if the basis is properly capitalised ~~as an NMRF~~ then the bank can choose to include in the RTPL either (i) the proxy risk factor and	The industry is concerned with the link made between proxying and modellability. There should not be any automated way to treat a basis risk factor if it (a) passes modellability tests and (b) the risk factor modelling captures the idiosyncratic basis risk.

the basis or (ii) the actual risk factor itself. **[Note that this principle does not apply to the situation the proxy in question is a modelling choice (i.e., not driven by data availability) (e.g. multi-factor model as mentioned above), in which case the actual return can still be included in the RTPL with no extra requirement for capitalisation.]**	

6. IMA DRC

6.1 Sovereign Floor

The proposed floor for the probability of default (PD) in the IMA default risk charge is set at 3 basis points across all issuer types. The floor is not risk-sensitive which puts disproportionally high capital requirements on bonds issued by high credit quality issuers, e.g. AAA rated government and covered bonds, which could impact liquidity negatively. Regional banks active in markets dominated by AAA and AA rated issuers are particularly affected by the combination of the PD floor and the overall design of the DRC, which penalizes less diversified portfolios, both in terms of sector and regional concentration as well as issuer concentration, i.e. in our view, the DRC overcharges for concentration in AAA/AA assets. Furthermore, the liquidity of these assets needs to be considered in the context of a 1 year PD horizon. In practice, given that these are typically high quality liquid assets, a bank will have the ability to manage such portfolios if credit quality deteriorates.

Industry Recommendation:
The industry reiterates its proposal to remove the 3 basis-point floor for Sovereigns.

This will ensure consistency between the Trading Book and the Banking Book. Covered Bonds should therefore be considered (i) as a separate risk exposure class under IMA DRC just like under SA (for LGDs and Credit Spreads), and (ii) the 3 bp floor is not appropriate and should be calibrated downwards.

APPENDIX 1 – FX Asymmetry

Abstract:

We present two different proofs from first principles; that FX risk in FRTB, with respect to a reporting currency, can be calculated by measuring FX risk via another currency, according to FRTB rules for the latter, without loss of accuracy.

- This appendix elaborates on the arguments in the article: *Farag, H.; J. Risk, Volume 19 Number 4, 2017.*
- For concreteness (only), we assume CAD is the reporting currency of the bank and that USD is some alternative currency for which we have approved FRTB rules representing the potential FX risk for a portfolio *P,* that is valued in USD, with risk measured with respect to USD. The arguments below show that there is a mathematical bridge between the two.
- Therefore, if you have one set of rules for one currency, self-consistency based on first principles, requires the below treatment to also be allowed for another currency.
- This is neither a change of definition of risk factors, nor a redefinition of reporting currency or FX risk with respect to the latter. All remain unchanged.
- We start by making various observations to be used later.

Observation 1:

In FRTB rules, the spot rate *f,* for USD/CAD, for the CAD reporting bank, is shocked by (1±*RW),* where *RW* is the risk-weight for USD/CAD (30%/$\sqrt{2}$ at this point in time). That is, under FRTB shocks,

$$f \to f \times (1 \pm RW). \qquad (1)$$

Observation 2:

Suppose a portfolio P has spot MtM value X in USD, is held by a CAD reporting bank. Suppose the value of this portfolio in general has no dependency on any exchange rate. Then, under all FX shocks of the FRTB, the potential loss to the CAD reporting banks can be expressed as:

$$CAD\ Loss = X \times f(1 - (1 \pm RW)) = RW \times CAD\ Notional. \qquad (2)$$

We here used the sign that maximizes the loss and expressed $|X| \times f$ as CAD notional. The absolute value allows us to consider negative MtM portfolio but the reader can consider X>0 for now. Note that this is exactly the same loss if we had done straightforward delta calculations in CAD reporting; for a linear position with sensitivity (to USD/CAD) equal to CAD notional. This result holds for any USD denominated position that does not depend on FX rates (e.g. USD cash or bond, or equity, or a simple equity option etc.)

Observation 3:

Suppose now the CAD bank holds a more general portfolio (which can depend on all FX rates without restriction). Say the portfolio is P with spot MtM value X in USD. We also have a (already approved) way to calculate the potential loss, $L > 0$, of this portfolio in USD. L is the potential loss under FX shocks, as per FRTB rules, for USD. The value of this portfolio in USD, under such shocks is then $X - L$. To a CAD reporting bank, holding this same portfolio, the loss can be more than L converted by the spot rate, as CAD can also move against USD simultaneously when these shocks occur. This is much more conservative than the correlation assumptions of the FRTB rules, and is a very conservative estimate. CAD loss to the CAD bank can then be estimated as

$$\text{CAD Loss} \leq \max\big(X-(X-L)(1+RW), X-(X-L)(1-RW)\big)\times f. \qquad (3)$$

Here the maximum is taken over the different sign choices. The maximization depends on the various signs of the quantities involved but all we need for now is that it can be related to the loss L in this way. This is the important connection between the USD loss and the CAD loss. Our next observation will simplify this expression in a natural way.

