ISDA Safe, Efficient Markets

afme/ Finance for Europe

The European Banking Authority
20 Avenue André Prothin
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Subject: Draft Regulatory Technical Standards on Criteria for assessing the modellability of risk factors under the internal Model Approach (IMA) under Article 325be(3) of Regulation (EU) No 575/2013 (Capital Requirements Regulation 2- CRR2)

The International Swaps and Derivatives Association (ISDA) and the Association for Financial Markets in Europe (AFME), together "the industry" welcome this opportunity to provide comments and address specific questions related to the EBA's deliberations regarding the proposed Regulatory Technical Standards (RTSs) on risk factor modellability assessment, referred to as risk factor eligibility test (RFET) requirements in the European Commission's legislative proposal.

The industry reiterates that consistency is important both across European institutions and globally across regions and therefore welcome standards whilst developed for Europe should also align globally to avoid any fragmentation.

It is furthermore important that the standards are implemented simultaneously and harmoniously across jurisdictions to avoid undue technological and business burden for banks. Trading businesses of banks are fundamentally global, and possible fragmentation of trading books because of inconsistent implementation would result in reduced capacity and fragmentation in the markets.

We furthermore recommend that the EBA consider market conventions, which will not prohibit the use of market data vendors. The use of market data vendors is important for banks in support of FRTB implementation.

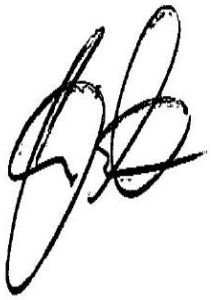
We appreciate the proposals made by the EBA but there is concern that certain proposals are far more prescriptive than the Basel text and could result in rigid rules that do not allow for sufficient supervisory discretion. This could lead to an overly punitive capital impact in Europe, which could go against the improvements made in the revised BCBS market risk standards.

The Industry is concerned that the proposed EBA framework for modellability of risk factors under the Internal Model Approach poses potential inconsistency with other jurisdictions and we therefore recommend that consideration should be given to the core objectives of the mandate to ensure consistency of implementation across jurisdictions.

This response is structured in three sections, Committed Quotes, Bucketing approaches for risk factors belonging to curves, surfaces or cubes and Consultation Paper questions.

We appreciate the effort into developing a standard which can be universally applied across institutions and respectfully ask that the recommendations provided in this response are considered and actions are taken to ensure smooth implementation of the FRTB Framework.

We thank you in advance for your consideration and please do not hesitate to contact the undersigned associations with questions or if you would like to discuss our recommendations further. We remain committed to assisting policymakers in achieving the objectives of this important RTS.



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Background

European parliament has passed regulations amending Capital Requirements Regulation 2 (CRR2) on 20th May 2019. As directed under new proposed regulations, on 27th June 2019, EBA published regulatory technical standards (RTS) on risk factor modellability assessment, referred to as risk factor eligibility test (RFET) requirements of CRR2 for consultation with industry stakeholders. The timeline for the submission of industry responses on the consultation period is set to 4th October 2019. The final draft RTS is required to be submitted by EBA to the European Commission by 28th March 2020.

The proposals within EBA regulatory technical standards consultation paper are intended to specify the requirements for a verifiable price and the representativeness of verifiable prices for risk factors. In addition, it intends to specify how the modellability of risk factors belonging to curves, surfaces or cubes should be assessed and the bucketing approaches that are available in this context.

Committed Quotes

The industry recognizes the phrase "legally obliged" used in the context of paragraph 1(c) can act as a significant change to the meaning of what is market convention for a committed quote:

"*For the purposes of point (c), a quote shall be considered committed only where the provider of the quote is legally obliged to buy and sell the corresponding financial instrument at that price if requested.***"**

The EBA consultation text has narrowed significantly to what is allowable as a "committed quote" by defining it as being a "legally obliged". In many markets the quotes are given at a fixed price and size, and there is therefore an obligation, and market convention, on the quote provider to stand by that quote, however this is not a legal obligation. If there is a market event between quote being given and request to trade on the quote, then market convention dictates that the quote provider is not committed to the quote. A market understanding of a committed quote can be where an institution is asked for and then provides a market quote indicating the size and the level they are willing to trade in. The counterpart can then respond to that committed quote and request to trade (or decline to trade) at that level and at that point in time. However by exception the provider of the quote, having given the quote and received the request to trade, can alter the quote given sudden market news or events. To force all quotes to be legally binding reduces liquidity and removes the possibility of the use of quotes for many markets and instruments.

