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Consultation Paper

Draft Regulatory Technical Standards on Back-testing requirements under Article 325bf(9) and Profit and Loss attribution requirements under Article 325bg(4) of Regulation (EU) No 575/2013 (Capital Requirements Regulation 2 - CRR2)

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1. Responding to this consultation

The EBA invites comments on all proposals put forward in this paper and in particular on the specific questions summarised in 5.2

Comments are most helpful if they:

- respond to the question stated;
- indicate the specific point to which a comment relates;
- contain a clear rationale;
- provide evidence to support the views expressed/ rationale proposed; and
- describe any alternative regulatory choices the EBA should consider.

Submission of responses

To submit your comments, click on the 'send your comments' button on the consultation page by 04.10.2019. Please note that comments submitted after this deadline, or submitted via other means may not be processed.

Publication of responses

Please clearly indicate in the consultation form if you wish your comments to be disclosed or to be treated as confidential. A confidential response may be requested from us in accordance with the EBA's rules on public access to documents. We may consult you if we receive such a request. Any decision we make not to disclose the response is reviewable by the EBA's Board of Appeal and the European Ombudsman.

Data protection

The protection of individuals with regard to the processing of personal data by the EBA is based on Regulation (EC) N° 45/2001 of the European Parliament and of the Council of 18 December 2000 as implemented by the EBA in its implementing rules adopted by its Management Board. Further information on data protection can be found under the Legal notice section of the EBA website.

2. Executive Summary

The amendments to Regulation (EU) No 575/2013¹ (the Capital Requirements Regulation 2 – CRR2) implement in EU legislation, *inter alia*, the revised requirements to compute own funds requirements for Market risk.

A key requirement for a credit institution to obtain approval to use an Internal Model Approach (IMA) to calculate own funds requirements for market risks, is the reliability of the IMA in determining capital requirements relative to the Profit & Loss (P&L) of the institution.

One way of assessing whether or not a model produces reliable capital requirements is the regulatory backtesting programme. Under the revised framework, backtesting will carry on relying on actual and hypothetical P&L. Therefore, clarifying the definition of the actual and hypothetical P&Ls (APL and HPL respectively) for the purpose of backtesting is a prerequisite for a smooth implementation of the new IMA under the revised market risk framework. Accordingly, the first section of these RTS sets the definition of actual and hypothetical P&L for the purpose of both backtesting performed at trading desk level and backtesting performed at top of the house level.

Another way of assessing whether or not a model produces reliable capital requirements is the P&L attribution test. The P&L attribution requirement ensures that the theoretical changes in a trading desk portfolio's value, based on the institution's risk-measurement model and risk factors in the risk-measurement model, are sufficiently close to the hypothetical changes in the trading desk portfolio's value, based on the pricing methods used by the institution in the end-of-day valuation process and including all the risk factors included in such pricing methods.

The second section of the RTS deals with the P&L attribution test and it is subdivided into 5 sub-sections following the order of the mandates within Article 325bh; in particular:

- The first sub-section defines, in light of the international standards, the criteria ensuring that theoretical changes in a trading desk portfolio's value are sufficiently close to the hypothetical changes.
- The second sub-section sets out the consequences for an institution with one (or multiple) trading desk(s) with theoretical and hypothetical changes in the portfolio(s) value(s) not sufficiently close.
- The third sub-section sets the frequency at which the P&L attribution test should be performed.

¹ REGULATION (EU) 2019/876 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 May 2019 amending Regulation (EU) No 575/2013 as regards the leverage ratio, the net stable funding ratio, requirements for own funds and eligible liabilities, counterparty credit risk, market risk, exposures to central counterparties, exposures to collective investment undertakings, large exposures, reporting and disclosure requirements, and Regulation (EU) No 648/2012

- The fourth sub-section provides the definition hypothetical P&L and risk-theoretical P&L (RTPL) for the purpose of P&L attribution test.
- The fifth sub-section specifies how institutions using the internal model for some desks have to aggregate the total own funds requirement for market risk of all their trading book positions and non-trading book positions bearing FX or commodity risk taking into account the consequences of the P&L attribution test.

These draft regulatory technical standards are part of the set of regulatory technical standards referred to in Articles 325bd(7), 325be(3), 325bf(9), 325bg(4) to be delivered by 28 March 2020. The entry into force of the latest of those regulatory technical standards will trigger the 3 year-period following which IMA institutions that have been granted IMA approval for reporting purposes by their competent authority will be required to report their IMA figures under the specific reporting requirements for market risk set out in Article 430b(3).

Explanatory text for consultation purposes

The amendments to Regulation (EU) No 575/2013 that relate to the EU implementation of the Basel Fundamental Review of the Trading Book (FRTB) do not consider as a full condition for computing the own funds requirements for market risk with the internal model approach for the positions within a trading desk, the fact that such trading desk meets the Profit and Loss Attribution (PLA) requirement. This is in line with the international standards, where meeting the PLA requirement becomes a full condition to be met for using the internal model approach only after a transitional period of 1 year.

Recital 41 of Regulation (EU) 2019/876 amending Regulation (EU) 575/2013 clarifies that the EU commission should submit a legislative proposal by 30 June 2020 for fully implementing the FRTB framework in the Union. Accordingly, the PLA requirements are expected to become a full condition to be met for calculating the own funds requirements for the positions in the relevant trading desks with the FRTB-internal model approach.

This consultation paper (both the background section and the proposed draft RTS) has been developed considering the current version of the CRR2 and how EU legislation text is expected to change in the near future to fully implement the FRTB standards in the Union.

3. Background and rationale

In January 2019, the Basel Committee on Banking Supervision (BCBS) finalised and published standards on Minimum capital requirement for market risk². The text replaces the previous minimum capital requirements for market risk in the global regulatory framework, which are implemented in the EU via Regulation (EU) No 575/2013 (CRR).

The amendments to Regulation (EU) No 575/2013³ (the Capital Requirements Regulation 2 – CRR2) implement the new market risk framework provided by the BCBS standards into EU legislation as a reporting requirement in a first step. A key requirement for a credit institution to obtain approval to use an IMA to calculate own funds requirements for market risks, is the reliability (conservatism and accuracy) of the IMA in predicting capital requirements relative to the realised Profit & Loss of the institution.

One way of assessing whether or not a model produces reliable capital requirements is the regulatory backtesting programme. Regulatory backtesting compares the model-generated risk metric at a given confidence level with the subsequent business day's realised trading actual and hypothetical P&Ls. In practice, many elements influence the realised P&L outcome of an institution (e.g. intra-day trading, market data movements). This implies in particular that there are several possible explanations for a backtesting overshooting. Some overshootings may be attributed to poor model quality (missing risk factors, inappropriate use of proxies, etc.) while others may not be related to model performance (i.e. unforeseeable market movements). Finally, an overshooting may be attributable to a non-modellable risk factor. However, in that case the institution may be allowed not to count the overshooting as outlined in Article 325bf(8).

The basic principles for the definition of actual and hypothetical P&L for regulatory backtesting purposes are set out in the CRR2. In particular, Article 325bf clarifies that the backtesting should be performed for two different purposes, at two different levels:

1. Each trading desk must meet backtesting requirements on an ongoing basis for being eligible to be capitalised under the Internal Model Approach (IMA). Consequently, only desks that are in the scope of the IMA approval are subject to backtesting at desk level, performed separately for each desk.
2. In addition, all desks that are capitalised under the IMA are subject to a regulatory backtesting performed on the portfolio of all positions attributed to these trading desks.

² Minimum capital requirements for market risk, January 2019 (rev. February 2019)

³ REGULATION (EU) 2019/876 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 May 2019 amending Regulation (EU) No 575/2013 as regards the leverage ratio, the net stable funding ratio, requirements for own funds and eligible liabilities, counterparty credit risk, market risk, exposures to central counterparties, exposures to collective investment undertakings, large exposures, reporting and disclosure requirements, and Regulation (EU) No 648/2012

The backtesting in this case is done at top of the house level, with the objective of defining an addend (on the multiplication factor) aimed at still ensuring adequate capital requirements also for banks with low-performing risk-models.

A more specific definition of APL and HPL for the purpose of the regulatory backtesting is provided in the RTS to ensure that the technical implementation does not undermine the usefulness of the test, and to ensure consistent implementation of the regulatory backtesting programme across EU institutions.

Another way of assessing whether or not a model produces reliable capital requirements is the P&L attribution test. The P&L attribution requirement ensures that the theoretical changes in a trading desk portfolio's value, based on the institution's risk-measurement model and risk factors in the risk-measurement model, are sufficiently close to the hypothetical changes in the trading desk portfolio's value, based on the pricing methods used by the institution in the end-of-day valuation process and including all the risk factors included in such pricing methods. Again, to ensure that the technical implementation does not undermine the usefulness of the test and to ensure consistent implementation across EU institutions, a more specific definition of HPL and RTPL for the purpose of the Profit & Loss Attribution (PLA) test is provided in the RTS.