Observation 4:

A CAD reporting bank, holding an arbitrary portfolio P, can have arbitrarily large amounts of CAD cash (say), without any FX risk in CAD.

Before we move to the next proof we highlight that the consideration of the dynamic portfolio achieves another helpful simplification. Whereas in (2) and (3), the *RW* term in the expression was critical to capture even first order risk, the explicit *RW* term in (5) leads to a higher order term. This is because the loss captured in L by the construction of the dynamic portfolio itself, by FRTB rules, has at least order one in *RW* (or higher). This deserves an example. Again, consider the case of portfolio of say USD cash or bond etc. Say in USD the spot MtM is X. The dynamic portfolio is then expressed as

$$X\ USD\ cash\ - X\times f\times\ CAD\ cash. \qquad (6)$$

Let us now calculate the loss L in USD. According to FRTB prescribed rules in reference [2], in USD, this portfolio has sensitivity of X with respect to CAD/USD, and therefore has potential loss of

$$L = X(RW).$$

This represents the Delta charge in USD and there is not curvature. Using (5), we obtain

$$\text{CAD Loss}\ \leq (X(RW)\times f\times(1+RW)). \qquad (7)$$

As can be seen with comparison with the exact answer in (2), which is only $X(RW)\times f$, (7) is overly conservative, and the additional *RW* term in the factor $(1+RW)$) is in fact over-kill here. What matters is that the upper bound in (5) works, regardless of form of the regulation by which we calculate L. It is a general principle and not special to FRTB.

Proof #2:

We now approach the same problem using capital considerations. P is an arbitrary portfolio. P_0 is a CAD cash position equal to the spot MtM of P in CAD.

Here, again, we use the dynamic portfolio $P-P_0$, $\text{without loss of generality}$. The CAD bank holds the portfolio $P-P_0$. Under the FRTB calibration for Delta and Curvature, it has potential to lose L>0, in USD (which can be calculated as if it is a USD bank). If this CAD reporting bank actually held its capital, for this risk, in USD, it suffices to hold the amount L. No further capital is required to cover the potential losses for this FX risk.

Suppose however that this CAD bank holds the equivalent of L in CAD (converted by spot rate), i.e. $L\times f$. This bank now has exposure to FX risk due to the capital potentially sliding in value against USD. This CAD bank is essentially exposed to a linear position in USD/CAD of USD notional L, or equivalently, CAD notional $L\times f$. According to FRTB calibrations for this CAD bank, it now needs capital of

$$L\times f\times RW. \qquad (8)$$

This is to cover the translation risk for the capital held in CAD.

Thus we get that the total required for a CAD reporting bank satisfies

$$L\times f\times(1+RW). \qquad (9)$$

The reader can now recognize this as the same result as (5). This completes Proof #2.

We conclude from either proof #1 or #2 that:

$$FRTB\ CAD\ capital \leq FRTB\ USD\ capital\times f\times(1+RW). \qquad (10)$$

This is the main result we attempted to prove, and now we have two independent proofs.

Observation 5:

The astute reader will notice that so far in our exact results we treated Capital or risk as a total quantity and did not attempt to split it as linear (Delta) and nonlinear (Curvature). We now address this by

decomposing our portfolio into two portfolios, one purely linear and one purely nonlinear (second order and higher). First we observe that all linear positions for a CAD bank, when expressed in USD, will also remain linear (with possibly constant terms). This can be seen from the linear part of a Taylor series, or simply by representing the linear positions by CASH positions denominated in different foreign currencies. Since the linear portfolio's total capital in the FRTB is purely Delta, and since the Delta of the original portfolio is the Delta of the linear part, we conclude, using (10) applied to these linear portfolios, that

$$FRTB\ CAD\ Delta\ capital \leq FRTB\ USD\ Delta\ capital \times f \times (1 + RW). \quad (11)$$

To do the same for Curvature, we observe that the higher order terms for a CAD portfolio (which we denote by P_2) can be represented as

$$\begin{aligned} &P_2\big(p(GBP,CAD),\dots,p(USD,CAD)\big) = \\ &A(p(GBP,CAD) - p_0(GBP,CAD))^2 + B(p(USD,CAD) - p_0(USD,CAD))^2 \\ &\quad + C\big(p(GBP,CAD) - p_0(GBP,CAD)\big)\big(p(USD,CAD) - p_0(USD,CAD)\big) \\ &\quad + D\big(p(GBP,CAD) - p_0(GBP,CAD)\big)\big(p(JPY,CAD) - p_0(JPY,CAD)\big) + \cdots \\ &\quad + h.o.t \end{aligned} \quad (12)$$