The industry would like to suggest rewording of this provision that will accurately reflect the purpose.

Suggested rewording:

"For the purposes of point (c), a quote shall be considered committed only where the provider of the quote is obligated, by market convention, to buy and sell the corresponding financial instrument at that price requested."

Bucketing approaches for risk factors belonging to curves, surfaces or cubes

The industry would like to propose a change to Article 6, paragraph 1 which mentions "Institutions shall use only one bucketing approach per curve, surface or cube."

We propose that bucketing should be applied at the dimension level. For example, it should be possible to define regulatory buckets for FX smile on the maturity dimension whereas an institution should be allowed to apply its own bucketing for the strike dimension.

The industry also notes that Article 6, paragraph 4 states;

> "For the assessment of modellability of risk factors of the broad risk factor category Credit spread belonging to a certain maturity bucket, institutions are allowed to reallocate the verifiable prices of a bucket to the adjacent bucket related to shorter maturities only if all the following conditions are met:
> (a) the institution does not have exposure to any risk factor belonging to the bucket related to the longer maturities and hence does not use any of these risk factors within its risk-management model;
> (b) any verifiable price is only counted in a single maturity bucket;
> (c) any verifiable price is only reallocated once"

The industry recommends to extend the risk factor category to others including Rates. We see the benefit of this extended to inflation risk factors where the short end of the curve is non-modellable. The industry further recommends to remove Point (a) as it is punitive and to keep the rule optional to use.

Consultation Paper Questions

A subset of proposals within EBA regulatory technical standards consultation paper are intended to specify the requirements for a verifiable price and the representativeness of verifiable prices for risk factors.

The industry requested support from various market data providers to supplement the responses to questions 1 to 6.

1. Do you agree that a committed quote, to be considered verifiable, should be required to have both a firm bid and offer price? If you think that solely a bid or offer price should be sufficient please provide a convincing rationale.

The industry disagrees that for a committed quote to be considered as verifiable price, it should have both a firm bid and offer price. The industry supports option 1a (as outlined on page 32 of the consultation paper).

"Option 1a: For a committed quote to be considered as verifiable price, it shall have either a firm bid or offer price."

It is conventional for firm quotes to be either a bid or an offer price for many OTC markets. If committed quotes are required to include a bid and offer price in order to be considered verifiable, it unduly limits the availability to the point where the data is no longer a fair and accurate reflection of the liquidity in the market.

It is also worth noting that major exchanges support single-sided quotes used in instruments such as index options trading on Eurex, where only a firm bid or offer is available.

The industry emphasises that single-sided quotes should be considered "committed" if they are sourced from an institutional platform and provided by active participants.

2. Please provide an estimation of the impact of requiring solely a firm bid or offer price compared to requiring both. Please provide this impact e.g. in terms of number of non-modellable risk factors, stress scenario risk measure charge or number of eligible committed quotes for different risk factors/ risk factor categories.

The industry recognizes that requiring committed quotes to have both a firm bid and offer significantly reduces the quantity of quote data eligible for inclusion in the risk factor eligibility test, although is not able to provide an accurate estimate of the impact at this time.

3. How would you define and check for a "non-negligible volume of a transaction or quote, as compared to usual transaction sizes for the bank, reflective of normal market conditions" for the purpose of assessing the validity of a price observation?

All committed quotes and trades conducted over regulated trading venues or centrally cleared should be classified as of non-negligible volume, as compared to usual transaction sizes for the bank, reflective of normal market conditions. The industry notes that allowing a bank to query the pool of

available observations and filter by size may potentially be in breach of contribution/pooling agreements that limit usage of data.

The industry also notes that implementing explicit limits to define non-negligible volume will have material challenges associated with implementation. There are sources of data where trade size is either not provided by the contributor, subject to data quality issues that may prevent the size being determined conclusively; and/or subject to delays in reporting.

It is operationally not feasible to implement explicit volume-based limit at industry level as for many markets that banks need to source real price observation data there is currently no complete and accurate transparency framework from which to calibrate such volume based limit. The filtering of data in many markets will likely increase the number of risk factors deemed non-modellable thereby acting as a disincentive for the adoption of IMA for certain desks.

The industry further recommends that the EBA not propose a single number and/or a single methodology for "non-negligible volume" as different asset-classes, instruments or currencies have different characteristics and levels of liquidity.