In light of the international standards, the RTS also set (i) the criteria ensuring that theoretical changes in a trading desk portfolio's value are sufficiently close to the hypothetical changes, (ii) the consequences for a desk where the theoretical and hypothetical changes are not sufficiently close (iii) the frequency of the P&L attribution, and (iv) how institutions using the internal model for some desks have to aggregate the total own funds requirement for market risk.

The draft RTS are structured following the order of the mandates within article 325bf and article 325bg. However, the background of this CP sets out in a unique section the technical elements to be included in the hypothetical, actual and theoretical changes in the relevant portfolio's value both for the purpose of the backtesting and the P&L attribution test; this to reflect that the two tests are interconnected.

3.1 Feedback received on the Discussion Paper

In December 2017, the EBA published a Discussion Paper (DP) on EU implementation of market risk and counterparty credit risk revised standards⁴. The paper discussed some of the most important technical and operational challenges for the purposes of implementing the FRTB and SA-CCR in the EU. The DP gave also the possibility to stakeholders to provide early input. The consultation ran

⁴<https://www.eba.europa.eu/documents/10180/37073/Discussion+Paper+on+EU+implementation+of+MKR+and+CCR+revised+standards+%28EBA-DP-2017-04%29.pdf/a5f47920-54be-4b68-a25c-119c70606186>

until 15 March 2018, and a public hearing took place on 5 February 2018. The EBA received eight public responses to the DP as well as six confidential responses⁵.

In particular, one of the implementation issues the EBA identified as potentially having a significant impact on banks is the definition of the scope of technical elements to be included in the P&Ls in the context of the two different tests. In the DP, without pre-empting any conclusion, preliminary views were provided.

Composition of the HPL

Some respondents showed their preference for excluding all Valuation Adjustments (VAs) from the HPL, while some others supported the EBA view on the exclusion/inclusion of VAs from/in the HPL. There was a general request to clarify the scope of valuation adjustments defining the compositions of the P&Ls. It was noted that it could be prescribed to include VAs only in the HPL performed at the top of the house.

In general, respondents said it would be possible to calculate VAs at trading desk level although the process for doing so could be too burdensome.

Some respondents asked to clarify that only VAs that are related to market-risk could be potentially included in the P&Ls relevant for backtesting and P&L attribution (PLA) requirements.

All respondents claimed the criteria presented in the DP are sufficient and accordingly they are against the development of additional guidance. Finally, all respondents said that either they did not have overshootings due to VAs included in the HPL, or VAs were not a driver.

Composition of the APL

The vast majority of respondents agreed with the list of criteria for exclusion/inclusion of valuation adjustments from/in the actual P&L. However, it was noted that it could be prescribed to include VAs only in the APL performed at the top of the house. All respondents said that either they did not have overshootings due to VAs included in the APL, or VAs were not a driver.

Specific issue of time/theta effect and net interest income

The majority of respondents agreed with the EBA view that net interest income is part of the time effect. The majority supported a more generic definition of time effect as “P&L due to the passage of time”. In general, respondents agreed that second proposal (among 3 proposed) would achieve the best outcome, although concerns were raised on whether the VaR/ES should capture time effects.

⁵ http://www.eba.europa.eu/regulation-and-policy/market-risk/discussion-paper-on-eu-implementation-of-mkr-and-ccr-revised-standards#responses_2065380

Composition of the RTPL

In general, respondents agreed with the EBA view that consistency should be preserved between the criteria defining the scope of valuation adjustments to be included in the HPL and in the RTPL.

3.2 Technical elements to be included in the P&Ls in the context of backtesting and P&L attribution test

This section discusses:

- The technical elements to be included in the HPL and APL for the purpose of the regulatory backtesting;
- The technical elements to be included in the HPL and RTPL for the purpose of the PLA test.

The EBA discussed this topic in its discussion paper. In addition, the BCBS regulatory standards, published in January 2019, already clarify some relevant aspects. Clarifying the definition of the three P&Ls is a prerequisite for a smooth implementation of the new IMA under the revised market risk framework.

It has to be noted that, in principle, the EBA could propose in these draft RTS a different definition of HPL for the purpose of regulatory backtesting and for the purpose of the P&L attribution test. However, in line with the international regulatory standards, the EBA proposes the same definition for the Hypothetical P&L in the two contexts. Accordingly, the criteria for inclusion/exclusion of technical elements in/from the HPL apply both in the context of backtesting and PLA test.

Having the same definition of HPL is also expected to reduce the burden for the institutions, as the same specification will be used for both backtesting and PLA test. In addition, it provides a simplification to the overall framework that consistent definitions are used.

3.2.1 Definition of APL for the purpose of backtesting and HPL for the purpose of backtesting and PLA test

As previously mentioned, the basic principles for the definition of actual and hypothetical P&L for regulatory backtesting purposes are set out in the CRR2. However, to ensure that the technical implementation does not undermine the usefulness of the two tests, and to ensure a consistent implementation across EU institutions, further specifications are needed. Accordingly, the draft RTS specify that:

- The actual and hypothetical changes in the relevant portfolio's value (i.e. the trading desk portfolio's value for the purpose of the backtesting at trading desk level and the purpose of the P&L attribution test, and the IMA portfolio's value for the purpose of the top-of-the-house backtesting) should be computed based on the pricing methods, the model

parametrisations, market data and any other technique (e.g. bootstrapping techniques) used by the institution in the end-of-day valuation process.

- For computing the hypothetical changes in the relevant portfolio's value, it is specified that any fee or commission should not be considered. It is worth mentioning that the same holds for the computation of the actual changes; however, in the context of the APL, such specification has been already included in the L1 text.
- Where computing the actual and hypothetical changes in the relevant portfolio's value, the institution should reflect any changes in the portfolio's value following the independent price verification (IPV) process.
- The institution should capture the passage of time (i.e. the theta effect) in the APL, and should reflect the same effect in the context of the HPL consistently with the treatment the institution applies for capturing such effect in the calculation of the expected shortfall and in the calculation of the stress scenario risk-measure.

Treatment of adjustments

The draft RTS clarify also the treatment for adjustments in actual and hypothetical P&L. For the purpose of this paper, 'adjustment' is a generic term which includes, for example, fair value adjustments, XVAs, reserves, model risk valuation adjustments.

In particular, the draft RTS specify that the institution should not include in the calculation of the APL and HPL that are used in the context of the backtesting and the P&L attribution test:

- (1) The CVA (as calculated in the Front Office for pricing purposes). It is worth mentioning, that the draft RTS propose to exclude the CVA as a separate regulatory capital treatment has been specified in terms of own funds requirements for such VA.
- (2) Adjustments, which are deducted from the CET1. This is the case for the additional valuation adjustments used in the context of prudent valuation in the sense of article 34 and 105 of the CRR2, as well as for adjustments related to changes in the institution creditworthiness.

On the contrary, the draft RTS require institutions:

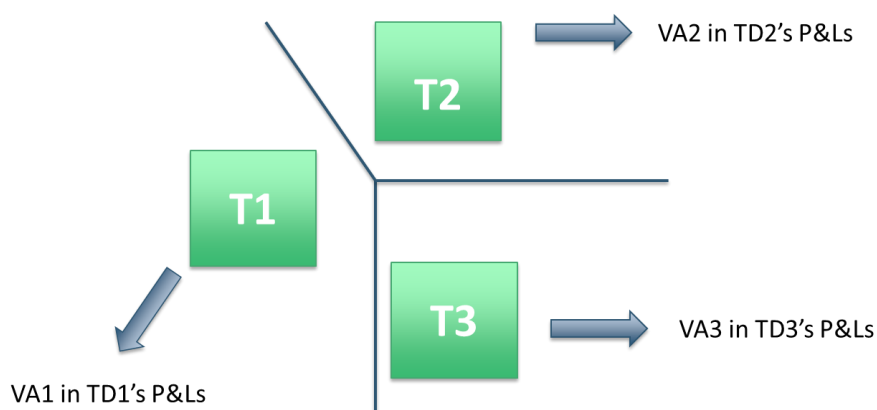
- To include in the HPL adjustments that are sensitive to market risk and are updated daily. Adjustment that are not calculated with a daily frequency must not be included. The main reason behind the policy proposal is that inclusion of adjustments updated less frequently than daily (for example monthly) in the hypothetical P&L would affect the PLA results, as it would lead to a (for example monthly) bump in hypothetical P&L versus risk-theoretical P&L and consequently to a potential increase in the number of desks failing the PLA tests, since these adjustments are usually not taken into account in the internal risk-measurement model.

- To include in the APL adjustments that are sensitive to market risk regardless of the frequency at which they are calculated. The main reason behind the policy proposal is that the actual P&L should be as close as possible to the P&L resulting from the end-of-day valuation process, and that backtesting the VaR against the actual P&L is a way to check if the VaR is sufficient to cover the P&L stemming from intra-day trading and, more generally, P&L elements not included in the VaR. Accordingly also adjustments that are not updated with a daily frequency must be included.