Here the ellipsis indicate terms of similar structure, h.o.t indicates third and higher order terms, $p(GBP,CAD)$is the exchange rate of GBP/CAD, and the zero subscript indicates the current spot rate. When expressed in USD, we simply have

$$P_2\big(p(GBP,CAD),\dots,p(USD,CAD)\big)p(CAD,USD). \quad (13)$$

Now, we write

$$p(GBP,CAD) = \frac{p(GBP,USD)}{p(CAD,USD)} \quad (14)$$

And,

$$p(USD,CAD) = \frac{1}{p(CAD,USD)} \quad (15)$$

It is then straightforward, using (12), (14), (15), to check that all first derivatives with respect to pairs like $p(CAD,USD)$, $p(GBP,USD)$, …, evaluated at the spot rates (with zero subscripts) of the expression in (13) vanish.

This implies that all second order (and higher) terms of this portfolio, when expressed in CAD, also produce second order (and higher) terms, when expressed in USD.

Since for such purely nonlinear portfolios the total FRTB capital is that of Curvature charge only, we then have, using (10),

$$FRTB\ CAD\ Curvature\ capital \leq FRTB\ USD\ Curvature\ capital \times f \times (1 + RW). \quad (16)$$

We here used the sign that maximizes the loss and expressed $|X| \times f$ as CAD notional. The absolute value allows us to consider negative MtM portfolio but the reader can consider X>0 for now. Note that this is exactly the same loss if we had done straightforward Delta calculations in CAD reporting; for a linear position with sensitivity (to USD/CAD) equal to CAD notional. This result holds for any USD denominated position that does not depend on FX rates (e.g. USD cash or bond, or equity, or a simple equity option etc.)

Observation 3 still holds even if we ignore this fact, although the maximization in (3) would ultimately produce a large double-count of risk that way (so the upper bound would be unnecessarily large). To simplify the calculations to follow and the expression for the CAD loss in (3), we express the portfolio as etc.)

$$P = P - P_0 + P_0. \quad (4)$$

Here P_0 is the spot MtM value of the portfolio P in CAD, expressed as a cash position. This cash position has zero risk to a CAD bank, in FRTB regulations, or any other risk measurement framework. Therefore, it represents no loss of information or generality. It is therefore sufficient to restrict our considerations to the “dynamic” portfolio $P - P_0$, when we calculate FX risk or capital charges for the CAD bank. (The reason we call this portfolio dynamic is due to the fact that, unless the exchange rates against CAD

change, this portfolio will have zero MtM.) In USD, right now, the MtM of this dynamic portfolio is also zero. Immediately we have made progress; because (3) can now be expressed ($X = 0$) as

$$CAD\ loss \leq L \times f \times (1 + RW) \qquad (5)$$

This is the result we wanted to prove. It shows that the intended capital charge for a CAD bank, which is presumed necessary to cover the losses in CAD, can be connected to the loss in USD, using FRTB rules for USD, and the risk-weight. This completes the first proof of our claim.

We note that this dynamic portfolio we considered is also a commonly encountered one in the trading book. Essentially traders borrow or lend cash to finance their trades, and the above dynamic portfolio is typical of a "CAD-funded" desk or trading book.

Before we move to the next proof we highlight that the consideration of the dynamic portfolio achieves another helpful simplification. Whereas in (2) and (3), the *RW* term in the expression was critical to capture even first order risk, the explicit *RW* term in (5) leads to a higher order term. This is because the loss captured in L by the construction of the dynamic portfolio itself, by FRTB rules, has at least order one in *RW* (or higher). This deserves an example. Again, consider the case of portfolio of say USD cash or bond etc. Say in USD the spot MtM is X. The dynamic portfolio is then expressed as

$$X\ USD\ cash\ - X \times f \times\ CAD\ cash. \qquad (6)$$

Let us now calculate the loss L in USD. According to FRTB prescribed rules in reference [2], in USD, this portfolio has sensitivity of X with respect to CAD/USD, and therefore has potential loss of

$$L = X(RW)$$

This represents the Delta charge in USD and there is not curvature. Using (5), we obtain

$$\text{CAD Loss } \leq (X(RW) \times f \times (1 + RW)). \qquad (7)$$

As can be seen with comparison with the exact answer in (2), which is only $X(RW) \times f$, (7) is overly conservative, and the additional *RW* term in the factor $(1 + RW)$ is in fact over-kill here. What matters is that the upper bound in (5) works, regardless of form of the regulation by which we calculate L. It is a general principle and not special to FRTB.

