FINANCIAL AND MARKET RISK DEPARTMENT

The Fundamental Review of the Trading Book

Response to EBA Consultation on Regulatory Technical Standards on the calculation of the stress scenario risk measure for NMRF

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Contents

1. Executive summary

In January 2019, Basel Committee on Banking Supervision (BCBS) finalised and published its standards on "Minimum capital requirement for market risk"[1]. The text replaces the previous minimum capital requirements for market risk in the global regulatory framework, which are transposed in the EU via Regulation (EU) No 575/2013 (Capital Requirements Regulation – CRR).

After the publication of the final text of the CRR II[2] in the Official Journal of the European Union, EBA was delegated to develop Regulatory Technical Standards (RTS) to better detail certain aspects related to the Internal Model Approach (IMA). Following the first package published on 27th March 2020[3], on 4th June 2020 EBA launched a consultation on draft RTS on the capitalisation of Non-Modellable Risk Factors (NMRFs) for institutions using the new IMA under the FRTB.

The proposed draft RTS are the result of an iterative process where the views of market participants have been required several times. Indeed, in June 2019 EBA launched a data collection exercise to fine-tune and calibrate the methodologies proposed in its Discussion Paper published on 18 December 2017.

These Regulatory Technical Standards are one of the key deliverables included in the roadmap for the new Market and Counterparty Credit Risk approaches: they set out two approaches that institutions are required to use for the purpose of determining the extreme scenario of future shock that, when applied to the NMRF, provides the Stress Scenario Risk-Measure (SSRM).

Considering the relevance of these topics within the revisited framework to compute own funds requirements for market risk, Intesa Sanpaolo (hereinafter, the Bank) would like to participate to the Consultation phase proposed by EBA on the aforementioned topic.

[1] BCBS d457, Minimum capital requirements for market risk, January 2019 (rev. February 2019)

[2] Regulation (EU) 2019/876 amending Regulation (EU) No 575/2013, June 2019

[3] EBA/RTS/2020/01, EBA FINAL draft RTS on Liquidity Horizon for the IMA

EBA/RTS/2020/02, EBA FINAL draft RTS on Back-Testing and Profit and Loss Attribution requirements

EBA/RTS/2020/03, EBA FINAL draft RTS on criteria for assessing the modellability of Risk Factors

2. FRTB – Calculation of the Stress Scenario Risk Measure for NMRF

Q1. What is your preferred option among option A (stress period based extreme scenario of future shock) and option B (extreme scenario of future shock rescaled to stress period)? Please elaborate highlighting pros and cons.

The Consultation Paper proposes two options for calibrating an extreme scenario of future shock.

1. Defining the Stress Scenario Risk Measure (SSRM) directly from the stress period for each asset class: this is defined as the period that maximizes the Rescaled Stress Scenario Risk Measure (RSS) for that risk category. Even if more coherent with the overall methodology, this approach could be excessively burdensome from an operational point of view: indeed institutions are required to apply entirely the prescribed SSRM methodology (i.e. direct, historical, etc.) scanning all 12-month periods starting at least from 1 January 2007 in order to identify the stress period.

2. Rescaling a shock calibrated on the current period to obtain a shock calibrated on the stress period: the rescaling factor to be applied could be determined according to two possibilities[4] and the stress period is defined as the one that maximises the scalar for each risk category. Even if this option is less straightforward than the former, it is easier to be applied for two reasons:
   - Banks may have limited observation data during the stress period than the current one;
   - It is less burdensome since institutions do not have to apply the entire NMRF methodology for all the 12-month periods, while they only have to compute the prescribed scalar for all 12-months period, without the need to fully revaluate the whole portfolio.

Following previous considerations, between the proposed approaches, the Bank welcomes the latter option. Indeed, under option A, the stress period selection will be operational burdensome and not workable in practice, since the full set of SES calculations need to be run for every candidate stressed window. On the other side, Option A is feasible (and preferable) only if stressed window calibration approach might be disentangled from the determination of the stressed scenario.

