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**Subject: Guidelines on criteria for the use of data inputs in the risk-measurement model referred to in Article 325bc under Article 325bh(3) of Regulation (EU) No 575/2013<sup>1</sup>**

The International Swaps and Derivatives Association ('ISDA') and the Association for Financial Markets in Europe ('AFME'), the 'Joint Associations' and their members ('the Industry') welcome the opportunity to comment on the EBA's Consultative Document on the technical standards on guidelines on criteria for the use of data inputs in the risk-measurement model.

The Industry appreciates the EBA's efforts in developing guidelines to align industry standards on the use of data inputs used in firms risk measurement model and the EBA's commitment to providing channels of communication with the industry that has benefited the development of robust market risk technical standards. The industry is confident that this consultation and the constructive feedback we provide in this comment letter will help the EBA's decision-making process.

The main concern we have is the prescriptive nature of the RTS, in particular on the allowance of appropriate extrapolation techniques. This could lead to a level playing field issue if European banks have a different set of modelling options compared to banks in other jurisdictions. We wish to reiterate that consistency is important both across European institutions but also globally across regions. Therefore, the standards whilst developed for European banks should also align to global standards and those adopted in other jurisdictions to avoid undesirable fragmentation. We have also provided additional questions to the EBA for consideration in areas where the draft RTS proposes requirements that are quite different in spirit and diverge from those provided by the BCBS.

We appreciate the hard work put into developing a standard which can be universally applied across European institutions and respectfully ask that the recommendations provided in this response are considered where necessary to ensure smooth and consistent implementation of the FRTB framework.

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<sup>1</sup> <https://eba.europa.eu/regulation-and-policy/market-risk/guidelines-criteria-use-data-inputs-expected-shortfall-risk-measure-under-ima>

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 the EBA in achieving the objectives of this important RTS.

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## Individual questions in the consultation

**Q1.** To which extent do you intend to apply paragraph 16 of the present GL? Please provide concrete examples that could fall under the scope of paragraph 16 and explain why the coefficients cannot be calibrated to the historical data only.

**Response:**

Paragraph 16 sets out some reasonable conditions under which coefficients may incorporate some level of judgement. The type of situation where this paragraph can be applicable is where there is not enough historical data under which to make a fully empirical estimate or the estimates can be stabilised and accuracy improved by incorporating a level of judgement.

**Proposed Action**

Include Paragraph 16

**Q2.** To which extent do you intend to apply paragraph 17 of the present GL? Please provide concrete examples that could fall under the scope of paragraph 17.

**Response:**

Paragraph 17 sets out conditions where institutions do not use data from the 1-year period of financial stress only but also more recent historical data.

One type of example of where one would not solely want to use data from a period of financial stress can be for example when the instrument or risk factor did not exist in the period of financial stress used.

A further example is where an issuer whose nature has changed dramatically through time, e.g. a company that has completely changed its business model and now belongs to a different sector. The data (stock price, credit spread) of that issuer in the stress period may not be relevant any longer to the current risk profile of the issuer. In this instance it may be preferable to use more recent data to reflect the risk of that issuer.

**Proposed Action**

Include Paragraph 17

**Q3.** Do you agree with the inclusion of paragraph 31 in the GL? Do you envisage any issues that could be associated with paragraph 31?

**Response:**

The market data team is required to remediate data issues such as missing data points and inconsistent data. Remediation is applied by replacement methodology which involves using data corresponding to other risk factors. Data remediation is generally considered as a one-off exercise. There is a concern that paragraph 31 could be interpreted as a requirement to regularly monitor modellability across all data points that have been used for data remediation, and trigger revision if modellability criteria are not met. This would potentially introduce instability in the risk estimate i.e. requesting periodic changes of shocks for historical time series which in theory should remain static. Furthermore, a situation could occur where a bank may have replaced a valid remediated point which at that time was an acceptable modellable alternative, but might now be modellable despite being non modellable at the time of remediation. Given the above concerns, it is advisable for paragraph 31 to be excluded.

**Proposed Action**

Remove paragraph 31

**Q4.** Do you agree with the inclusion of paragraph 34 in the GL? Do you envisage any issues that could be associated with paragraph 34?

**Response:**

The CP provides guidance on the concept of “extrapolation up to a reasonable distance.” If the risk factor has been deemed modellable and there is either missing or inconsistent values in the historical time data series of the risk factor, there may be a need for extrapolation to rectify the issues in the time series. However, the CP is too prescriptive on the use of extrapolation and restricting the use of extrapolation as a means to substitute risk factors when data inputs are not available, and therefore it may inadvertently result in the application of proxies of inferior quality when compared to extrapolation. In the most extreme cases, no “reasonable” proxy (other than extrapolation) may be available. Consequently shocks beyond the last modelled pillar would effectively be forced to zero with significant impact on risk factor eligibility tests to IMA, in particular on PLAT.