APPENDIX 2 – CTP DRC Examples & Proposed Rewrite

A2.1

As illustrated with the below examples based on a 5-name First-to-Default (FTD), (a) a portfolio with **significant net long default** risk will receive **zero capital** and resulting in being undercapitalised whereas (b) portfolio with **fully hedged default risk** can be **overcapitalised** and generate substantial default risk capital.

(a) Example with Net Long Default risk via FTD resulting in an undercapitalisation of DRC[6].

	Portfolio Characteristics and Economics			FRTB with JTD Scaling	
5-name FTD, Short Protection, $20m Notional, partially hedged	FTD Basket, JTD per name	CDS Hedge JTD	Actual Loss on 1st Default	"Scaled" FTD Basket JTD per name	Net JTD/Capital per FRTB final rule
Name1	$20m	-$10m	$10m	$4m	-$6m
Name2	$20m	-$10m	$10m	$4m	-$6m
Name3	$20m	-$10m	$10m	$4m	-$6m
Name4	$20m	-$10m	$10m	$4m	-$6m
Name5	$20m	-$10m	$10m	$4m	-$6m
Default Risk Capital (assuming all names BBB rated, with 6% RW ➔ Capital = $\sum_i^5$(JTD * RW each name) = ∑ (-$6m * 6%) = -1.8 < 0					**$0**

(b) Example with a Net Flat risk resulting in an overcapitalisation of DRC[1]

	Portfolio Characteristics and Economics			FRTB with JTD Scaling	
5-name FTD, Long Protection, $20m Notional, fully hedged	FTD Basket JTD per name	CDS Hedge JTD	Actual Loss on 1st Default	"Scaled" FTD Basket JTD per name	Net JTD/Capital
Name1	-$20m	$20m	$0m	-$4m	$16m
Name2	-$20m	$20m	$0m	-$4m	$16m
Name3	-$20m	$20m	$0m	-$4m	$16m
Name4	-$20m	$20m	$0m	-$4m	$16m
Name5	-$20m	$20m	$0m	-$4m	$16m
Default Risk Capital (assuming all names BBB rated, with 6% RW ➔ Capital = $\sum_i^5$(JTD * RW each name) = ∑$16m * 6% = $4.8m					**$4.8m**

A2.2

The same portfolio as above now receives appropriate capital charges – the first portfolio with significant default risk now receives DRC capital charges, while the second portfolio without any current default risk does not produce DRC capital charges. Note that, once there is a default and the FTD protection is exhausted, the now naked long CDS positions will produce a DRC capital charge.

At all times, the DRC capital charge is consistent with the Default Risk facing the portfolio, for any single default.

(a) Example with Net Long Default risk via FTD

	Portfolio Characteristics and Economics			FRTB with JTD Scaling	Industry proposal with no JTD Scaling
5-name FTD, Short Protection, $20m Notional, partially hedged	FTD Basket, JTD per name	CDS Hedge JTD	Actual Loss on 1st Default	Net JTD/Capital per FRTB final rule	Net JTD/Capital, Industry Proposal
Name1	$20m	-$10m	$10m	-$6m	$10m
Name2	$20m	-$10m	$10m	-$6m	$10m
Name3	$20m	-$10m	$10m	-$6m	$10m
Name4	$20m	-$10m	$10m	-$6m	$10m
Name5	$20m	-$10m	$10m	-$6m	$10m
Default Risk Capital (assuming all names BBB rated, with 6% RW ➔ Capital = $\sum_i^5$$10m * 6% = $3m)				**$0**	**$3m**

(b) Example with a Net Flat risk, also showing increase in .capital after first default, to demonstrate that impact of marginal defaults is reflected in capital charges.

	Portfolio Characteristics and Economics			FRTB with JTD Scaling	Industry proposal with no JTD Scaling	
5-name FTD, Long Protection , $20m Notional, fully hedged	FTD Basket JTD per name	CDS Hedge JTD	Actual Loss on 1st Default	Net JTD/Capital	Net JTD/Capital	Net JTD/Capital, after First Default
Name1	-$20m	$20m	$0m	$16m	$0m	-
Name2	-$20m	$20m	$0m	$16m	$0m	$20m
Name3	-$20m	$20m	$0m	$16m	$0m	$20m
Name4	-$20m	$20m	$0m	$16m	$0m	$20m
Name5	-$20m	$20m	$0m	$16m	$0m	$20m
$\sum_i^5$$0 * 6% = $0 $0 * 6% + $\sum_i^4$$20 * 6% = $4.8				**$4.8m**	**$0m**	**$4.8m**

[6] We use Default Risk Weight as described paragraph 152. We cannot use the banking book risk weights for securitisations applied to tranches because we have decomposed to single name JTDs

1.5.6 Correlation Trading Portfolio DRC proposed rewrite

(iii) Default Risk Charge for securitisations (correlation trading portfolio)

Gross Jump-to-default risk positions (gross JTD)