[4] Ratio between Standard Deviation [Expected Shortfall] of Risk Factor returns in stress and current period for each risk class, computed by using the Reduced Set of Modellable Risk Factors in the Expected Shortfall.

In a more general way, Intesa Sanpaolo propose an alternative solution. Indeed, we believe that for institutions having a sufficient number of observations for each Non-Modellable Risk Factor (i.e. at least 200 data), shall be possible to apply a methodology *similar* to the one adopted in the IMCC framework. This means that, for the *i-th asset class*, the scenario of future shocks applied to NMRFs shall be calibrated to historical data from a continuous 12-month period of financial stress (starting at least from 1 January 2007) that shall be identified by the institution in order to maximize the value of ES^i (without applying entirely the prescribed SSRM methodology).

In other words, with regard to the definition of the observation period to be used, the Bank believes that should there be the possibility to adopt the single 1-year stress period applied for modellable Risk Factors in the Expected Shortfall calculation (different for each asset class). In this case, is it possible to assume that a stress period for the modelled risk factors is a suitable period to use for the SES for that broad risk class.

Q2. What are characteristics of the data available for NMRF in the data observation periods under options A and B?

Due to the Market Data Management workflow currently implemented in Intesa Sanpaolo, for each Risk Factor, we are able to collect the entire historical time series: hence, we have availability of daily data that could be used as inputs for the calibration of the downward and upward shock. Therefore, this means that the Bank is able to compute the time series of nearest to 10 business days returns irrespective from the 1-year period (current or stressed).

Q3. Do you think that institutions will actually apply the direct method to derive the extreme scenario of future shock or do you think that given the computational efforts that it requires and considering that the historical method typically provides very similar results it will not be used in practice? As stated in the background section of this CP, the EBA will drop the direct method from the framework if not provided with clear evidence for its need.

A premise is that the maintenance of the direct approach within the draft methodology published, is welcome. Indeed, it has some advantages, leading to reliable results, for example:

- It works properly with NMRF where each tenor can have its own shift characteristics, capturing the true dynamics of a historical scenario for non-modellable buckets;
- The methodology is more straightforward compared to shocking risk factors;

- It is more aligned with the ES calculation.

However, as already stated both in past position papers and in bilateral calls, even if the proposed direct method leads to reliable results, it is overly burdensome in terms of computational effort, due to the multitude of NMRFs that would require a stand-alone ES calculation. Indeed, although it is straightforward from a mathematical point of view, it requires a challenging computational effort, since for each Risk Factor a relevant number of loss evaluations need to be computed, while the other methods require only a few.

In addition, from our empirical analysis, we found that Direct and Historical approach (which required the same observations number) lead to similar results even if the latter is less costly to be implemented from an operational point of view. For sake of completeness, the table below summarizes the results obtained considering a sample IR curve and focusing on a Trading Desk with both linear and structured IR strategies, which is sufficiently representative of bank portfolio.

This data have been already shared during June 2019 Data Collection Exercise.

Methodology	SES
Direct	100.00
Historical	101.20
Sigma	142.60
Fallback	305.86

Therefore, the Bank believes that, in order to derive the extreme scenario of future shock, the direct method will not be taken into account.

Q4. What is your preferred option among (i) the representative risk factor – parallel shift option, and (ii) the contoured shift option? Please elaborate highlighting pros and cons.

The Consultation Paper proposes two options for calibrating an extreme scenario of future shock at bucket level:

1. *Representative Risk Factor*, which is based on the identification of a representative Risk Factor for the bucket, determined as the one with the highest absolute shock (computed according to one of the proposed methodologies – *direct, historical, etc.*). Once the bump has been identified, a parallel shift has to be applied for all Risk Factors within the considered bucket.

2. *Contoured shifts*, based on the application of contoured shifts of regulatory buckets. In this case, institutions are required to determine downward and upward shocks for each Risk Factors within the regulatory bucket (computed according one of the proposed approach) which should be scaled by a "*bucket shock strength*" parameter β. With respect to the previous approach, following this methodology, banks have to apply a contoured family of non-parallel shocks instead of a parallel shift.