Portfolio Back-testing is already recognized by Basel (par 99.22(4)) as a valid tool to identify whether risk factors simulated in the Risk Management Model (‘RMM’) adequately reflect market volatility and correlations. Besides that, FRTB framework introduces another mechanism to ensure that risk factors’ dynamics within the RMM is consistent to the dynamic of the market data sets used in the Front Office: the Profit and Loss Attribution Test (‘PLAT’).

In cases where extrapolation/interpolation is of insufficient quality, PLAT failure would offer a backstop, forcing the desk on SA if the desk fails to meet the prescribed thresholds. This mechanism is already strict and does not require additional constraints on risk factor extrapolation mechanisms.

In general, we consider interpolation/extrapolation modelling techniques as a distinctive aspect of the Internal Model and it should not be part of a prescriptive regulation. Indeed, such limitations in the use of sound proxy methodologies may greatly impact the results of Backtesting and PLAT tests.

We would like to illustrate the above point by means of an example using FX Volatilities.

When considering potential proxies, several alternatives can be contemplated. For example, it is possible to consider extrapolation technique such as tenor substitution for a best fit. Here the implied volatility of a given tenor point can be used to approximate other adjacent tenor points. Alternatively, currency substitution may be used in which the missing data is replaced by data from a comparable currency, maybe selected via regression analysis. Tests performed using market data for FX volatility show that proxying via extrapolation across adjacent data points performs better compared to currency pair substitution. Extrapolation method leads to a higher correlation and comparable volatilities between the underlying and the proxy when compared with the currency substitution approach.

To support the above statement with empirical evidence, we compared a flat extrapolation “Tenor substitution” method to a “Currency substitution” method based on regression analysis.

- In the Tenor Substitution case we proxied the Delta Neutral implied volatility at 3Y tenor with the implied volatility at the 1Y Tenor of the same currency pair.
- In the Currency Substitution case we proxied the Delta Neutral implied volatility of currency pair (X) at 3Y tenor with Delta Neutral implied volatility of currency pair (Y) at 3Y tenor. Currency pair Y as a proxy for currency pair X was selected via regression analysis.
- We repeated the exercise across 73 currency pairs.
- Analysis was carried across SVaR period

The table below shows the detailed comparison between “Tenor Substitution” / “Currency Substitution”

**Table 1 – Tenor Substitution vs Currency Substitution average across 73 currencies**

Period	Risk Factor	TenorSub	CcySub	TenorSub Vol	CcySub Vol
		Corr	Corr		
SVAR	25C	0.96 (+/- 4%)	0.83 (+/- 13%)	0.98 (+/- 10%)	0.97 (+/- 14%)
SVAR	25P	0.96 (+/- 4%)	0.84 (+/- 13%)	0.98 (+/- 10%)	0.98 (+/- 14%)
SVAR	DN	0.96 (+/- 4%)	0.86 (+/- 13%)	0.97 (+/- 10%)	0.97 (+/- 14%)

Conclusions:

- Tenor Substitution, results in higher correlations, at 96% when compared to Currency Substitution which scores between 83% to 86%
- Tenor Substitution approach tracks the statistical properties of the underlying risk factor as the volatility of proxy is comparable to the volatility of the underlying risk factor.
- The average correlation results for Tenor Substitution are quite stable, changing only by +/- 4% across currencies while a corresponding change under Currency Substitution methods is +/- 13%

We therefore recommend that banks be allowed the flexibility to choose the most appropriate extrapolation methodologies as long as they are able to demonstrate appropriateness of extrapolation choice and therefore we recommend to remove paragraph 34.

**Proposed action**

The Industry proposes to not include paragraph 34 in the Guidelines.

## Additional questions:

**Q5.** Paragraphs 12, 13 and 14 ask for a quarterly check of the alignment between risk factors used in the ES model and the risk factors derived from the RPO used in the RFET. Do you envisage any issues that could be associated with paragraphs 12, 13 or 14?

**Response:**

*Principles for the modellability of risk factors that pass the RFET*

Section 4.1 on the Accuracy of data inputs seems to be extensively inspired from the section in the Basel Standard that was originally known as “Annex D” but that was eventually included in chapter MAR31 despite the concerns expressed by the Industry.

In particular, the principle being enforced by the RTS is Principle Four; the Industry concerns on it revolve around the fact that it poses requirements that are quite different in spirit from one of the cornerstone of the ruling on RFET that is established in 31.22

31.22 Once a risk factor has passed the RFET, the bank should choose the most appropriate data to calibrate its model. **The data used for calibration of the model does not need to be the same data used to pass the RFET.**

All the developments carried out by the Industry over the years were embracing this principle, which we highlighted in our response to the consultation on RFET that the EBA conducted in 2019. In particular, the outcome of question 14 was fairly uncontroversial and was noted by EBA.