166. For the computation of gross JTD on securitisations in the CTP, a decomposition approach should be used, such that a JTD is computed for each reference name in the securitization portfolio. The JTD is defined as the total P&L incurred by the instrument on the occurrence of a default event in each reference name. In detail, the JTD is computed as follows:

a. A reference name is defaulted, with recovery set consistent with the LGD prescribed for non-securitisations in paragraph 144 – i.e. 25% for senior, 0% for non-senior.
b. The change in market value of the instrument is calculated.
c. Any cash payment due is calculated (generally applicable to equity tranches and first-to-default positions).
d. b and c above are summed to produce the total JTD for that reference name.
e. The steps above are repeated for each name, in turn and in isolation, to produce a JTD for every name in the underlying portfolio.

~~the same approach must be followed as for default risk securitisations (non-CTP) as described in paragraph 151.~~

167. The definition of JTD for non-securitisations in the CTP (ie single-name and index hedges) positions is ~~their market value.~~ the instrument's sensitivity to a default of a reference name. For instance, for an index CDS position, the JTD is defined as the total P&L incurred by the Index CDS position on the occurrence of a default event. The total P&L will be comprised of both the change in the market value of the instrument, and any cash payment due as a result of the default. The recovery used in this calculation should be consistent with the LGD used for non-securitisations in paragraph 144.

168. ~~Nth-to-default products should be treated as tranched products with attachment and detachment points defined as:~~

~~(a) attachment point = (N – 1) / Total Names~~
~~(b) detachment point = N / Total Names~~

~~where "Total Names" is the total number of names in the underlying basket or pool.~~

Net Jump-to-default risk positions (net JTD)

~~**169.Deleted**~~

169. Once all securitization positions have been decomposed to produce single name JTD exposures, they should be netted using the same approach as that used for non-securitisations, as outlined in paragraphs 150-151.

Default risk charge for securitisations (CTP)

~~**170 - 175 deleted**~~

170. The default risk charge should be calculated using the same approach as that used for non-securitisations, as outlined in paragraphs 152-156.

APPENDIX 3 – PLA and well hedged portfolios

Here an example of the hedging effect. We split a real portfolio into subcategories, Cross Currency Swap (CCS) and the rest (no CCS), which hedge each other as showed in the following plot.

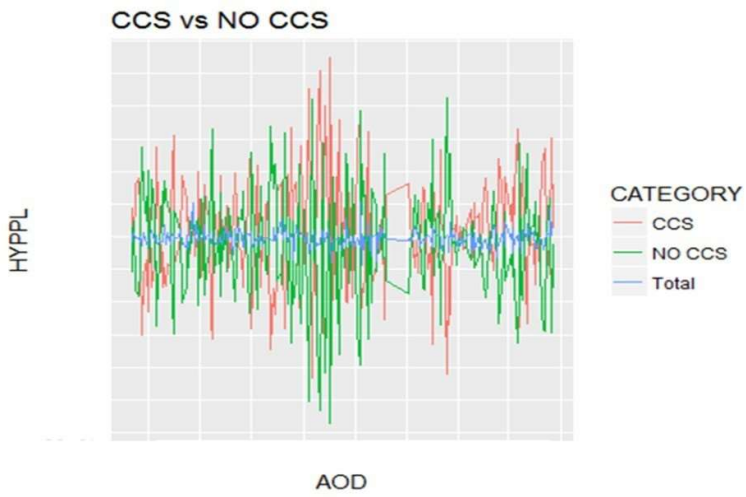


Figure 1: Hypothetical PL of the hedged portfolio together with its components.

The table below reports the results of the test applied to CCS, no CCS and the entire portfolio given by the sum of the two.

Perimeter	Spearman Cor	KS	TL
CCS	0.94	0.04	Green
NO CCS	0.93	0.05	Green
Total	0.57	0.13	Red

Although the two subcategories pass the test, the resulting hedged portfolio does not. The following plots provide a graphical evidence of the decorrelation effects due to hedging.