Banks' internal compliance rules include provisions against market manipulation in the context of Market Abuse regulations. For instance, there is no specific thresholds regarding off-market trades in the regulation, however, internal rules based on market practices are defined, thresholds fixed internally, and controls realised and documented whenever thresholds are exceeded.

The industry believes that EBA RTS should not address a prescriptive definition of "non-negligible volume of a transaction or a quote" as it is operationally not feasible to implement explicit volume-based limit. The EBA RTS should remain principle based on this topic whereby internal compliance rules and appropriate procedures and controls are put in place and made available to supervisors in the context of modellability.

4. How would you define and check for an "unreasonably large bid-offer spread as compared to usual bid-offer spreads, reflective of normal market conditions" for the purpose of assessing the validity of a price observation obtained from a committed quote? In your response, please provide a detailed reasoning.

In many traded markets, committed quotes include either a bid or offer price as highlighted in above answers. Given the quote is single-sided (either a bid or an offer price) it is not possible to calculate a bid-offer spread. The industry suggests that single-sided quotes should be exempt from any checks relating to "unreasonably large bid-offer spread as compared to usual bid-offer spreads, reflective of normal market conditions".

In the markets where committed quotes are provided with both a bid and offer price, the size of the spread can differ significantly depending on the liquidity available in the market. Particularly during periods where strong trending behaviour is observed (i.e. rapidly rising prices) where bid prices may be observed close to current market "fair value" whereas ask prices may be much higher or non-existent. Less liquid markets will have large bid-offer spreads. There is a correlation between liquidity and bid-offer spreads, hence the industry recommends the EBA retain sufficiently flexible guidance on "unreasonably large bid-offer spreads as compared to usual bid-offer spreads to be reflective of normal market conditions".

Similarly to what was stated in the answer to question 3, industry believes that EBA RTS should remain principle based as well with regards to bid-offer spread definition. Compliance rules and procedures controls should include provisions in the context of committed quotes for modellability.

5. Do you see any problems with requiring that institutions are allowed to use data from external data providers as input to the modellability assessment only where the external data providers are regularly subject to an independent audit (independent of whether the price is shared with the institution or not)? If so, please describe them thoroughly (i.e. for which data providers and the reasons for it).

The industry strongly support that committed quotes provided by external market data vendors should be accurate and complete, and meet BCBS standards [MAR31.12](1) to [MAR31.12](3) and [MAR31.14](1) to [MAR31.14](4). The industry agrees that external market data vendors should be able to provide evidence of the transaction or committed quote upon request. A significant deviation from BCBS standards could introduce additional costs and risk for both banks and vendors, and may negatively impact availability of 3rd party data to support the risk factor eligibility test.

6. Do you have any proposals on additional specifications that could be included in the legal text in order to ensure that verifiable prices provided by third-party vendors meet the requirements of this Regulation?

The industry does not have any additional recommendations to propose and would note that further prescription could hinder the effective use of market data providers in helping to establish eligibility or risk factors.

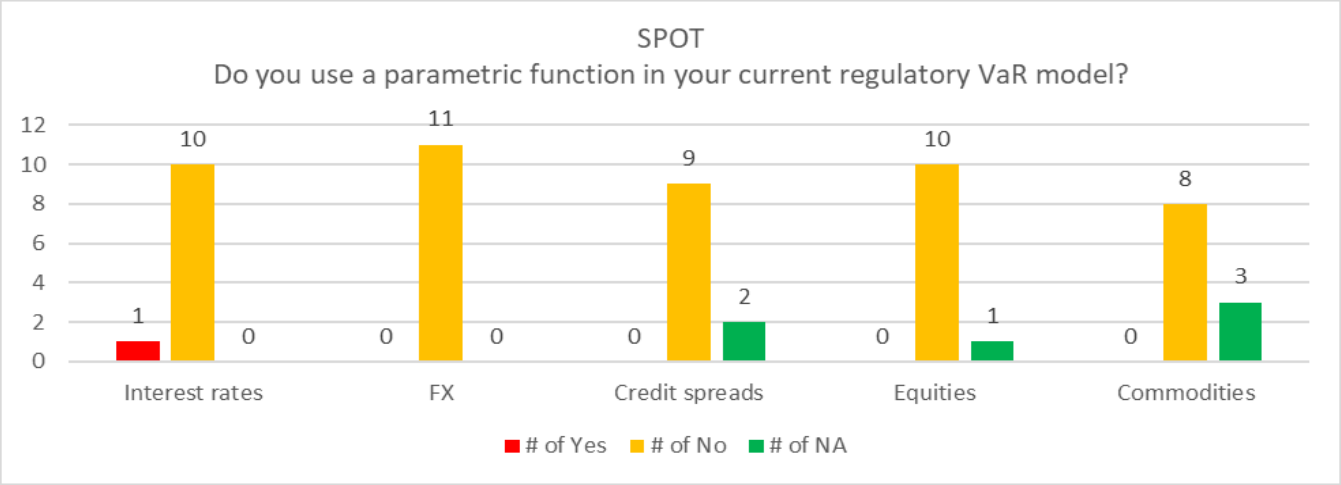
7. How relevant are the provisions outlined above for your institution? How many and which curves, surfaces or cubes are (planned to be) represented by a mathematical function with function parameters chosen as risk factors in your (future) internal model?