**Question 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

All respondents agree that data used for the modellability assessment will play no big role or no role at all in model calibration.

Some respondents state that they do not expect to integrate RFET data into the calibration of their internal models. Other respondents declare that they see no direct link between the data used for the modellability assessment and the historical dataset for model calibration. One respondent explains that it will be difficult to leverage data used for the modellability assessment for model calibration, as verifiable price data will typically not meet the requirements of regular frequency (e.g. daily) and consistent cut-off times.

Two respondents believe that the modellability assessment will be a stand-alone test, independent of the

The EBA takes note of the fact that data used in the modellability assessment will typically not be used by institutions for calibrating their internal models.

No amendments are needed.

The EBA RTS however poses an explicit reconciliation requirement between what Principle Four defines as “risk prices” and a Real Price Observation (‘RPO’) (where Back/Front Office prices could also serve as RPO as a fallback of verifiable prices under restrictive conditions of verifiable prices’ availability)

*Where the data inputs used are not derived from verifiable prices collected for the purpose of the modellability assessment...institutions should at least quarterly reconcile the **values of a risk factor** that are used as data inputs, as **derived by the price data used in the ES model**, with the values of that risk factor, as **derived from verifiable prices only**.”*

In particular paragraphs 12, 13 and 14 essentially require a quarterly check of the alignment between risk factors used in the ES model and the risk factors derived from the RPO used in the RFET or, in their absence on risk-factors derived from Back/Front Office prices.

The comparison with risk factors derived from RPOs might not provide the desired outcome:

### 1. Lack of comparability due to differences in cut off times, bid/ask vs mid, valuation adjustments

RPO (or verifiable price (‘VP’) are mainly generated intraday (at a specific moment during the day) and not normalized on a given cut off time (normalization which is required when building time series for specific one day or ten days shocks). Associated prices (verifiable or not) can significantly vary during the day. The rationale of reconciliation between these two sources of data seems not aligned (and is not by construction possible in a majority of cases due to significant intraday moves) with the more global shock framework used in the ES model.

⇒ Liquidity measure captured by intraday verifiable prices and associated modellability is not expected to be aligned with flashed time series associated to given cut-off time and seems to provide a sound rationale for MAR 31.22 advocating in favor of a distinction between data input used for verifiable prices on the one hand and data input used for the generation of historical scenario on the other hand.

RPO (or VP) are quoted using bid/ask spreads which can themselves significantly vary depending on the nature of considered risk factors. While considered data series used for historical scenario are expected to provide a mid / fair value for a given risk factor / market parameter, market parameters used for pricing purposes are not normalized but rather skewed depending on the position taken by the bank, and depending also on valuation adjustments that are very specific to the transaction (CVA, FVA...)

In light of the above, such checks can easily become very difficult to pass for Institutions employing standard and well accepted practices in risk modelling (considering normalized time series associated to given cut off times).

## **2. Vendors and pooling services to improve RPO availability will not provide the risk factors values**

The use of vendors or pooled data is explicitly allowed by the regulation.

Due to confidentiality agreements with the contributors the vast majority of the vendors provide just a report that counts the number of observed trades according to a given taxonomy. The prices are not disclosed, however the information that there were enough transaction of a certain kind still allow to establish that the risk factors relevant for that instrument can be considered modellable. In this context it is clear that inferring risk-factor values would be impossible (since the traded price is undisclosed).

Furthermore, even in those cases where the price level gets disclosed by the vendor/pool, the instrument might not be in general booked in the Bank's systems. Under these circumstances working out the risk-factor values from a price would be a cumbersome additional exercise where all the information required for its pricing (the term-sheet, the pricing model) might simply not be available.

In essence, the request to explicitly infer risk-factor values out of RPOs (to be then compared with risk-factors used in the ES metrics) will either be impossible or extremely difficult to comply with for any firm using an external vendor or a data pooling system. This is irrespective of the type of metric used to assess the accuracy, the issue being the inability to infer a risk-factor value in the first place in the absence of the required information.

## **3. Use of market data providers for the risk factors time series (back to 2007)**

Risk Measurement models are often populated by risk-factors provided by market data providers to ensure that the whole history is consistently derived, especially in those cases where a new risk factor enters the perimeter and its time series needs to be readily available for ES calculation over the current and stressed window. Such time series would be typically representing a mid-quote at a given closing time.