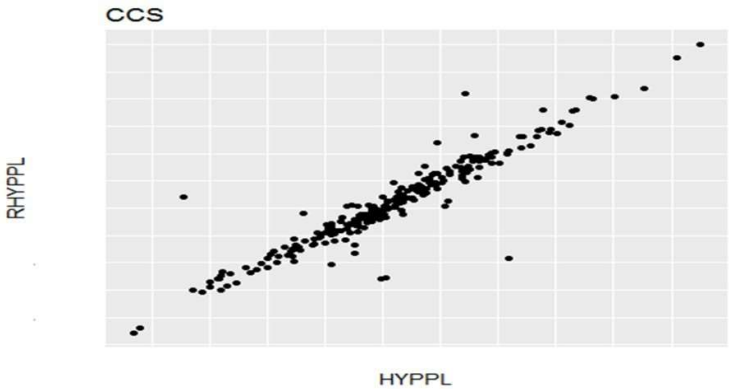


Figure 2: RTPL vs HYPL for CCS

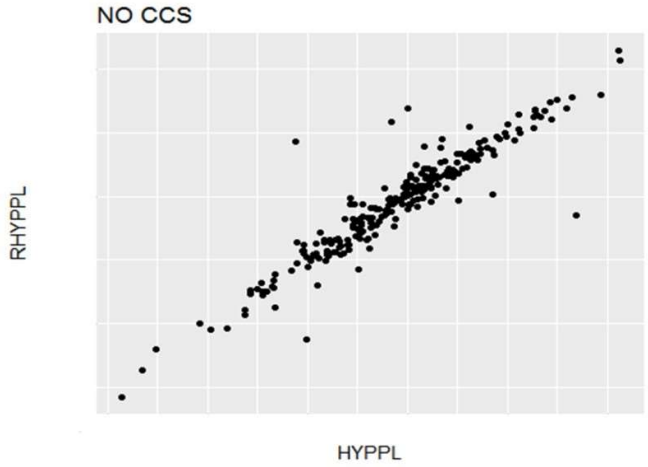


Figure 3: RTPL vs HYPL for no CCS.

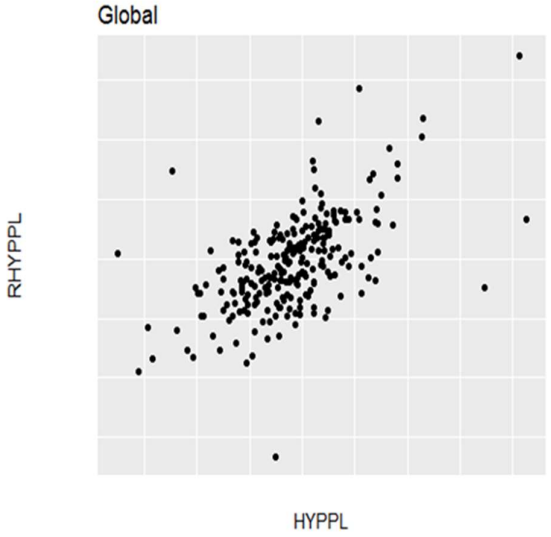


Figure 4: RTPL vs HYPL for the hedged portfolio

APPENDIX 4 – FAQs

1.6 Standardised approach: Credit Spread Risk (securitisations)

Q2. *Paragraph 61 (e) seems to indicate that single names hedging the correlation trading portfolio (CTP) should be categorised and bucketed as CSR – Securitisation CTP, hence netted across the same risk factor, ie same issuer. Paragraph 69 (a) seems to negate this. Please confirm whether hedges to CTP can be netted with CTP at issuer level?*

Relevant provisions: paragraphs 61 and 69 of the January 2016 market risk framework.

Answer: As per paragraph 61 (e), instruments that are not securitisation positions and that hedge a position described by paragraphs 61 (a) to 61 (d) are part of the CTP. Paragraph 69 (a) states that, in the case of index CTP instruments, an index cannot be broken down into its different constituents. That means it should be considered as a risk factor as a whole. Netting with hedges to such index CTP instruments at issuer level is not permitted. Hedges to non-index CTP can be netted with non-index CTP at issuer level.

2.2 Liquidity horizons

Q4. How must a bank treat risk factors in instruments which mature before the liquidity horizon of the respective risk factor prescribed in paragraph 181 (k)?

Relevant provisions: paragraph 181 (k) of the January 2016 market risk framework

Answer: If the maturity of the instrument is shorter than the respective liquidity horizon of the risk factor as prescribed in paragraph 181 (k), the next longer liquidity horizon length (out of the lengths of 10, 20, 40, 60 or 120 days as set out in the paragraph) compared with the maturity of the instrument itself must be used. For example, although the liquidity horizon for interest rate volatility is prescribed as 60 days, if an instrument matures in 30 days, a 40 day liquidity horizon would apply for the instrument's interest rate volatility.

Q5. Which liquidity horizon should be mapped to multi-sector credit and equity indices (ie where different risk factor categories are involved)?

Relevant provisions: paragraph 181 (k) of the January 2016 market risk framework.