Therefore, the proposed options are similar from a computational point of view, as they both require to determine upward and downward shocks for all the Risk Factors within the bucket. In financial terms, the second option could be more reliable, substantially for three reasons:

- Shifts to be applied are more aligned to historical Risk Factor movements;
- The latter approach will mitigate the possible discontinuity created by shocking the Risk Factors within a bucket while keeping fixed those in the adjacent buckets;
- There might be situations where bumps to be applied could be influenced by outlier. For example, in case of IR / EQ Volatility surface, the bump with the highest absolute shock could be associated to *out-of-the-money* Risk Factor and it is unlikely that it is sufficient representative of the whole bucket. Similar considerations may be extended also to short-term components of IR Curves, which empirically are *more volatile*: however, this trend may not properly describe historical movement of Risk Factors within the bucket and, as previously specified, it is not representative of the whole cluster.

Following considerations above, between the proposed methodologies, Intesa Sanpaolo believes that the *Contoured shifts* option could be more suitable to this scope.

However, due to regulatory bucket structure, a third option could be taken into account. Indeed, it is reasonable to assume that a bucket shock may be proxied with the shock of the *most relevant* Risk Factor within the bucket (i.e. for standard maturity bucket $0 \leq t < 0.75$ could be 6M, for $0.75 \leq t \leq 1.5$ could be 1Y and so on). With this approach, institutions will have less computational effort since they are required to determine up / downward shocks only for *representative* (i.e. most relevant) Risk Factors.

Q5. What are your views on how institutions are required to build the time series of 10 business days returns? Please elaborate.

Intesa Sanpaolo agrees with the approach to determine the series of 10 business days returns from the time series of values of a given NMRF, coherently with the methodology applied in the context of modellable Risk Factors. In addition, as premise of Non-Modellable Risk Factor framework is that banks may have limited data and time series may not always yield exactly 10 business days returns for all dates, the Bank believes that the "*nearest next to 10 days*" approach could be sound enough.

Q6. What is your preferred option among (i) the sigma method and (ii) the asymmetrical sigma method for determining the downward and upward calibrated shocks? Please highlight the pros and cons of the options. In addition, do you think that in the asymmetrical sigma method, returns should be split at the median or at another point (e.g. at the mean, or at zero)? Please elaborate.

Among the other options, the Consultation Paper proposes two different Sigma approaches in order to determine the upward and downward calibrated shocks.

- *Symmetrical Sigma*, which requires to first estimate the standard deviation of nearest to 10-day returns, on the overall time series. The shock computed will be applied both upward and downward in a symmetric way.

- *Asymmetrical Sigma*, which takes into account the skewed distribution of Risk Factors (since downward shocks are more severe than upward ones). In order to cater the aforementioned effect, the historical time series of 10 business days returns of the NMRF will be split according to prescribed criteria and two asymmetric upward / downward rescaled standard deviations are computed. This methodology increases the accuracy of the calibrated shocks if compared to the previous approach.

Even if the former approach is less complex, from a statistical point of view the latter is more robust. As previously specified, the *Asymmetrical Sigma* is able to cater the skewness of returns distribution: for this reason, the Bank supports the ASigma methodology.

In addition, Intesa Sanpaolo believes that the median should be used to this purpose: indeed, according to this approach, it is possible to ensure that the same number of nearest to 10-days return

is used when calibrating the upward and downward shocks. Similarly, splitting the distribution at zero might lead to distortive effect as upward shocks could be calibrated on a low number of observations.

Q7. What are your views on the value taken by the constant CES for scaling a standard deviation measure to approximate an expected shortfall measure?

In the proposed methodologies, the calibrated shocks for a NMRF correspond to the 97.5% Expected Shortfall of estimated returns. However, if the number of available data observation could not allow estimating a reliable Expected Shortfall, a scaling factor to get an approximation of the *real* Expected Shortfall should be applied.

The C_{ES}, set equal to three, seems to capture with a sufficient degree of conservativism the possible Risk Factor distributions and all the possible methods applicable. Indeed, setting a value less than three would mean being too close to the value used in the case of a Gaussian distribution (which is roughly 2.33) risking not to properly capture skewness and excess kurtosis. On the other hand, setting a value higher than three would imply a challenging increase of the level of calibrated shocks.