It is worth remarking that where an adjustment is included in the hypothetical changes in the relevant portfolio's value, institutions should calculate the value of the adjustment assuming unchanged positions in the relevant portfolio in line with the definition of the HPL. In addition, where an adjustment is updated with a less than daily frequency (e.g. weekly/monthly), then the changes in such adjustment should be reflected in the APL only on the date at which the calculation is actually performed (i.e. at the reference date for the calculation of the adjustment); in other words, any smoothing of the adjustment over the period between two reference dates for its calculation is not allowed.

Finally the RTS specify that, for the purpose of the backtesting at trading desk level and for the purpose of the P&L attribution test (which is performed at trading-desk level), where an adjustment is included in the actual and hypothetical P&L institutions are required to compute such adjustment considering only positions within the desk (i.e. on a stand-alone basis); in other words, the diversification effect between positions assigned to different desks must not be captured when computing the adjustment. Figure 1 provides a graphical representation of the calculation of an adjustment (a valuation adjustment in the example below) considering the positions within the desk on a stand-alone basis.

Figure 1: Calculation of a valuation adjustment (VA) on a stand-alone basis for each trading desk for the purpose of calculating the HPL or the APL per desk



The VA is computed for each trading desk on a stand-alone basis, and such value should be used in the computation of the actual and hypothetical changes in the trading desk's P&L.

As just mentioned, where an adjustment is included in the APL or HPL at trading desk level (because it is market risk sensitive and it does not fall within the scope of those that should be excluded in first place e.g. the CVA) then the institution should perform a calculation of such adjustment considering the positions in the desk on a stand-alone basis. However, there might be cases, where computing the adjustment considering only positions within the desks would not be meaningful from an economic point of view, e.g. an institution may compute the Funding Valuation Adjustment at funding set level which might include positions that are actually held in multiple trading desks. Accordingly, the draft RTS specify that institutions may be allowed to exclude from the APL and HPL calculated at trading desk level, adjustments that in the end of-day valuation process are calculated on sets of positions assigned to multiple trading desks due to the nature of the adjustment. For such adjustment, the institution must be able to prove that its internal risk-management is consistent with the level at which the adjustment is calculated (e.g. for institutions calculating the FVA on a funding set basis, the institution should be able to prove that the risk stemming from its changes is actually managed on a funding set basis as well), and should fulfil specific documentation requirements.

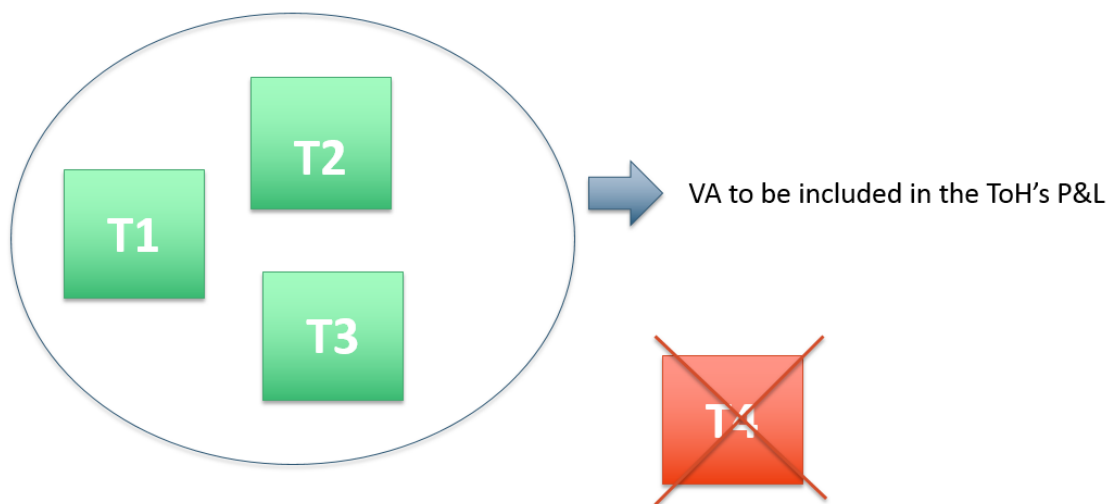
It is worth mentioning that the way institutions calculate the HPL and APL is subject to supervisory approval as part of the internal model approval process. Accordingly, if competent authorities deem that the institution does not fulfil the conditions laid down in these RTS for excluding an adjustment from the trading's desk P&L (e.g. this may be the case where the institution is not able to prove that the internal risk-management of the adjustment is done consistently with its level of calculation), then the institution should include such adjustment in the trading desk's P&L performing a stand-alone calculation.

It is also important to stress that where the conditions laid down in these RTS for excluding the adjustment from the trading's desk P&L are met, the institutions can still include such adjustment at trading desk level; however, it will have to do so, computing its value on the positions within the desk only (i.e. on a stand-alone basis). In other words, any proportional allocation (that the institution might have in place for deriving the end-of-day-value of a trading desk's portfolio) reflecting the contribution of the positions in a desk to the total value of the adjustment (computed on a set of positions across multiple trading desks, e.g. on a funding set spanning multiple trading desks), is not foreseen for the calculation of the APL and HPL in these draft RTS.

Along the same lines of the 'stand-alone calculation' of adjustments at trading desk level, where an adjustment is included in the actual and hypothetical P&L for the purpose of the top of the house backtesting, institutions should compute them only on the basis of positions assigned to desks for which the institution got the permission to calculate the own funds requirements for market risk with the IMA, meeting the backtesting requirements (and the profit and loss attribution requirement once such requirements will be a full condition for computing the own funds

requirements with the IMA). In other words, the diversification effect with positions assigned to desks capitalised with the SA must not be captured when computing the adjustment. Figure 3 provides a graphical representation of the calculation of an adjustment (a valuation adjustment) considering only the positions capitalised under the IMA.

Figure 3: calculation of the VA considering only desks capitalised under the IMA

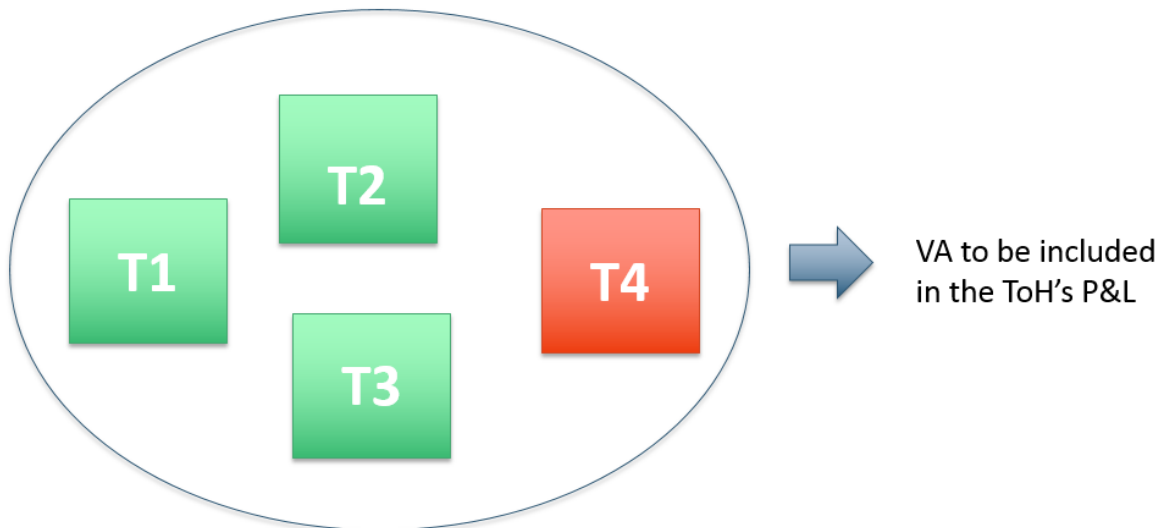


In the figure above, T1, T2 and T3 are desks which positions are capitalised under the IMA. Positions in T4 are capitalised with the SA, either because they are out of the scope of the desks for which the permission was granted by the supervisor to calculate the own funds requirements with the IMA, or because they did not meet the backtesting (or P&L attribution requirements once such requirements will be a full condition for computing the own funds requirements with the IMA). The VA shall be computed only considering desks T1, T2 and T3 capitalised under the IMA.

However, there might be cases where the institution calculates an adjustment on all positions subject to market risk own funds requirements (i.e. also on those held in SA desks), and it could be too burdensome for the bank to re-compute such adjustment only on positions in desks that are capitalised under the IMA just for the purpose of the top of the house backtesting. Accordingly, as long as this is done on a permanent basis, these RTS provide the institution with the possibility to include in the APL and HPL (calculated for the purpose of the top of the house backtesting), the changes in the value of an adjustment calculated on the set including all positions subject to market risk own funds requirements.