Answer: To determine the liquidity horizon of multi-sector credit and equity indices, the respective liquidity horizons of the underlying instruments must be used. A weighted average of liquidity horizons of the instruments contained the index must be determined by multiplying the liquidity horizon of each individual instrument by its weight in the index (ie the weight used to construct the index) and summing across all instruments. The liquidity horizon of the index is the shortest liquidity horizon (out of 10, 20, 40, 60, 120 days) that is equal to or longer than the weighted average liquidity horizon. For example, if the weighted average liquidity horizon is 12 days, the liquidity horizon of the index would be 20 days

2.4 Backtesting

Q2. *Appendix B.III.a states that "[i]n the case where an outlier can be shown by the firm to relate to a non-modellable risk factor, and the capital requirement for that non-modellable risk factor exceeds the actual or hypothetical loss for that day, it may be disregarded for the purpose of the overall backtesting process if the national supervisor is notified accordingly and does not object to this treatment." Please confirm if this treatment applies to desk-level backtesting exceptions as well. Also, please confirm if the stressed capital add-on (SES) should be compared with the full loss amount or just the excess amount, ie the difference between actual/hypothetical P&L and VaR.*

Relevant provisions: Appendix B.III of the January 2016 market risk framework.

Answer: If the backtesting exception at a desk-level test is being driven by a non-modellable risk factor that receives an SES capital charge that is in excess of the maximum of the actual of hypothetical P&L loss for that day, it is permitted to be disregarded for the purposes of the desk-level backtesting. The bank must be able to calculate a non-modellable risk factor capital charge for the specific desk and

not only for the respective risk factor across all desks. For example, if the P&L for a desk is EUR –1.5 million and VaR is EUR 1 million, a non-modellable risk factor capital charge (at desk level) of EUR 0.8 million would not be sufficient to disregard an exception for the purpose of desk-level backtesting. The non-modellable risk factor capital charge attributed to the standalone desk level (without VaR) must be greater than the loss of EUR 1.5 million in order to disregard an exception for the purpose of desk-level backtesting.

3.1 Trading book instruments

Q3. *What are the operational calculation and frequency for determining instruments giving rise to "net short" equity or credit positions in the banking book?*
Relevant provisions: paragraph 13 (c) of the January 2016 market risk framework.
Answer: Banks should continuously manage and monitor their banking book positions to ensure that any instrument that individually has the potential to create a net short credit or equity position in the banking book is not actually creating a non-negligible net short position at any point in time.

3.2 Movement of instruments between the trading book and banking book

Q2. *Does the treatment specified for internal risk transfers apply only to risk transfers done via internal derivatives trades, or does it apply to transfer of securities internally at market value as well?*
Relevant provisions: paragraph 29 of the January 2016 market risk framework.
Answer: The treatment specified for internal risk transfers applies only to risk transfers done via internal derivatives trades. The reallocation of securities between trading and banking book should be considered a re-designation of securities and is governed by paragraph 29.
Q3*. Where a banking book business buys securities from an internal trading desk (as opposed to from an external seller), and the securities, once transferred to the banking book business, qualify for AFS accounting treatment instead of MTM/held for trading, is this a re-designation per paragraph 29?*
Relevant provisions: paragraph 29 of the January 2016 market risk framework.
Answer: Any reallocation of securities between trading and banking book, including outright sales at arm's length, should be considered a re-designation of securities and is governed by paragraph 29.

APPENDIX 5 –Sample list of products failing Risk Factor Eligibility Test

This list of products by asset class and maturity below fail using the '1 in 30 rule', but may become modellable using '3 in 90 rule' (which is the Industry recommendation).

It is important to note that this list is not exhaustive. The specific risk factors which relate to these products and fall under NMRF vary across different maturities and strike levels. The data presented below captures specific tenors that may become modellable. This list has been constructed using data from the Industry and various market data providers[7]

Interest Rates

Product	Currency	Maturity Bucket
IR Swap	AED	6M
IR Swap	AUD	5Y
IR Swap	BHD	6M to 2Y
IR Swap	CAD	3M
IR Swap	CNH	5Y
IR Swap	CNY on-shore Deposit	Up to 12M
IR Swap	CNY on-shore Shibor	3-5Y
IR Swap	DKK	2Y
IR Swap	HKD	7Y
IR Swap	INO	6M
IR Swap	KRW	14Y+
IR Swap	KWD	3Y, 5Y
IR Swap	NOK	2Y
IR Swap	NZD	13Y, 14Y, 15Y
IR Swap	QAR	9M to 3Y
IR Swap	SEK	1M
IR Swap	SGD	3Y

Product	Currency	Maturity Bucket
IR Options	ATM AUD	7Y_3M
IR Options	ATM EUR	3M_1M
IR Options	ATM GBP	2Y_1Y
IR Options	ATM HKD	3M_3M
IR Options	ATM KRO	3Y_15Y
IR Options	ATM KRW	10Y_15Y
IR Options	ATM USD	10Y_30Y
IR Options	ATM ZAR	3M_10Y

[7] In this analysis we have considered input by Bloomberg, ICE, Reuters, CME and LSEG