The table below summarizes results obtained from empirical analyses on the C_{ES} parameter, with a breakdown for each Risk Factor typology.

Asset Class	AVG(C_ES)
Bond Volatility	2.761438458
Cross Currency Swap	2.535984634
Commodity Curves	2.080734375
Commodity Volatility	2.520077468
Credit Spread Curves	2.501421864
Credit Spread Volatility	2.826095112
Equity Volatility	2.583969099
Inflation Curves	2.207052765
Interest Rate Curves	2.676068468
Interest Rate Volatility	3.339000814
Swaption Volatility (ATM)	2.382982678
Swaption Volatility (OTM)	2.760668526

A premise is that the aforementioned results are computed taking into account historical time series with more than 200 observations, while C_{ES} parameter is applied only for the Sigma approach (which is used when data number ≤ 200).

On the one hand, empirical results confirm that Risk Factors have a fat-tailed distribution, while on the other hand setting a floor to C_{ES} parameter equal to three could be overly conservative.

Therefore, Intesa Sanpaolo believes that this parameter might be recalibrated (i.e. equal to 2.50).

Q8. What are your views on the uncertainty compensation factor $(1+CUC\sqrt{2}(N-1.5))$? Please note that this question is also relevant for the purpose of the historical method.

The uncertainty compensation factor has been designed to cater and to compensate uncertainty in computing calibrated shocks aiming to avoid an undue underestimation. The underlying reason is that by definition NMRFs are characterized by lower market observability and potentially lower data availability. To this purpose, banks are required to compute a scalar factor covering the uncertainty due to the lower observability of non-modellable Risk Factors, estimation error and the uncertainty in the underlying distribution. Considering empirical analyses results, Intesa Sanpaolo believes that the calibration of the uncertainty compensation factor is suitable to this scope since it works also in case calibrated shock is computed for non-normal distributions and not based on the standard deviation (i.e. for historical approach).

In addition, the Bank believes the calibration of C_{UC} = 1.28 (= $\phi^{-1}(0.90)$) is sufficiently conservative: indeed, setting 0.90 as confidence level for the estimation of the parameter of i.i.d. normal case in the large N limit could be acceptable.

Q9. What are your views on the fallback method that is envisaged for risk factors that are included in the sensitivity-based method? Please elaborate.

As a premise, due to current Intesa Sanpaolo Market Data Management Workflow, the Bank believes there are no cases in which it has to use the proposed fallback method. For this reason, we appreciate that this approach is sufficiently simple and does not add any extra-layer of complexity.

Focusing on the methodology designed in case of NMRF included in sensitivity-based method, some considerations are needed. Indeed, on the one hand risk-weights prescribed in standardized approach are deemed to represent a good starting point for determining an extreme scenario of future shock, while on the other hand they could be overly punitive (also considering 1.3 and LH rescaling factor).

However, Intesa Sanpaolo agrees with the proposed approach from a general point of view. Indeed, the aforementioned conservatism will further provide the incentive to institutions to collect data for Risk Factors with very low observability and, at the same time, it ensures that fallback approach leads to a more conservative result than any other proposed methodology. However, the Bank believes that the extension of the SBM fallback method use to basis risk and maturity spread risk could be suitable to this purpose.

Q10. What are your views on the fallback method that is envisaged for risk factors that are not included in the sensitivity-based method? Please comment on both the 'other risk factor' method, and the 'changing period method'.

In this context, the same aforementioned premises are still valid.

In addition, we believe that both the proposed approaches are suitable to this scope since they allow the use of the fallback methodology for all Risk Factors in perimeter. Anyway, some considerations are needed. Indeed, the identification of a Risk Factor with the same nature of the *original* may not be trivial (i.e. for CDS Risk Factors which are representative of specific Legal Entity) as well as it is possible that also the "changing period method" will not lead to reliable results.

However, since these approaches are expected to be used in a residual number of situations, the Bank believes that they could represent a good compromise between complexity of implementation and applicability.