Figure 4 provides a graphical representation of the calculation of an adjustment (a valuation adjustment in the example below) considering all positions held in the institution's desks.

Figure 4: Calculation of the VA considering all positions held in the institutions' desks.



Documentation requirements

In the proposed draft RTS, institutions are required to fulfil several documentation requirements. In particular, institution should have in place policies defining:

- How the actual changes in the portfolio's value are calculated, highlighting the differences between such actual changes (i.e. the APL) and the daily P&L produced by the end-of-day valuation process;
- How the hypothetical changes are calculated, outlining also the differences between the APL and HPL;
- The definitions of fees and commissions, and the methods used for excluding them from the APL.

In addition, institutions shall maintain a comprehensive list of adjustment that are computed for fair valuing the relevant portfolio. For each adjustment, the institutions should specify:

- Its definition;
- The methods used for its calculation;
- The frequency at which it is calculated and the reasoning in case of a less than daily frequency;
- Whether it is sensitive to market risk;

- The sets of positions on which the adjustment is calculated and the reasoning for computing it at that level;
- Whether the institution is actively hedging it;
- Whether and how the adjustment is included in the APL or/and in the HPL of the relevant portfolio's value.

3.2.2 Definition of RTPL

The risk-theoretical P&L (RTPL) is the P&L (ignoring intra-day trading) calculated using the risk factors and valuation engines in the risk management model. The desk's risk management model takes into account all risk factors that are included in the bank's ES model and any non-modellable risk factors included in the bank's stress scenario risk measure. The RTPL must not take into account any risk factors that the bank does not include in its trading desk's risk-measurement model.

Accordingly, the RTS specify that:

- The theoretical changes in the trading desk's portfolio value must be calculated considering only changes in risk factors that are included in the risk-measurement model to which the institution applies the scenario of future shocks when calculating the Expected Shortfall and the Stress Scenario Risk Measure.
- The theoretical changes in the trading desk's portfolio value must be calculated using the pricing methods, model parametrisations, market data and any other technique used in the internal risk-measurement model.
- The theoretical changes in the trading desk's portfolio value must be calculated assuming a 1-day static portfolio as for the computation of the hypothetical changes.

3.3 Test Metrics for the Profit and Loss Attribution

3.3.1 Introduction and Background

This section outlines, in light of the international standards, the test metrics institutions should apply to ensure that theoretical changes in a trading desk portfolio's value, based on the institution's risk-measurement model, are sufficiently close to the hypothetical changes in the trading desk portfolio's value, based on the institution's pricing models, parametrisations and market data and any other technique used by the institution in the end-of-day valuation process. In addition, specifications in relation to the possible alignment of input data for the HPL and RTPL are provided.

The test is performed for each trading desk in scope for use of the internal model approach and should:

- Measure the materiality of simplifications in the institutions' internal models used for determining market risk capital requirements driven by missing risk factors and differences in the way positions are valued compared with their front office systems; and
- Prevent institutions from using their internal models for the purposes of capital requirements when such simplifications are considered material.

For meeting these intentions, the HPL is compared with the RTPL. This comparison is performed to determine whether the risk factors included and the valuation engines used in the trading desk's risk management model capture the material drivers of the institution's P&L by determining if there is a significant degree of association between the two P&L measures observed over a suitable time period. A trading desk's risk management model should indeed provide a reasonably accurate assessment of the risks of a trading desk to be deemed eligible for the internal models-based approach.

3.3.2 P&L attribution test metrics

Design of the test

The P&L attribution requirements are based on the two test metrics:

1. **The Spearman correlation metric** to assess the correlation between the RTPL and the HPL: A high correlation between HPL and RTPL indicates that both P&Ls move in the same direction on a daily basis.
2. **The Kolmogorov-Smirnov (KS) test metric** to assess similarity of the distributions of the RTPL and the HPL: The closeness of the distributions of their values indicates that the bank's model is accurately capturing the range of losses of the trading desk across different market conditions.

These metrics are generally not particularly sensitive to outliers and, in determining whether a desk is well-modelled, consider a range of distributional characteristics of both time series. Importantly, the metrics can cope with trading desks that have significant changes in the level of risk they hold over time, and also desks that are well-hedged.

To calculate each test metric for a trading desk, the institution should use the time series of the most recent 250 trading days of observations of the RTPL and HPL.

The RTS also establish that institutions are allowed to align the snapshot time used for the calculation of the risk-theoretical P&L of a desk to the snapshot time used for the calculation for the derivation of its hypothetical P&L.

Spearman correlation metric

The Spearman correlation coefficient test metric measures the correlation between the two P&Ls to assess the level of statistical dependence between HPL and RTPL. A well-modelled trading desk would be expected to exhibit a high dependence between its HPL and its RTPL.

Institutions should apply the following process for determining the Spearman correlation metric for a trading desk in the scope for use of the internal model approach:

1. The institution determines the time series of the most recent 250 trading days of observations of the RTPL and HPL of the trading desk.
2. For a time series of the HPL, the institution produces a corresponding time series of ranks based on the size of the P&L (R_{HPL}). That is, the lowest value in the HPL time series receives a rank of 1, the next lowest value receives a rank of 2 and so on.
3. Similarly, for a time series of the RTPL, institutions must produce a corresponding time series of ranks based on size (R_{RTPL}).
4. Institutions must calculate the Spearman correlation coefficient γ_s of the two time series of rank values of R_{RTPL} and R_{HPL} based on size using the following formula:

$$\gamma_s = \frac{cov(R_{HPL}, R_{RTPL})}{\sigma_{R_{HPL}} \times \sigma_{R_{RTPL}}}$$

Where: $\sigma_{R_{HPL}}$ and $\sigma_{R_{RTPL}}$ are the standard deviations of HPL and RTPL respectively.

Kolmogorov Smirnov test metrics

As previously mentioned, the Kolmogorov-Smirnov (KS) test metric assesses the similarity of the distributions of the RTPL and the HPL. Well-modelled trading desks would be expected to feature smaller differences between the distributions. The test metric is well-acknowledged in academic literature and does not require specification of assumptions regarding the distributions to be measured.

Institutions should apply the following process for determining the KS test metric for a trading desk in the scope for use of the internal model approach:

1. The institution determines the time series of the most recent 250 trading days of observations of the RTPL and HPL of the trading desk
2. The institution must calculate the empirical cumulative distribution function of the RTPL. For any value of RTPL, the empirical cumulative distribution is the product of 0.004 (i.e.

- 1/250) and the number of RTPL observations that are less than or equal to the specified RTPL.
3. The institution must calculate the empirical cumulative distribution function of the HPL. For any value of HPL, the empirical cumulative distribution is the product of 0.004 (i.e. 1/250) and the number of HPL observations that are less than or equal to the specified HPL.
 4. The KS test metric is the largest absolute difference observed between these two empirical cumulative distribution functions at any P&L value.

Allocation of desks to zones following the test metrics' results

Based on the outcome of the metrics, a trading desk is allocated to a P&L attribution test “red zone”, an “amber zone” or a “green zone”. The allocation is set out as follows:

1. A trading desk is in the P&L attribution test “green zone” if both
 - (a) The Spearman correlation metric is above 0.8; and
 - (b) The KS distributional test metric is below 0.09.
2. A trading desk is in the P&L attribution test “red zone” if the Spearman correlation metric is less than 0.7 or if the KS distributional test metric is above 0.12.
3. A trading desk is in the P&L attribution “amber zone” if it allocated neither to the “green zone” nor to the “red zone”.

The zone in which a trading desk is allocated determines the consequences to which institutions are subject.

3.3.3 Alignment of input data for the purpose of the PLA test

The PLA tests are designed to assess the materiality of risks that may be missing from the internal risk-measurement model and simplifications in the model’s approaches to valuation. Beyond these sources of discrepancy between the HPL and RTPL, additional differences may arise as the result of misalignments in the data that the institution uses as inputs for determining their respective values. To avoid issues resultant from such differences, institutions are allowed to align the data used in the RTPL with those used in HPL as long as some specific conditions are met.

In particular, the proposed RTS identified two cases where the institution may be allowed to align the data.

Case 1: the institution may use the HPL input data as input data for the RTPL for a given risk factor (e.g. zero rate tenor x) that is included in both the RTPL and HPL, where:

- (1) The input data used in the RTPL and HPL to derive the value of the risk factor are of the same nature (e.g. par rate tenor x)
- (2) The differences in the value of the input data are due to either different providers of market data (e.g. par rate tenor x taken from provider A in the HPL computation, and par tenor x taken from provider B in the APL computation) or different time fixing of market data sources.

Case 2: the institution may substitute the value of a risk factor used in the calculation of the RTPL with the value taken by the same risk factor used in the calculation of the HPL, as long as:

- (1) In the calculation of the HPL, the value taken by the risk factor has been derived transforming input data into a suitable data for that risk factor. In other words, in the computation of the HPL, the risk factor does not directly correspond the input data;
- (2) The value of the risk factor in the HPL has been obtained using techniques of the valuation systems used for the hypothetical changes in the trading desk portfolio's value;
- (3) None of the techniques of the valuation systems used for computing the HPL have been rebuilt in the valuation systems to derive the value of the risk factor for computing the RTPL.