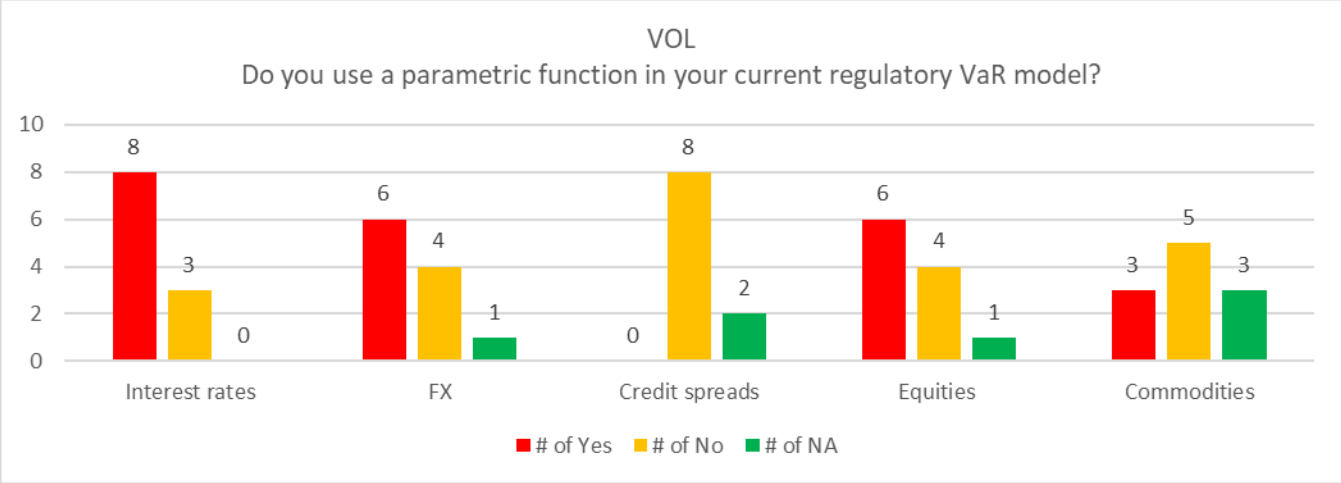
The industry has conducted a survey to supplement the response to Q7, collectively 11 firms participated in the survey.

The industry has framed the survey question in two sub-questions as follows:

Survey question 1: For which of the following market data types do you use a parametric function in your current regulatory VaR model (answer yes/no/not applicable)

Result:





Survey question 2: What parametric models do you use (e.g. Nelson-Siegel, SABR, quadratic based on ATM/RR/Strangle Premium (SP))

Result:

Parametric models	**# of firms**
SABR	6
Quadratic	2
SVI	1
Local Vol	1
PIV (Parametric IV)	1

Based on the survey conducted by the industry, the majority of industry respondents confirm that the parametric function in current VaR modelis used for volatility related market data only – majority for interest rate, FX and equity asset classes; and minority for commodities.

The industry respondents also confirm that, in general, the parametric functions are used in current VaR model. The use of SABR parameters to argue for modellability is used to illustrate the argument. The regulatory text should allow for the use of other models as well.

One of the most common uses of parametric functions is to parameterise implied volatility surfaces and cubes in the strike dimension. In most cases, normal tenor-by-tenor bucketing is used in the expiry dimension (or in the expiry and maturity dimensions for interest rate volatility cubes) and the "smile" is defined using a separate set of parameters for each tenor bucket.

The most common parameterisations use three parameters, which broadly correspond to the level, slope and curvature of the volatility. Industry-standard examples include:

- The SABR model for interest rate volatilities, where the ATM volatility is the level parameter, alpha (vol-of-vol) is the curvature parameter, and rho is the slope parameter. (SABR beta is generally kept constant in practice).
- FX and precious metal volatility smiles defined in terms of the ATM volatility and the risk reversal and strangle premium at a fixed delta.