Product	Currency	Maturity Bucket
X-ccy Swaps	AED	5Y
X-ccy Swaps	HUF	3-7Y
X-ccy Swaps	KRO	10Y
X-ccy Swaps	KZT	1M
X-ccy Swaps	RUB	7Y, 10Y
X-ccy Swaps	TRY	1M
X-ccy Swaps	TWD	10Y
X-ccy Swaps	ZAR	7Y+

Equities

Product	Issuer	Maturity Bucket
Equity Single Name	CHINA MERCHANTS SHEKOU IND-A	
Equity Single Name	HNA TECHNOLOGY INVESTMENTS HLDGS	
Equity Single Name	METRO AG	
Equity Single Name	NORWEGIAN CRUISE LINE HOLDIN	
Equity Single Name	WORLDPAY GROUP PLC	
Equity Single Name	YAHOO! INC	

Product	Issuer	Maturity Bucket
Equity Single Name Option	ALPHABET INC	1M
Equity Single Name Option	BOC HONG KONG HOLDINGS LTD	3M
Equity Single Name Option	MASTERCARD INC	1M
Equity Single Name Option	MAZDA MOTOR CORP	9M
Equity Single Name Option	MICROSOFT CORP	1M
Equity Single Name Option	PFIZER INC	3M
Equity Single Name Option	FORD MOTOR CO	3M

Foreign Exchange

Product	Currency Pair	Maturity Bucket
FX Options	ATM AUD/JPY	6M
FX Options	ATM CHF/USD	3Y
FX Options	ATM CNY/USD	1Y
FX Options	ATM EUR/JPY	5Y
FX Options	ATM GBP/USD	3Y
FX Options	ATM GBP/JPY	6M
FX Options	ATM HKD/USD	1Y
FX Options	ATM JPY/KRW	6M
FX Options	ATM KRW/USD	10Y
FX Options	ATM RUB/USD	6M

Product	Currency Pair	Maturity Bucket
Non Deliverable Forward	AUD/IDR	3M
Non Deliverable Forward	CAD/BRL	3M
Non Deliverable Forward	EUR/PEN	3M
Non Deliverable Forward	USD/VND	3M
Non Deliverable Forward	EUR/KRW	3M
Non Deliverable Forward	EUR/BRL	6M

Credit

Product	Country	Maturity Bucket
Government Bonds	Austria	Up to 1Y
Government Bonds	Greece	3M to 10Y+
Government Bonds	Iraland	Up to 1Y
Government Bonds	Netherlands	Up to 6M
Government Bonds	Slovakia	1Y to 10Y+
Government Bonds	Slovenia	6M to 10Y+
Government Bonds	Denmark	20Y+
Government Bonds	Finland	20Y+
Government Bonds	Czech Republic	5Y+
Government Bonds	Korea	15Y+
Government Bonds	Mexico	15Y+

Product	Issuer	Maturity Bucket
Single Name CDS	BP P.L.C.	6M to 3Y and 5Y to 10Y
Single Name CDS	BRITISH AMERICAN TOBACCO p.l.c.	1Y to 10Y
Single Name CDS	ASTRAZENECA PLC	6M to 5Y
Single Name CDS	BASF SE	6M to 10Y
Single Name CDS	BRITISH AIRWAYS plc	6M to 5Y
Single Name CDS	Daimler AG	6M to 10Y
Single Name CDS	DIAGEO PLC	6M to 5Y
Single Name CDS	Deutsche Telekom AG	6M to 10Y
Single Name CDS	ENI S.P.A.	6M to 10Y
Single Name CDS	FIAT CHRYSLER AUTOMOBILES N.V.	6M to 3Y
Single Name CDS	Glencore International AG	6M to 3Y

APPENDIX 6: Glossary

ALM	Asset and Liability Management
ATM	At-the-Money
BB	Banking Book
BCBS	Basel Committee on Banking Supervision
BIS	Bank for Internal Settlements
CCR	Counterparty Credit Risk
CDS	Credit Default Swap
CP	Consultation Paper
CRM	Comprehensive Risk Measure
CRR2	European Commission legislative proposal 2016/0360 issued on 23 November 2016 to amend the Capital Requirements Regulation (CRR)
CTP	Correlation Trading Portfolio
DRC	Default Risk Charge
ES	Expected Shortfall
FRTB	Fundamental Review of the Trading Book
FX	Foreign Exchange
IMA	Internal Model Approach
ITM	In-the-Money
IR	Interest Rate
LGD	Loss Given Default
LH	Liquidity Horizon
NMRF	Non-Modellable Risk Factor
OTC	Over the Counter
OTM	Out-of-the-Money
P&L	Profit and Loss
PD	Probability of Default
PLA	Profit and Loss Attribution
RRAO	Residual Risk Add-On
RWA	Risk-Weighted Asset(s)
SA	Standardised Approach
SBM	Sensitivities-based Method
TB	Trading Book
VA	Valuation Adjustment
VaR	Value at Risk