Example (case 2):

Both when computing the HPL and the RTPL the zero rate tenor x is used as a risk factor by the institution. In the HPL, the value of the risk factor (i.e. the zero rate tenor x) has been derived constructing the fixed-income yield curve from interest rate swaps (via bootstrapping). Accordingly, the input data for the risk factor are the rates in the interest rate swaps. In the RTPL, the value of the risk factor (i.e. the zero rate tenor x) has not been derived via bootstrapping (i.e. the technique used in the valuation systems used to determine the value of the risk factor for computing the HPL). Instead, the value of the risk factor is directly taken from a market data source (e.g.. provider a). Accordingly, in this case, the institution is allowed (just for the purpose of the PLA) to substitute the value of the risk factor in the RTPL (i.e. the value of the zero rate tenor x as given by the market data provider a) with the value of the risk factor in the HPL (i.e. the value of the zero rate tenor x as derived via bootstrapping from data on interest rate swaps).

Institutions are required to document any alignment to the input data, providing a rationale for doing such alignment. In addition, institution are required to:

- (1) compare the RTPL obtained without any alignment and the RTPL obtained following the alignments and document such comparison;
- (2) assess the impact of such alignment on the P&L attribution results and document such assessment.

3.4 Consequences following a poor performance in the P&L Attribution Test

Explanatory text for consultation purposes

Article 325az of Regulation (EU) No 575/2013 lays down that the competent authority must grant the permission for using the internal model approach to calculate the own funds requirements for market risk also for positions held in desks not meeting the PLA requirement (as long as all conditions in 325az(2) are met). This is in line with the international standards, where meeting the PLA requirement becomes a full condition to be met for using the internal model approach only after a transitional period of 1 year.

Recital 41 of Regulation (EU) 2019/876 amending Regulation (EU) No 575/2013 states that the European Commission should, where appropriate, submit a legislative proposal by 30 June 2020 for fully implementing the FRTB framework in the Union.

Therefore, the EBA consults on a legal text, which has been designed and drafted to comply with the provisions in Regulation (EU) 575/2013, while also being compatible with potential future changes to Regulation (EU) No 575/2013 such as making the PLA requirement a condition for applying the IMA.

Precisely, the proposed draft RTS specify that a capital surcharge will apply to all trading desks meeting both the following conditions:

- (1) the desk meets all conditions set out in Article 325az(2) for calculating the own funds requirements for the positions in the relevant trading desks with the internal model approach;
- (2) the desk shows misalignment in its HPL and RTPL (i.e. the desk has been allocated in the amber or red zone in accordance with these RTS).

With such conditions in place, as soon as a new version of Article 325az(2) starts applying with the PLA requirement as a condition to be met for using the internal model approach, it will be automatic that:

- (a) institution will have to calculate the own funds requirements for trading desks not meeting the PLA requirement in accordance with the standardised approach;
- (b) trading desks not meeting the PLA requirement (e.g. red desks) will not meet the above-mentioned condition (1) identifying desks which positions are subject to a capital surcharge, and accordingly, only amber desks would be subject to such surcharge.

As a result, the EU would automatically be in line with the Basel standards without the need to perform any amendment to the RTS around this aspect.

An alternative way that would ensure a timely implementation of the Basel standards in the EU legislation, while complying with the current provisions in Regulation (EU) 575/2013, could be to add an extra-layer of reporting requirements (through these RTS) as a consequence for institutions with trading desks not meeting the PLA requirement.

Such institutions would be required to report (on top of the requirements set out in 430b(3)) the own funds requirements for market risk including positions in desks not meeting the PLA requirement in the 'standardised approach portfolio', and accordingly, excluding such positions from the portfolio for which the institution reports the own funds requirements with the internal model approach ('IMA portfolio'). In other words, for reporting purposes, the institution would need to recompute the own funds requirements with the standardised approach by including in the SA portfolio also positions in trading desks not meeting the PLA requirement, and to recompute the own funds requirements with the internal model approach by excluding such positions from the IMA portfolio (i.e. by calculating - also on the basis of this new portfolio - the expected shortfall risk measure, the stress scenario risk measure, the own funds for default risk, and the VaR for the top of the house backtesting).

Such supplementary reporting requirements would make the PLA effective as agreed in the international standards for the purpose of obtaining the relevant capital figures for reporting purposes, while still ensuring compliance of these RTS with the provisions in Regulation (EU) 575/2013.

The EBA did not include this option in the proposed draft RTS. However, during the consultation period, the EBA will further analyse whether this option could lead to a faster (or even smoother) implementation of the FRTB standards in the EU. If the EBA assesses this to be the case, the EBA would implement this option in its final draft RTS.

In the proposed draft RTS, institutions are required to calculate a capital surcharge for positions in all trading desks showing a certain degree of misalignment between the HPL and RTPL and meeting all conditions in Article 325az(2) for calculating the own funds requirements for the positions in the relevant trading desks with the internal model approach.

As previously mentioned, desks are allocated in one of the three different zones based on the outcome of the two metrics, and consequences are defined on the basis of this allocation. In particular:

1. If a trading desk is in the PLA "red zone", then it is considered to not meet the profit and loss attribution requirements.
2. If the trading desk is in the "amber zone", then the relatively poor performance in the PLA test does not necessarily entail that the desk does not meet the PLA attribution requirements. For these desks, the institution needs to perform another step to assess whether they meet such requirements. Indeed:

- (i) If the institution was not calculating the own funds requirements for the positions in the desk with internal model approach in the previous quarter, then the fact that the desk has been allocated to the amber zone following the tests' results, entails that the desk does not meet the profit and loss attribution requirements, and as a result its positions should be capitalised with the SA.
- (ii) If the desk was in the scope to use the internal model in the previous quarter, then a desk which has been allocated to the amber zone following the tests' results meets the profit and loss attribution requirements.

Institutions are subject to a capital surcharge whenever there are desks capitalised under the IMA (because meeting all requirements in 325az(2)) showing a certain degree of misalignment between the HPL and RTPL (i.e. trading desks that have not been allocated to the green zone). How the capital surcharge should be computed is outlined below and is included in the aggregation formula of section 3.6 defining the own funds requirements for an institution with desks under the IMA.

Before outlining how the capital surcharge should be computed, it is worth mentioning that the scope to which such capital surcharge applies will change as soon the requirements for using the IMA are changed. Accordingly, as soon the P&L attribution requirement will become a full condition for capitalising the positions in the relevant trading desk using the IMA, positions in desks not meeting the PLA requirement (that according to the CRR2 may still be allowed to be capitalised with the IMA as long as all other requirements are met) will no longer be subject to the capital surcharge as they will be capitalised using the SA. However, the capital surcharge will still apply for positions in trading desks for which the institution will still have the permission to use the IMA for computing the own funds requirements that show a certain degree of misalignment between HPL and RTPL (i.e. amber desks).

For determining the capital surcharge, the following steps need to be performed:

- (1) First, the institution must consider only desks which positions are capitalised under the IMA.
- (2) Second, the institution must calculate IMA_{ima} , i.e. the aggregated capital requirement for desks under the IMA in accordance with Article 325ba. Accordingly,

$$IMA_{ima} = CA + DRC$$

Where:

- a. CA is defined in article 325ba(1), i.e. the $\max(ES_{t-1} + SS_{t-1}; m_c * ES^{avg} + SS^{avg})$. Where ES_{t-1} , m_c , SS_{t-1} , ES^{avg} , SS^{avg} have been defined in the same article.
- b. DRC is the default risk charge obtained in accordance with article 325ba(2).

(3) Thirdly, the institution calculates the aggregated standardised capital charge SA_{ima} of the portfolio of all positions in the trading desks identified in point (1) (i.e. IMA desks).

(4) Finally, the institution calculates the capital surcharge as:

$$\text{Capital surcharge} = k \cdot \max\{0, SA_{ima} - IMA_{ima}\}$$

$$\text{Where: } k = 0.5 \times \frac{\sum_{i \in NG} SA_i}{\sum_{i \in ima} SA_i};$$

- a. SA_i denotes the standardised capital charge for all the positions of trading desk “i”;
- b. $i \in NG$ denotes the indices of all trading desks among those identified in point (1) that have not been allocated to the “green zone”;
- c. $i \in ima$ denotes the indices of all trading desks identified in point (1).

It is worth remarking that for a trading desk, meeting the PLA requirements will be only a necessary condition for computing capital requirements under the internal model approach. Indeed, desks should always be compliant with backtesting requirements at trading desk level set out in article 325bf (along with supervisory approval for using the IMA for the desk).