There is also widespread use of proprietary equity volatility models with the same general form. In all these cases, the ATM volatility or level parameter is treated as "more liquid" than the other parameters – for example it is more likely to be included in a VaR model, whereas the other parameters are more likely to be treated as Risks Not in VaR.

8. Do you have a preference for any of the options outlined above? For which reasons? Please motivate your response. [Article 5, paragraph 3]

The Industry considers that the general "all-or-nothing" rule outlined in articles 5.3(a) and 5.3(b) of the draft RTS (whereby the function parameters are modellable only if all the buckets covering the related dimensions are modellable) is far more stringent than the BCBS provision [MAR 31.19] itself and shares EBA's concern that a full curve, surface or cube could be pushed into the SSRM "just because one bucket is non-modellable".

Unfortunately, the Option 1 proposed in article 5.3(c)(i) as a derogation does not depart from the "all-or-nothing" rule. When the function parameters {a,b,c} are deemed non-modellable, the derogation consists in calibrating alternative parameters {a',b',c'} based on the subset of calibration instruments that actually pass the RFET criteria, using the alternative parameters as a modellable proxy for the original parametric risk factors in the ES computation, and capitalizing the residual basis as an NMRF.

Although the derivation of alternative parameters {a',b',c'} is conceptually feasible, the industry recognizes in Option 1 effectively an application of the BCBS principles [MAR 31.13(2)(FN3)] and therefore considers that no derogation is needed for its implementation and that any prescription with regard to proxy definition would be beyond the scope of the current RTS. In addition, we provide in Q9 more details of the technical and operational challenges such a treatment would face, which makes its implementation possible only in certain circumstances.

On the other hand, the proposed Option 2 seems to alleviate the "all-or-nothing" rule since sub-parts of the parameterized curve, surface or cube may remain modellable when some calibration instruments no longer meet the RFET criteria. However, it would require the redefinition of risk factors

and pricing functions, which makes the solution quite impractical and the derogation of no use. Please refer to Q9 for more details.

Owing to the above, the Industry recommends an alternative proposal in Q10 as a simple and pragmatic workaround to the eligibility of function parameters when some buckets of calibration instruments are non-modellable that avoids any redefinition of risk factors or pricing functions. The industry appreciates the flexibility provided in the RTS when assessing modellability of function parameters. This is aligned to the industry view that restricting possible approaches to one specific option is contra-productive - rules for general eligibility criteria should be adaptive to the nature specific of parameters and the implementation of the IMA model in an institution.

9. Do you consider any of the options outlined above as impossible or impractical? For which reasons? Please motivate your response. [Article 5, paragraph 3]

A) Option 2 is materially impractical and requires the alternative pricing functions to be built in the risk engine

- If {x1,x2,x3,x4} are the "output risk factors" chosen to discretize the curve, surface or cube, then the pricing function $\phi(a,b,c)$ has to be replaced by an equivalent pricing function of the form $\Psi(x1,x2,x3,x4)$. Otherwise, it would be impossible to exclude x1 alone from shocking in the ES, or shock it separately from the other in the SSRM, should it be NMRF.
- Ultimately, the building of new pricing functions makes the parametric function almost useless in the risk engine. Furthermore, if internal model risk factors were to be redefined in accordance with Option 2 while daily risk management is still based on the parametric approach, it will be in violation of the spirit of the qualitative standards, expressed both in the Basel text (MAR 30.10(3)) and CRR2 (Articles 325bi-1(f)).

B) The implementation of Option 1 largely depends on the IMA model framework employed in the institution and on the specific nature of the function parameters. Specifically Option 1 requires recalibration of historical parameters, as highlighted already by EBA in describing the option itself.

A necessary pre-requisite to recalibration of historical parameters is the availability of historical market information. For some risk factors, industry practice is to store the historical data in the form of function parameters instead of market information (eg SABR parameters for interest rate volatilities). In such cases, it will be impractical to re-calibrate the function parameters based on RFET qualifying market information. If, however, historical market information (e.g., for the underlying trade prices or implied volatilities, rather than model parameters) is available and the implementation of the IMA model in an institution allows for "on-the-fly" calibration of function parameters, Option 1 is feasible. Note that this is largely equivalent to the risk model operating directly on the corresponding volatility points, in particular with respect to historical and static data, since the inputs to the parametric volatility functions are not stored but generated as part of the simulation, so it is questionable if this can be considered a "true" parametric approach. In any case, "on-the-fly" calibration will be challenging to implement, meaning that Option 1 may not be a practical approach as:

- From an operational standpoint, the marking of a set of parameters {a,b,c} is driven by the market information available at a given point in time, and completed if needed by human expertise. Stripping a set of alternative parameters {a',b',c'} only from RFET qualifying data is possible only if a full history of RFET qualifying data (since 2007) is still available and if the human expertise is replaced by some algorithmic intelligence to solve operational issues.
- The modellability of the underlying instrument buckets evolve through time. If N is the number of buckets supporting the modellability of the parameters {a,b,c}, then there are 2^N-1 versions of possible alternative sets {a',b',c'} to maintain. Otherwise, the entire history of time series would need to be regenerated every quarter based on the current RFET outcome.

An alternative proposal that is more workable and provides the appropriate level of flexibility, is presented in the response to Q10.

10. Do you have alternative proposals to define the consequence on the modellability of the parameters where some buckets of a curve, surface or cube are modellable whilst others are non-modellable?

When it comes to parametric functions, the industry believes the general eligibility criteria should be adaptive to the specific nature of parameters and offer recognition for a potential hierarchy between parameters where relevant. For instance, the ATM volatility parameter plays a central role in the calibration of a SABR model. Assessing its modellability based on the ATM bucket makes sense, whether or not DITM buckets pass the RFET.

Each model being different in nature, the industry would recommend the EBA to adopt a principle-based derogation approach, rather than a prescriptive one, and allow institutions the flexibility to establish the most meaningful mapping between representative real prices and risk factors. Enabling this flexibility as a derogation to the "all-or-nothing" rule would provide a simple, effective and Basel consistent [see MAR31.15] workaround to the modellability of parametric functions.

If nonetheless the EBA believes that a prescriptive approach is necessary in some cases, then the industry would like to preserve a clear easy-to-apply rule for the most common use case (as identified in our survey in response to question 7), namely when a volatility object is parameterised in the strike dimension using industry-standard models. Ideally, this would be offered as an explicit alternative to a more complex approach that is applicable more generally. So in essence, the Industry would prefer, to allow Institutions to deal with few options (but discarding Option 2).

In particular, in the case where there are sufficient real price observations to pass RFET for the overall level of implied volatility (ATM) but not for the shape of the volatility smile, a bank should be allowed to treat the level parameter as modellable and other volatility surface parameters as non-modellable. This could be addressed with the following addition to Article 5:

3(d): By way of derogation from point (b), where the parametric function for an implied volatility curve, surface, or cube belongs to the following general class:

i. the strike dimension is parameterised independently from the time dimension(s) ; and

ii. the institution has demonstrated that one parameter in the strike dimension measures the overall level of implied volatility (ATM) with other distinct parameters measuring the shape of the volatility (smile, skew) ;

an institution may assess modellability of the level and shape parameters separately, in accordance with paragraph 2, so that

(a) modellability of parameters shall be assessed at bucket (expiry)/Grid (expiry x maturity) level rather than the entire surface;
(b) if there is a sufficient number of observations, as per paragraph 3 of Article 4, in the ATM strike bucket, then the corresponding model parameter is deemed modellable;
(c) if in addition, there is a sufficient number of observations, as per paragraph 3 of Article 4, in either the ITM or OTM strike bucket, then the model parameter measuring volatility skew is also deemed modellable;
(d) if there is a sufficient number of observations, as per paragraph 3 of Article 4, in both the ITM and OTM strike buckets, then the model parameters measuring volatility skew and smile are deemed modellable.

The ATM, ITM and OTM buckets can be defined either using the standard, pre-defined set, as per paragraph 3 of Article 6, in which case Bucket 3 in Table 1 will be used for assessing modellability of the parameters describing ATM/level of implied volatility; or own bucketing approach, in which case the institution will define the strike range corresponding to each of the parameters of the model, measuring ATM, skew and smile.

This is consistent with the general principles set out in Article 3: if the overall level of implied volatility is considered as a risk factor in isolation, then a verifiable price at any strike would be representative of that risk factor. This derogation also brings the European implementation closer to the spirit of the Basel text and maintains the flexibility for banks to model a modellable risk factor using the best available data, in line with MAR31.23.