Q11. What are your views on the conditions identified in paragraph 5 that the 'selected risk factor' must meet under the 'other risk factor' method? What would be other conditions ensuring that a shock generated by means of the selected risk factor is accurate and prudent for the corresponding non-modellable risk factor?

In order to apply the "*Same type of risk factor*" option, EBA proposes that institution identifies another Risk Factor with the same nature for calibrating downward and upward shock if the *original* one is not included in Sensitivity-based method.

This "other" Risk Factor is deemed "of the same nature" if it is able to capture the same type of risk as the *original* Risk Factor and it differs from the latter only for features that are not expected to have a significant impact on the final value of the calibrated shock. In addition, the Regulator specifies some conditions that the "other" Risk Factor shall meet, in particular:

- It has to belong to the same Broad Risk Factor category / subcategory of the *original* NMRF;
- It is of the same nature as the NMRF and it differs from the *original* Risk Factor for features that do not lead to an underestimation of the volatility of the NMRF, including under stress conditions;
- Its 10-days returns time series contains at least 12 observations.

Taking into account the aforementioned considerations, Intesa Sanpaolo believes that the specified conditions are rather accurate and prudent for calibrated stress scenario computation.

Q12. What are your views on the definition of stress period under option A (i.e. the period maximizing the rescaled stress scenario risk measures for risk factors belonging to the same broad risk factor category)? What would be an alternative proposal?

As specified in Q1, the definition of stress period specified in option A is reliable from a financial point of view as well as the Bank believes that identifying a different stress period for each Broad Risk Factor Category is suitable to this scope. However, the methodology to be applied is challenging and overly burdensome for banks, as it requires to entirely apply the prescribed SSRM approach for each different possible period. In other terms, this approach requires seeking the period that maximises the SES for that asset class and it is extremely intensive and is not workable in practice.

For this reason, an alternative option could be taken into account. Indeed, Intesa Sanpaolo believes that for institutions having a sufficient number of observations for each Non-Modellable Risk Factor (i.e. at least 200 data), shall be possible to apply a methodology *similar* to the one adopted in the IMCC framework. This means that, for the *i-th asset class*, the scenario of future shocks applied to NMRFs shall be calibrated to historical data from a continuous 12-month period of financial stress (starting at least from 1 January 2007) that shall be identified by the institution in order to maximize the value of ES^i (without applying entirely the prescribed SSRM methodology).

In other terms, a proposed approach would be to use a Risk Factor based approach to identify the stressed period per asset class and to assume that a stress period for the modelled risk factors is a suitable period to use for the SES for that broad risk class.

Q13. What are your views on the definition of maximum loss that has been included in these draft RTS for the purpose of identifying the loss to be used as maximum loss when the latter is not finite? What would be an alternative proposal?

In order to ensure the alignment of the Union with the international standards, the regulatory extreme scenario of future shock will be the one leading to the maximum loss that may occur due to a change in the NMRF. Where such maximum loss does not take a finite value (i.e. for short positions in shares), then institutions should be allowed to provide an alternative stress scenario calibrated to be at least as conservative as a 97.5% stressed ES to the supervisor's satisfaction. Only when this alternative stress scenario is deemed unacceptable, banks shall determine a prudent value of the loss that can occur due to a change in the value of the NMRF, targeting a level of certainty equal to 99.95% (i.e. similar to a 99.95% 10-days VaR).

Following the aforementioned considerations, Intesa Sanpaolo believes that when the EBA proposed approach results in losses that are beyond reach (or in excess of a 97.5% stressed ES), the losses may be capped to the maximum possible losses (respectively a majoring value of the 97.5% stressed ES).

Q14. How do you currently treat non-pricing scenarios (see section 3.2.5 of the background section) if they occur where computing the VaR measures? How do you envisage implementing them in (i) the IMA ES model and (ii) the SSRM, in particular in the case of curves and surfaces being partly shocked? What do you think should be included in these RTS to address this issue? Please put forward proposals that would not provide institutions with incentives that would be deemed non-prudentially sound and that would target only the instruments and the pricers for which the scenario can be considered a 'non-pricing scenario'.