3.5 Frequency of the P&L Attribution

The RTS specify that the test must be performed on a quarterly basis. Consequently, the frequency of the PLA test is aligned with the frequency of the RFET, and the frequency at which the backtesting results are assessed for determining whether the desk meets the backtesting requirements. Institutions should perform the PLA tests on a quarterly basis for all desks in the IMA scope (i.e. including those that are not currently meeting the PLA or backtesting requirements).

3.6 Calculation of the own funds requirements for institutions having desks capitalised under the IMA

Institution having desks capitalised under the IMA should compute the own funds requirement for market risk (i.e. for all their trading book positions and non-trading book positions bearing FX-risk or Commodity risk) using the formula below:

$$OFR_{market\ risk} = \min (IMA_{ima} + Capital\ Surcharge + C_u; SA_{all\ desks}) + \max\{0, IMA_{ima} - SA_{ima}\}$$

Where:

- a) IMA_{ima} , *Capital Surcharge*, SA_{ima} are defined as in section 3.4;
- b) C_u denotes the standardised approach capital requirement for all positions that are not capitalised under the internal model approach (including those that were out of the IMA scope, those for which the permission to use internal models was not granted by the competent authority).
- c) $SA_{all\ desks}$ denotes the aggregated standardised charge for all desks within the institution.

4. Draft Regulatory Technical Standards on Back-testing requirements under Article 325bf(9) and Profit and Loss attribution requirements under Article 325bg(4) of Regulation (EU) No 575/2013 (Capital Requirements Regulation 2 - CRR2)

In between the text of the draft RTS that follows, further explanations on specific aspects of the proposed text are occasionally provided, which either offer examples or provide the rationale behind a provision, or set out specific questions for the consultation process. Where this is the case, this explanatory text appears in a framed text box.

COMMISSION DELEGATED REGULATION (EU) .../..

of **XXX**

supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to regulatory technical standards on back-testing requirements under Article 325bf(9) and profit and loss attribution requirements under 325bg(4) of Regulation (EU) No 575/2013

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) No 575/2013 of 26 June 2013 of the European Parliament and of the Council on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012⁶, and in particular the third subparagraph of Article 325bf(9) and the third subparagraph of Article 325bg(4) thereof,

Whereas:

- (1) Article 325bf and Article 325bg of Regulation (EU) No 575/2013 specify tests that need to be performed for different purposes, namely the purpose of assessing whether trading desks meet the back-testing and the profit and loss attribution requirements and the purpose of determining the multiplication factor that the institution should use for determining own funds requirements for the portfolio of all positions assigned to trading desks for which the institution calculates the own funds requirements using internal models. Accordingly, the elements to be included in the actual, hypothetical and theoretical daily portfolio's changes should reflect the purpose of the tests that require their computation.
- (2) Back-testing the value-at-risk number with the hypothetical and actual changes in the portfolio's value should capture the ability of the trading desk or of the institution, depending on the level at which the test is performed, to model the risks embedded in their respective portfolios and to determine an adequate level of own funds requirements. Accordingly, when calculating the hypothetical and actual changes of the portfolio's value, the end-of-day portfolio value should be used as a starting point 'as is', i.e. including all adjustments (fair value adjustments, reserves or any other valuation adjustment).
- (3) Back-testing the value-at-risk number with actual changes in the portfolio's value should capture effects that are not modelled in the risk-measurement model but are within the scope of the market risk, e.g. intra-day trading. Accordingly, adjustments sensitive to market risk, regardless of the frequency with which they are updated, should be included in the actual changes in the portfolio's value. On the contrary, the back-testing of the value at risk number with hypothetical changes in the portfolio's value is performed under the assumption of a static portfolio and when computing such hypothetical changes in the portfolio's value, institutions should include only adjustments that are calculated daily.
- (4) In exceptional cases, an adjustment might be computed across sets of positions (e.g. netting sets) assigned to more than one trading desk due to its nature, and due to its internal risk-management. In order to ensure harmonisation across the Union, for the purpose of calculating the actual and hypothetical changes in the trading desk's portfolio value, institutions should be required to either recompute such adjustment for each trading desk on the stand-alone basis of the positions assigned to the trading desk only, or, where specific conditions are met to reflect the changes arising from such adjustment only in the context of the back-testing referred to in Article 325bf(6) of Regulation (EU) No 575/2013. Accordingly, a proportional allocation of the adjustment to the trading desks according to each trading desks' contribution to the value of the adjustment, which an institution might perform in the end-of-day valuation process to derive the trading desks' end-of-day portfolio values, should not be allowed for the calculation of hypothetical and actual changes on trading desk level.

⁶ OJ L 176, 27.6.2013, p. 1.

- (5) Considering the prominent role the profit and loss attribution has in the determination of the own funds requirements for market risk, it is necessary that the criteria ensuring that theoretical changes in the trading desk portfolio's value are sufficiently close to the hypothetical changes in the trading desk portfolio's value are aligned with those outlined in the international regulatory standards.
- (6) Institutions with trading desks meeting all conditions set out in Article 325az(2) of Regulation (EU) No 575/2013 that are not classified as green zone desks in terms of the profit and loss attribution requirement referred to in Article 325bg(1) of that Regulation, should be required to calculate an additional capital surcharge. This would be proportionate to the level of misalignment between theoretical and hypothetical changes.
- (7) When performing the profit and loss attribution test, theoretical changes in the portfolio's value are analysed against hypothetical changes computed under the assumption of a static portfolio, aiming at measuring the materiality of simplifications in the institution's risk-measurement model compared to the systems producing the daily hypothetical changes. Accordingly, in order to ensure the effectiveness of the profit and loss attribution tests, theoretical changes in the portfolio's value should be computed under the assumption of a static portfolio, and should only capture changes in risk factors in the risk-measurement model to which the institution applies the scenarios of future shocks for the purpose of calculating the expected shortfall risk-measure or the stress scenario risk measure.
- (8) To ensure consistency with international practices, the hypothetical changes in the portfolio's value computed for the purpose of the profit and loss attribution tests should be aligned with the hypothetical changes in the portfolio's value that an institution computes for the purpose of the back-testing.
- (9) The profit and loss attribution requirements are designed to assess the materiality of risks that may be missing from the internal risk-measurement model and simplifications in the model's approaches to valuation. Beyond these sources of discrepancy between the hypothetical and theoretical changes in the portfolio's value, additional differences between the two measures may arise as the result of misalignments in the data that the institution uses as inputs for determining their respective values. To avoid issues resulting from such differences in input data, institutions should be allowed to align the input data as long as some specific conditions are met.
- (10) The frequency with which the profit and loss attribution is to be performed should be set considering the frequency at which the modellability of the risk factors is assessed and the own funds requirements for market risk are reported. In this way, the institution can determine the own funds requirements for market risk based on the results of the back-testing requirements, the profit and loss attribution requirements and the risk-factor eligibility test at the same time.
- (11) The aggregation formula that institutions should use for calculating the own funds requirement for market risk should be aligned with the aggregation formula set out in the international regulatory standards. The aggregation formula should reflect the results obtained of profit and loss attribution requirement and accordingly should include the capital surcharge which the institution calculates, where such results show a level of misalignment between theoretical and hypothetical changes. In addition, in line with the international standards, the aggregation formula should reflect the loss of diversification benefits the institution might face where the own funds requirements for a trading desk are calculated with the alternative standardised approach and not with the alternative internal model approach.

- (12) This Regulation is based on the draft regulatory technical standards submitted by the European Banking Authority to the Commission.
- (13) EBA has conducted open public consultations on the draft regulatory technical standards on which this Regulation is based, analysed the potential related costs and benefits, and requested the opinion of the Banking Stakeholder Group established in accordance with Article 37 of Regulation (EU) No 1093/2010⁷,

HAS ADOPTED THIS REGULATION:

SECTION 1

TECHNICAL ELEMENTS TO BE INCLUDED IN THE ACTUAL AND HYPOTHETICAL CHANGES IN THE PORTFOLIO'S VALUE FOR THE PURPOSES OF THE REGULATORY BACK-TESTING OF ARTICLE 325bf OF REGULATION (EU) No 575/2013

SUB-SECTION 1

TECHNICAL ELEMENTS TO BE INCLUDED IN THE ACTUAL CHANGES IN THE PORTFOLIO'S VALUE FOR THE PURPOSES OF THE REGULATORY BACK-TESTING OF ARTICLE 325bf OF REGULATION (EU) No 575/2013

Article 1

Technical elements to be included in the actual changes in a trading desk portfolio's value for the purpose of back-testing in accordance with to Article 325bf(3) of Regulation (EU) No 575/2013

1. For the purpose of the trading desk back-testing according to Article 325bf(3) of Regulation (EU) No 575/2013, actual changes in the trading desk portfolio's value shall be computed using the same pricing methods, model parametrisations, market data and any other technique as those used by the institution in the end-of-day valuation process taking into account the independent price verification (IPV) process in accordance with Article 105(8) of Regulation (EU) No 575/2013.
2. Institutions shall reflect the passage of time in the actual changes in the trading desk portfolio's value.
3. Institutions shall include in the actual changes in the trading desk portfolio's value only the adjustments that have been considered in the end-of-valuation process referred to in paragraph 1 that are market risk sensitive, excluding:
 - (a) credit valuation adjustments reflecting the current market value of the credit risk of counterparties to the institution;
 - (b) adjustments attributed to the institution's own credit risk that have been excluded from own funds under Article 33(1)(c)(3) of Regulation (EU) No 575/2013;

⁷ Regulation (EU) No 1093/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Banking Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/78/EC (OJ L 331, 15.12.2010, p. 12).