If the EBA prefers a more generic derogation principle, the industry notes that the treatment above, focused on parametric volatility functions across the strike dimension, can be generalized to all types of parametric models while still ensuring simple and pragmatic implementation. The rule would then be based on the following two principles:

- N modellable buckets can cover up to N parameters (or all parameters, if N is the maximum number of regulatory buckets involved in the calibration of the parametric model).
- Institutions should define priority rules between parameters and get supervisory approval thereof.

Remark: whichever the preferred approach for assessing the eligibility of parametric functions, the institutions will have several choices in terms of calibration and capitalization. If {a,b,c} are the original parameters and if parameter c is deemed not modellable, then the institution can either

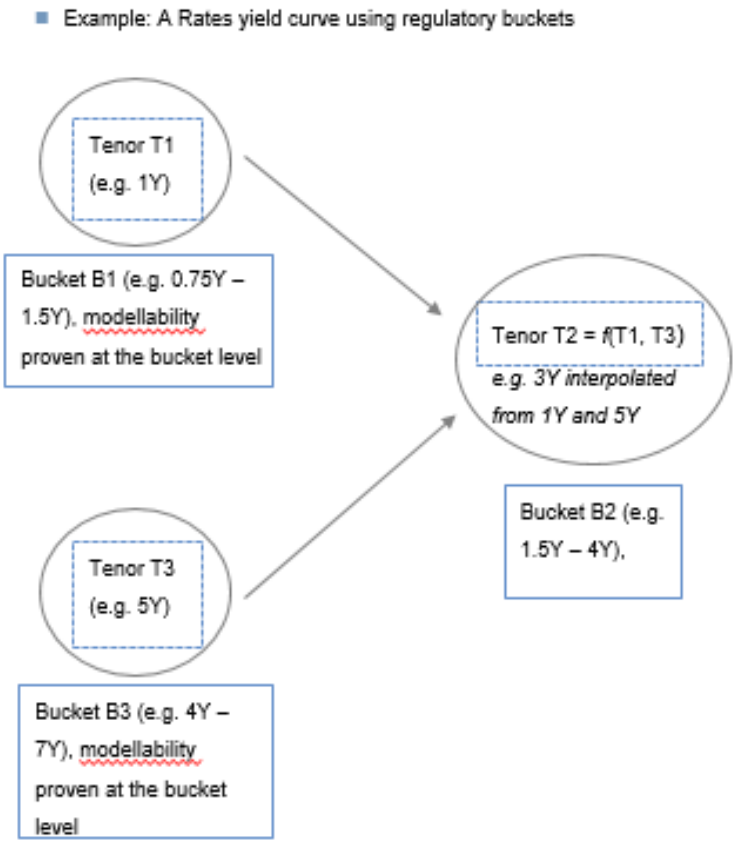
- Capitalize {c} as NMRF; or
- Derive {a',b',c'} according to Option 1, proxy {c} by {c'} in the ES, and capitalize {c-c'} as NMRF; or
- Define any proxy {c"} deemed relevant, proxy {c} by {c"} in the ES, and capitalize {c-c"} as NMRF

11. Do you intend to apply paragraph 4? If so, for which risk factors will it be relevant? Do you expect any implementation issues related to it? Please explain expected issues thoroughly. [Article 6, paragraph 4]

The industry proposes that the following order of precedence be applied for the assessment of modellability of risk factors of the broad risk factor category Credit Spread belonging to a certain maturity bucket:

- Generally, risk factors derived solely from a combination of modellable risk factors are modellable regardless of whether an own or regulatory bucketing approach is being used, i.e. any deterministic function of modellable risk factors should always be considered as modellable.
    - In the example shown below, since the buckets B1 and B3 are modellable, any risk factors contained within those buckets (e.g. T1 and T3) are considered modellable. Consequently, the risk factor T2 is derived from two modellable risk factors, and should always be treated as modellable.
- However, considering a derived risk factor within the bucket as modellable, does not automatically make the entire bucket modellable. In other words, if there are other, non-derived risk factors within the bucket, then they can only be considered modellable if the bucket as a whole passes the RFET criteria.
    - In the example shown below, if there is a 2Y risk factor within bucket B2, then that can be treated as modellable only if either a) B2 satisfies the RFET criteria, or b) the 2Y tenor is derived from other tenors in modellable buckets B1 and B3.
- For derived risk factors, the mappings/functions used to determine the RTPL should be the same as that used to derive the risk factor
    - In the example shown below, RTPL cannot directly use the FO marks for the 3Y tenor. Rather, the value of 3Y will have to be derived by using the FO marks for 1Y and 5Y, along with the same interpolation logic that is being used in the risk model.
- Finally, a derived risk factor is only considered modellable if ALL of the input risk factors used to derive it are modellable.