A needed premise is that the situation of non-pricing scenario caused by incoherent SES stress shifts is rather rare and it is difficult to envisage all possible situations until an approach is fully implemented and applied.

In order to compute the loss corresponding to a future shock applied to a NMRF, institutions have to use the pricing functions of the internal risk-measurement model. In this context, there might be cases where the scenarios generated may lead the pricing engine not to provide meaningful results for some instruments/ scenarios. For example, this situation could occur when a portion of a risk factor is shifted by a large amount and the other parts are left constant. In order to overcome these issues it is possible

to set cap / floor to prescribed shocks (i.e. reducing the risk factor shift size for the bucket, that is liable to a non- pricing scenario by a fixed factor). Therefore, in order to restore the *original* situation, the stress PL amount can be scaled by the inverse of the factor (i.e. if the stress shift size is reduced by a factor of *x* the stress PL amount can be multiplied by a factor of *x*).

However, the cases where it is applied should be limited and notified to Supervisors.

Q15. What are your views on the conditions included in these draft RTS for identifying whether a risk factor can be classified as reflecting idiosyncratic credit spread risk only (resp. idiosyncratic equity risk only)? Please elaborate.

EBA specifies that Risk factors reflecting idiosyncratic Credit Spread [Equity] risk are aggregated with zero correlation in the aggregation formula. This feature is ensured only if the following conditions are met:

- The nature of the risk factor is such that it shall reflect idiosyncratic credit / equity spread risk only;
- The value taken by the Risk Factor shall not be driven by systematic risk components;
- The institution performs the statistical tests that are used to verify the previous conditions.

Following the aforementioned considerations, on a general way, the Bank believes that the prescribed conditions are acceptable. However, for the condition stated in the second point, specified that "*the value taken by the risk factor should not be systematically correlated with other idiosyncratic factors*" could be more suitable to this purpose.

Q16. What are your views on flooring the value taken by non-linearity coefficient κ to 0.9? Please elaborate.

As specified in the Consultation Paper, for a given NMRF institutions have to calculate the non-linearity coefficient kappa where the extreme scenario of future shock is computed according to the stepwise method and such extreme scenario occurs at the boundaries of the CSSRFR at figure date.

The stepwise method is based on the assumption that the Expected Shortfall of losses is approximately equal to the loss of the Expected Shortfall, i.e. $ES(loss[r_j(D_t)]) \approx loss(ES[r_j(D_t)])$. However, when losses grow faster than linearly, the former is higher than the latter: in order to capture this deviation, banks have to consider the aforementioned non-linearity adjustment. Intuitively, the reason is that a convex loss function leads to magnified losses compared with the Risk Factor distribution for tail values of r_j.

Due to robustness of statistical analysis behind the estimation of kappa-adjustment, Intesa Sanpaolo believes that the estimation of such parameter is crucial in order not to ignore effects of non-linearity.

In this context, EBA specifies that due to the limitations of the approach, the benefit of the non-linearity adjustment is floored at $k_{min} = 0.9$ and adjustments smaller than this value are likely due to inaccuracies of quadratic approximation. The table below summarizes results obtained from empirical analyses on kappa-adjustment, with a breakdown for each Risk Factor typology.

Asset Class	AVG(kappa)
Bond Volatility	1.000080465
Cross Currency Swap	0.993452408
Commodity Curves	0.995862527
Commodity Volatility	0.878378307
Credit Spread Curves	0.995636156
Credit Spread Volatility	1.000553375
Equity Volatility	0.991842018
Inflation Curves	1.000314652
Interest Rate Curves	0.990907782
Interest Rate Volatility	1.001628760
Swaption Volatility (ATM)	0.991534843
Swaption Volatility (OTM)	0.911037531

Considering these results, Intesa Sanpaolo believes that the proposed floor (0.9) could be reasonable to this scope. However, we signal that in the Consultation Paper the value of k_{min} is not univocal.

Q17. What are your views on the definition of the tail parameter ϕavg where a contoured shift is applied (i.e. average of the tail parameters of all risk factors within the regulatory bucket)? Please elaborate.