- (c) additional valuation adjustments deducted from Common Equity Tier 1 capital as per Article 34 of Regulation (EU) No 575/2013.
4. When computing the actual changes, institutions shall compute the value of an adjustment on the basis of only the positions assigned to that trading desk and shall reflect changes in its value only on the reference date for the calculation of the adjustment.
5. Where in the end-of-valuation process an institution computes an adjustment across sets of positions assigned to more than one trading desk on a net basis, it may, by way of derogation from paragraph (3), exclude that adjustment from the calculation of the actual changes, if all of the following conditions are met:
- (a) that adjustment is computed this way due to its nature;
 - (b) the internal risk management of that adjustment is consistent with the level at which it is calculated;
 - (c) the institution documents all of the following:
 - (i) the sets of positions on which the adjustment is computed;
 - (ii) the reasoning underpinning the computation of the adjustment on the sets of positions referred to in point (i);
 - (iii) the justification for not computing the adjustment on the basis of positions assigned to that trading desk only.

Explanatory text for consultation purposes

The basic principles for the definition of actual and hypothetical P&L are set out in the CRR2. However, in particular with respect to the treatment of adjustments, to ensure a consistent implementation of the backtesting and PLA requirements across EU institutions, further specifications are needed. Considering diverging practices with respect to the treatment of adjustments, the EBA proposes a framework that is deemed to ensure an appropriate level of harmonization, while being not overly prescriptive, and provides competent authorities with an appropriate degree of latitude to approve or not approve the P&L computed by the institutions. In light of a missing univocal terminology around some aspects which are relevant in the calculation of the HPL and APL, the EBA seeks feedback also on the clarity of the proposed terminology in draft RTS.

Questions for consultation

Q1. Which are the adjustments that institutions include in the fair value of a financial instrument that you consider not sensitive to market risk? Please provide a list of adjustments or a list of types of adjustments.

Q2. Which are the adjustments that institutions include in the fair value of a financial instrument that you consider market risk sensitive? Please provide a list of adjustments or a list of types of adjustments.

Q3. Paragraph 4 specifies that no smoothing of adjustments is permitted over the readjustment period. Do you agree with the provision? Do you consider the provision clear?

Q4. Paragraph 4 requires institutions to compute (for the purpose of the backtesting) the value of an adjustment (that is included in the changes in the portfolio's value) performing a stand-alone calculation, i.e. considering only the positions in the trading desk. Do you agree with the provision? Do you consider the provision clear?

Q5. Do you agree with the criteria in paragraph 5 allowing institutions to exclude an adjustment from the changes in the trading desk's portfolio value? Are there any other criteria you deem useful for this purpose?

Q6. How do institutions identify client margins and day-one profits/losses in the systems (e.g. as commissions, margins) ? Please specify if currently they are taken into account in the end-of-day valuation process, in the actual P&L and in the hypothetical P&L.

Article 2

Technical elements to be included in the actual changes in the portfolio's value for the back-testing in accordance with Article 325bf(6) of Regulation (EU) No 575/2013

1. For the purpose of the back-testing according to Article 325bf(6) of Regulation (EU) No 575/2013, actual changes in the portfolio's value shall be computed using the same pricing methods, model parametrisations, market data and any other technique as those used by the institution in the end-of-day valuation process taking into account the independent price verification (IPV) process in accordance with Article 105(8) of Regulation (EU) No 575/2013.
2. Institution shall reflect the passage of time in the actual changes in the portfolio's value.
3. Institutions shall include in the actual changes in the portfolio's value the adjustments that have been considered in the end-of-valuation process referred to in paragraph 1 that are market risk sensitive, excluding:
 - (a) credit valuation adjustments reflecting the current market value of the credit risk of counterparties to the institution;
 - (b) adjustments attributed to the institution's own credit risk that have been excluded from own funds under Article 33(1)(c)(3) of Regulation (EU) No 575/2013;
 - (c) additional valuation adjustments deducted from Common Equity Tier 1 capital as per Article 34 of Regulation (EU) No 575/2013.
4. When computing the actual changes, institutions shall compute the value of an adjustment on the basis of only the positions assigned to trading desks for which the institution calculates the own funds requirements for market risk in accordance with Part Three, Title IV, Chapter 1b of Regulation (EU) No 575/201 and shall reflect changes in its value only on the reference date for the calculation of the adjustment.

5. Institutions may, by way of derogation from paragraph (4), compute the value of the adjustment on the portfolio of all positions subject to own funds requirements for market risk and include the changes in that value in the calculation of the actual changes in the portfolio's value.

Questions for consultation purposes

Q7. Paragraph 4 requires institutions to compute (for the purpose of the back-testing) the value of an adjustment (that is included in the changes in the portfolio's value) performing a stand-alone calculation, i.e. considering only the positions in trading desks that are calculating the own funds requirements using the internal model approach (i.e. desks meeting all conditions in article 325az(2)). Do you agree with the provision? Do you consider the provision clear?

Q8. Do you agree with the possibility outlined in paragraph 5 to include in the portfolio's changes the value of an adjustment stemming from the entire portfolio of positions subject to own funds requirements (i.e. both positions in standard-approach desks and positions in internal model approach desks)? Or do you think it would not be overly burdensome for institutions to compute adjustments on the positions in trading desks that are calculating the own funds requirements using the internal model approach only?

SUB-SECTION 2

TECHNICAL ELEMENTS TO BE INCLUDED IN THE HYPOTHETICAL CHANGES IN THE PORTFOLIO'S VALUE FOR THE REGULATORY BACK-TESTING PURPOSES OF ARTICLE 325bg OF REGULATION (EU) No 575/2013

Article 3

Technical elements to be included in the hypothetical changes of a trading desk portfolio's value for the purpose of back-testing in accordance with Article 325bf(3) of Regulation (EU) No 575/2013

1. For the purpose of the trading desk back-testing according to Article 325bf(3) of Regulation (EU) No 575/2013, hypothetical changes in the trading desk portfolio's value shall be computed using the same pricing methods, model parametrisations, market data and any other technique as those used by the institution in the end-of-day valuation process taking into account the independent price verification (IPV) process in accordance with Article 105(8), and without considering any fees and commissions.
2. Institutions shall reflect the passage of time effect in the hypothetical changes in the trading desk portfolio's value consistently with the treatment the institution applies for such effect in the calculation of the expected shortfall risk measure as referred to in article 325bb of Regulation (EU) No 575/2013 and in the calculation of the stress scenario risk measure referred to in Article 325bk of Regulation (EU) No 575/2013.

3. Institutions shall include in the hypothetical changes in the trading desk portfolio's value only adjustments that have been considered in the end-of-valuation process referred to in paragraph 1 that are market risk sensitive and calculated on a daily basis, excluding:
 - (a) credit valuation adjustments reflecting the current market value of the credit risk of counterparties to the institution;
 - (b) adjustments attributed to the institution's own credit risk that have been excluded from own funds under Article 33(1)(c)(3) of Regulation (EU) No 575/2013;
 - (c) additional valuation adjustments deducted from Common Equity Tier 1 capital as per Article 34 of Regulation (EU) No 575/2013.
4. When computing the hypothetical changes, institutions shall compute the value of an adjustment on the basis of only the positions assigned to that trading desk and shall reflect changes based on a comparison between its end-of-day value and, assuming unchanged positions in the trading desk's portfolio, its value at the end of the subsequent day.
5. Where in the end-of-valuation process an institution computes an adjustment across sets of positions assigned to more than one trading desk on a net basis, it may, by way of derogation from paragraph (3), exclude that adjustment from the calculation of the hypothetical changes, if all of the following conditions are met:
 - (a) that adjustment is computed this way due to its the nature;
 - (b) the internal risk management of that adjustment is consistent with the level at which it is calculated;
 - (c) the institution documents all of the following:
 - (i) the sets of positions on which the adjustment is computed;
 - (ii) the reasoning underpinning the computation of the adjustment on the sets of positions referred to in point (i);
 - (iii) the justification for not computing the adjustment on the basis of positions assigned to that trading desk only.