The industry recommends to extend the risk factor category to others including Rates. We see the benefit of this extended to inflation risk factors where the short end of the curve is non-modellable.



12. Do you agree with the outlined methodology for the assessment of modellability of risk factors? If not, please explain why.

As a general principle, the industry favours a framework where institutions are allowed the flexibility of using various options according to the specific nature of the function parameters and adapting to the requirements arising from their implementation of the internal model with reference to the parametric risk factors. We have explained our arguments throughout our response.

The industry would also like to take the opportunity to comment on Article 3: the criteria on how a verifiable price shall be considered representative of a risk factor.

A verifiable price shall be considered representative of a risk factor as of its observation date where both the following conditions are met:

(a) the institution has demonstrated that there is a close relationship between the risk factor and the verifiable price;

(b) the institution has specified a conceptually sound methodology to extract the value of the risk factor from the verifiable price. Any input data or risk factor used in that methodology other than that verifiable price shall be based on objective data.

While the second criteria can be easily applied to vanilla products, it can be particularly difficult to apply to exotic derivatives. For example, a swap rate can be relatively easily implied from an interest rate swap; however, it is difficult to imply parametric volatility from a barrier option. More particularly

the price of an exotic derivative is a non-linear function of multiple market data inputs/parameters, hence there could be numerous combinations of such parameters that would lead to the same price. Besides, the value (level) of the same risk factor derived from different exotic products for the same observation dates could be materially different. Finally, yet importantly, the price of a transaction is also dependent on non-model considerations, such as client relationships; extracting just the model related component of such risk factor could be extremely difficult.

The industry would thus propose the following wording:

A verifiable price shall be considered representative of a risk factor as of its observation date where:

(a) the institution has demonstrated that there is a close relationship between the risk factor and the verifiable price;

(b) where possible the institution has specified a conceptually sound methodology to extract the value of the risk factor from the verifiable price. Any input data or risk factor used in that methodology other than that verifiable price shall be based on objective data, e.g. market data inputs/risk factors used in the daily market to market.

c) Where it is not possible to extract the value of the risk factor from the verifiable price, the Institution shall demonstrate that the value of the risk factor on the observation date used in the risk model and the risk P&L thereof can be reconciled to the economic P&L.

13. Do you expect any problems for the modellability assessment arising from the upcoming benchmark rate transition that could be addressed via this regulation? If so, please provide a thorough description and potential solutions if any.

Yes, the industry believes that the impending RFR transition programs across various large economies may provide further challenges for the modellability assessment under the FRTB standards. Although it's still early stages to assess and explore the full impact, the industry is expecting the lack of "liquidity" (as expressed by Risk Factor Eligibility Criteria in the FRTB rules) for risk factors (RFs) associated with the new reference rates could mean these RFs would inevitably failing the risk factor eligibility test and be capitalised under NMRF. In addition, the lack of historical rates would result in the Expected Shortfall calculation using proxies and any basis between these Risk Factors and the proxy will need to be capitalised as a Non-Modellable Risk Factor. The impact of the new RFRs have also not yet necessarily been accounted for in the Industry QIS exercises due to operational complexities across jurisdictions at this stage.

We would propose risk factors associated with all reference rates (as part of the benchmark rate transition) to be considered modellable at FRTB go-live. We would also propose that risk factors associated with old reference rate (i.e. Libor) should also be "grandfathered" as modellable post transition.

14. How do you intend to integrate the risk factor modellability assessment (i.e. RFET) into the processes of your institution? Do you expect those data to be used for the purpose of the RFET only or do you think those data would increase the data availability used e.g. for the calibration of your internal model (under para 31.26 of 2019 Basel rules)? What percentage of data used for the RFET do you think will be used also for the calibration of your internal model?

The Industry considers risk factor modellability assessment to be an added regulatory requirement under the Market Risk capital framework. Whilst firm-specific infrastructure enhancement/improvement may embed certain elements to align market risk data in certain areas and/or streamline certain internal process, the industry considers it difficult to generalise the direction of travel this point in time given the nature of process design are often unique to individual firms.

Furthermore, the industry viewpoint on the similar subject was discussed under its response to EBA RTS Discussion Paper on "Market Risk & Counterparty Credit Risk framework March 2018". It was highlighted that there is no direct link between the data used for the observation of whether a risk factor is observable and the data that is available and used as the historical data set to calculate the SES.

Additionally, 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.