This would be not possible using risk-factors obtained by RPO (that only cover the most recent year) or FO data (that typically cover only those risk-factors that are relevant to the current portfolio). Additionally, RPO reflect bid/ask quotes rather than mid.

Inferring risk-factors values from RPOs with the aim of comparing them to risk-factors that derive from market data providers is a very cumbersome process that might result in different results because the data that is used for pricing a products may not be the same as those that are used to generate shock scenarios.

Furthermore, there might be other instances where banks could face discrepancies in data inputs. Such instances include for example intraday differences between the tick time of the trade and the risk factors time series cut off time and where significant market moves that incurred intraday and associated data input cannot be mechanically reconciled.

### **Proposed Action**



In the light of the above observation we would recommend amending the requirement expressed by points (a) of 12, 13 and 14 by removing the precondition on the lack of a sufficient number of verifiable prices to access to case (b).

(a) the volatility of that risk factor as estimated from the verifiable prices referred to in Article 2 of Commission Delegated Regulation (EU) No XXX/20XX [RTS Modelling assessment], ~~where the number of verifiable prices is sufficient to perform this assessment with accuracy/ where a verifiable price is available for a given observation date ;~~

(b) the volatility of that risk factor as estimated from the time series of values for that risk factor used in the institution's front-office or back-office pricing models, ~~where the number of verifiable prices is not sufficient to perform this assessment with accuracy / where a verifiable price is not available for a given observation date.~~

and hence allowing the comparison between Risk risk-factor and FO risk-factors (b) even in the case RFET is conducted with a sufficient number of RPOs (e.g. in that the RPOs are obtained through a vendor)

This would imply that for an Institution it would be sufficient to conduct a (quarterly) reconciliation exercise between the FO Risk Factors (i.e. those used to quote the RPO originated by the Bank) and Risk Factors used in the ES simulation.

Such check would implicitly guarantee that the Risk risk-factors are aligned to those generated by the FO and would be sufficient to meet the principle established in 32.22

**Q6.** Paragraphs 26-31 discusses the criteria for using data inputs in the risk measure model. Do you envisage any issues that could be associated with paragraphs 26-31?

**Response:**

Section 4.4. of the Guidelines on criteria for the use of data inputs in the risk-measurement model provides across paragraph 26 to paragraph 31 the set of requirements around completeness and consistent usage for data inputs.

Paragraph 28 stipulates that *“Institutions should have **clear policies for the replacement of missing or inconsistent values in the historical time series of data inputs, including policies for verifying that such replacement of missing or inconsistent values complies with the conditions referred to in paragraphs 12, 13 and 14.**”*

Paragraph 29 requires that *“ Institutions **should not use old and unchanged (‘stale’) data as replacement of missing or inconsistent values in the historical time series of data inputs**”.*

As common practice, in particular for remediating inconsistent values e.g. one day spikes deriving from operational errors, institution may apply forward filling technique. Such a practice is simple but effective.

Paragraph 29 limits the possibility of using forward filling technique, since it would introduce ‘stale’ data points, and would instead require institutions to implement more complex filling techniques. Introduction of this additional complexity is seen by the industry as a significant overhead without a clear supervisory objective that adds value to the process. Since under paragraph 28, institution will be required to have in place *“clear policies for replacement of missing or inconsistent values”*, the decision to which specific replacement methodology to be used should be left to the individual institutions.

Moreover, if on a single day a missing or inconsistent value cannot be replaced through interpolation or extrapolation in a way that meets the guidelines, the risk factor might have to be capitalised under the non-modellable risk factor framework. This would be a negative outcome as the exposures to that risk factor will be capitalised conservatively in the stress scenario risk measure (‘SSRM’) and, within the model, hedging and diversification benefit will be lost. We are therefore calling for a level of tolerance whereby if less than [x%] of values are replaced in a way that do not meet strictly the guidelines (ex. forward filling techniques), this would still be found acceptable and the risk factor may still be eligible to be capitalised in the risk measurement model. An example when this may occur includes a single day at which a RF cannot be extrapolated according to the guidelines because the closest risk factor value is missing as well.

**Proposed Action**

Given the presence of paragraph 28, the presence of paragraph 29 it is seen as not necessary and we recommend that paragraph 29 be removed.

**Q7.** Paragraph 33 requires that extrapolated values volatility is equal or higher than the volatility of the data it is extrapolated from. Would you support such requirement?

**Response:**

If there is a single day of missing or inconsistent values then the Industry believes that this comparison on extrapolating values driven by a lack of data would lack robustness.

The Industry supports a justification of values extrapolated where they do not lead to a systemic bias toward volatility underestimation, however these requirement are already present in the Guidelines at paragraph 28. Hence, paragraph 33 may be deleted.

**Proposed action:**

We propose paragraph 33 to be deleted.