As previously specified, when contoured shift option is applied, the bucket is shocked applying a non-parallel shift determined according to historical time series of each Risk Factor. However, the empirical ϕ factor is dispersed between different data series. In order to take into account the aforementioned considerations, Intesa Sanpaolo believes that setting ϕ as an average of the tail-shape parameter of Risk Factor within the bucket may produce unreasonable results, while consider the median (or heavily trimmed mean) could be deemed more suitable to this purpose.

Q18. Would you consider it beneficial to set the tail parameter ϕ to the constant value 1.04 regardless of the methodology used to determine the downward and upward calibrated shock (i.e. setting ϕ = 1.04 also under the historical method, instead of using the historical estimator)? Please elaborate.

Intesa Sanpaolo believes that for institutions having a sufficient number of observations for the j-th Non-Modellable Risk Factor (i.e. at least 200 data) should be given the possibility to estimate the *real* tail-shape parameter to be applied in order to determine the downward and upward calibrated shocks. Indeed, from empirical analyses, the Bank estimates that on average, ϕ is less than 1.04, as specified in table below.

Asset Class	AVG (phi_left)	AVG (phi_right)
Bond Volatility	1.101790618	1.041431215
Cross Currency Swap	1.012397869	1.017162378
Commodity Curves	1.008820546	1.010089825
Commodity Volatility	1.031792100	1.022849712
Credit Spread Curves	1.013226253	1.016933585
Credit Spread Volatility	1.003917363	1.001823324
Equity Volatility	1.025380730	1.035867181
Inflation Curves	1.031201394	1.017619371
Interest Rate Curves	1.020095217	1.025254971
Interest Rate Volatility	1.124605202	1.234151706
Swaption Volatility (ATM)	1.036820842	1.029491797
Swaption Volatility (OTM)	1.074988329	1.064102979

For this reason, Intesa Sanpaolo believes that to this purpose institutions might be allowed to use the historical estimator.

Q19. Do you agree with the definition of the rescaling factor mS, under option B or do you think that the rescaling of a shock from the current period to the stress period should be performed differently? Please elaborate.

A premise is that the introduction of a ratio to scale up the current period stresses is suitable, since it allows good quality data found in the current period to be modified for use in the stress period.

EBA specifies that given a 1-year period X over which a shock for a Risk Factor belonging to the j-th risk class is calibrated, the corresponding shock calibrated over another 1-year period Y can be obtained multiplying the future shock calibrated on X by a prescribed scalar. However, the proposed approach

could imply some issues, substantially for two reasons. Firstly, in the same asset class there could be Risk Factors having different features (i.e. IR curves / IR Volatility for which additive / log returns are computed). Secondly, the standard deviation is not a pure number (like the coefficient of variation) and therefore compute a trimmed mean imply to take into account not-homogeneous values.

Therefore we believe that the ratio at Broad Asset Class level should be revised.

Q20. The scalar mS , is obtained by using data related to modellable risk-factors in a specific risk class (i.e. the class i). As a result, such a scalar is not defined where an institution does not have any modellable risk factor in this risk class. How do you think the scalar mS, should be determined in those cases? Please elaborate.

This situation could rarely occur. However, where the whole set of Risk Factors within a specific asset class are Non-Modellable, in order to determine the aforementioned scalar, institutions might be allowed to use directly NMRFs if the number of observations is deemed acceptable (i.e. at least 200 data).

Two additional fallback solutions could be adopted to this purpose:

- Firstly, institutions may calibrate the prescribed scalar to be at least as prudent as the coefficient computed on the other asset classes (i.e. $\mathrm{m}^{\mathrm{i}}_{\mathrm{P}_1,\mathrm{P}_2} = \max(\mathrm{m}^{\mathrm{j}}_{\mathrm{P}_1,\mathrm{P}_2})$, i $\neq$ j with i, j $\in$ (IR, EQ, FX, CS, CO));
- Secondly, based on the industry feedback, it is possible to evaluate an average scaling factor for each asset class and, similarly to the previous approach, the regulatory scaling factor may be calibrated to be at least as prudent as the estimated value.