Article 4

Technical elements to be included in the hypothetical changes in the portfolio's value for the back-testing according to Article 325bf(6) of Regulation (EU) No 575/2013

1. For the purpose of the back-testing according to Article 325bf(6) of Regulation (EU) No 575/2013, hypothetical changes in the portfolio's value shall be computed using the same pricing methods, model parametrisations, market data, and any other technique as those used by the institution in the end-of-day valuation systems used by front office personnel taking into account the independent price verification (IPV) process in accordance with Article 105(8), and without considering any fees and commissions.

2. Institutions shall reflect the passage of time effect in the hypothetical changes in the portfolio's value consistently with the treatment the institution applies for such effect in the calculation of the expected shortfall risk measure as referred to in article 325bb of Regulation (EU) No 575/2013 and in the calculation of the stress scenario risk measure referred to in Article 325bk of Regulation (EU) No 575/2013.
3. Institutions shall include in the hypothetical changes in the portfolio's value only the adjustments that have been considered in the end-of-valuation process referred to in paragraph 1 that are market risk sensitive and are calculated on a daily basis, excluding:
 - (a) credit valuation adjustments reflecting the current market value of the credit risk of counterparties to the institution;
 - (b) adjustments attributed to the institution's own credit risk that have been excluded from own funds under Article 33(1)(c)(3) of Regulation (EU) No 575/2013;
 - (c) additional valuation adjustments deducted from Common Equity Tier 1 capital as per Article 34 of Regulation (EU) No 575/2013.
4. When computing the hypothetical changes, institutions shall compute the value of an adjustment on the basis of only the positions assigned to trading desks for which the institution calculates the own funds requirements for market risk in accordance with Part Three, Title IV, Chapter 1b of Regulation (EU) No 575/201 and shall reflect changes in its value only on the reference date for the calculation of the adjustment.
5. Institutions may, by way of derogation from paragraph (4), compute the value of the adjustment on the portfolio of all positions subject to own funds requirements for market risk and include the changes in that value in the calculation of the actual changes in the portfolio's value.

Article 5
Documentation requirements

1. Institutions shall have policies and procedures in place defining how they calculate the actual, hypothetical changes in accordance with Articles 1 to 4, which shall include at least the following elements:
 - (a) how the actual changes in the relevant portfolio's value are calculated, outlining the differences between the changes in the end-of-day portfolio values produced by the end-of-day valuation process and the actual changes in the relevant portfolio's value;
 - (b) the definitions of fees and commission and the methods used to apply the exclusion referred to in Article 325bf(3)(b) of Regulation (EU) No 575/2013;
 - (c) how the hypothetical changes in the relevant portfolio's value are calculated;
 - (d) a list of all adjustments specifying for each adjustment all of the following:
 - (i) definition;
 - (ii) calculation methodology and process;

- (iii) frequency of calculation and reasoning in case of a less than daily calculation frequency;
- (iv) whether the adjustment is sensitive to market risk;
- (v) the sets of positions on which the adjustment is calculated and the reasoning for performing the computation on such sets;
- (vi) whether and how the risk stemming from changes in the adjustment is actively hedged and which trading desk(s) are responsible for this;
- (vii) whether and how each adjustment is taken into account in the actual changes in the relevant's portfolio value for the purpose of the back-testing referred to in Article 325bf(6) of Regulation (EU) No 575/2013 and the back-testing referred to in Article 325bf(3) of Regulation (EU) No 575/2013;
- (viii) whether and how each adjustment is taken into account in the hypothetical changes in the relevant portfolio value for the purpose of Article 325bf and Article 325bg, also outlining how the change in the adjustment is calculated assuming unchanged positions in the portfolio.

SECTION 2

SPECIFICATION OF VARIOUS ASPECTS OF THE PROFIT AND LOSS ATTRIBUTION REQUIREMENT FOR THE PURPOSES OF ARTICLE 325bg OF REGULATION (EU) No 575/2013

SUB-SECTION 1

Criteria

Article 6

Criteria

1. For the purpose of ensuring that the theoretical changes in a trading desk portfolio's value are sufficiently close to the hypothetical changes in the trading desk portfolio's value for the purposes of paragraph 2 of Article 325bg of Regulation (EU) No 575/2013, institutions shall calculate the Spearman correlation coefficient as set out in Article 7 and the Kolmogorov-Smirnov test metric as set out in Article 8.
2. For the purpose of calculating the Spearman correlation coefficient and the Kolmogorov-Smirnov test metric under paragraph 1, institutions may align the snapshot time for which they calculate the theoretical changes in the trading desk portfolio's value with the snapshot time for which they calculate the hypothetical changes in the trading desk portfolio's value.

Article 7

Calculation of the Spearman correlation coefficient

1. In order to calculate the Spearman correlation coefficient for a trading desk as referred to in Article 6(1), an institution shall perform the following steps in sequence:
 - (a) it shall determine the time series of observations of the hypothetical and theoretical changes in the trading desk portfolio's value for the most recent 250 business days;
 - (b) from the time series of the hypothetical and theoretical changes referred to in point (a), it shall produce the corresponding time series of ranks in the manner set out in paragraph 2, treating the time series of the hypothetical and theoretical changes as the originating time series;
 - (c) it shall compute the Spearman correlation coefficient in accordance with the following formula:

$$r_s = \frac{COV(R_{HPL}, R_{RTPL})}{\sigma_{R_{HPL}} * \sigma_{R_{RTPL}}}$$

Where:

R_{HPL} = the time series of ranks produced by the institution from the time series of hypothetical changes as per point (b);

R_{RTPL} = the time series of ranks produced by the institution from the time series of theoretical changes as per point (b);

$\sigma_{R_{HPL}}$ = the standard deviation of the time series of ranks R_{HPL} calculated in accordance with paragraph 3(1);

$\sigma_{R_{RTPL}}$ = the standard deviation of the time series of ranks R_{RTPL} calculated in accordance with paragraph 3(2);

$COV(R_{HPL}, R_{RTPL})$ = the covariance calculated in accordance with paragraph 3(3) between the times series of ranks R_{HPL} and R_{RTPL} .

2. Institutions shall produce the time series of ranks referred to in point (b) of paragraph 1 from an originating time series by performing the following steps:
 - (a) for each observation within the originating time series, it shall count the number of observations within the same times series with a lower value than that observation;
 - (b) it shall label each observation with the number resulting from point (a), increased by one;
 - (c) it shall consider as time series of ranks, the time series of the labels obtained in accordance with point (b).
3. Institution shall calculate the standard deviations of the the time series of ranks R_{HPL} and R_{RTPL} and the covariance between them with the following formulas:

$$(1) \sigma_{R_{HPL}} = \sqrt{\frac{\sum_{i=1}^{250} (R_{HPLi} - \mu_{R_{HPL}})^2}{249}};$$

$$(2) \sigma_{R_{RTPL}} = \sqrt{\frac{\sum_{i=1}^{250} (R_{RTPLi} - \mu_{R_{RTPL}})^2}{249}};$$

$$(3) \text{COV} (R_{HPL}, R_{RTPL}) = \frac{\sum_{i=1}^{250} (R_{HPLi} - \mu_{R_{HPL}}) * (R_{RTPLi} - \mu_{R_{RTPL}})}{249};$$

Where:

i = the index that denotes the observation in the time series of ranks;

R_{HPLi} = the ‘ i -th’ observation of the time series of ranks R_{HPL} ;

$\mu_{R_{HPL}}$ = the mean of the time series of ranks R_{HPL} ;

R_{RTPLi} = the ‘ i -th’ observation of the time series of ranks R_{RTPL} ;

$\mu_{R_{RTPL}}$ = the mean of the time series of ranks R_{RTPL} .

Article 8

Calculation of the Kolmogorov-Smirnov test metric

1. In order to calculate the Kolmogorov-Smirnov test metric for a trading desk as referred to in Article 6(1), an institution shall perform the following steps:
 - (a) it shall determine the time series of the most recent 250 business days of observations of the hypothetical and theoretical changes in the trading desk portfolio’s value;
 - (b) it shall compute the empirical cumulative distribution function of the hypothetical changes in the trading desk portfolio’s value from the time series of the hypothetical changes referred to in point (a);
 - (c) it shall compute the empirical cumulative distribution function of the theoretical changes in the trading desk portfolio’s value from the time series of theoretical changes referred to in point (a);
 - (d) it shall obtain the Kolmogorov-Smirnov test metric by calculating the maximum difference observed between the two empirical cumulative distributions calculated in accordance with points (b) and (c) at any possible value of profit and loss.
2. For the purpose of paragraph 1, the empirical distribution function obtained from a time series shall be understood as the function that, given any number as input, results in the ratio between the number of observations within the time series with lower or equal value than the input number and the number of observations within the full time series.

SUB-SECTION 2

CONSEQUENCES FOR POORLY PERFORMING DESKS

Article 9

Allocation of desks to zones

1. For the purpose of determining the consequences for trading desks for which theoretical changes in their portfolio's value are not sufficiently close to the hypothetical changes in the trading desk portfolio's value, each of those trading desks shall be classified to a green, amber or red zone as set out in paragraphs 2, 3 and 4.
2. A trading desk shall be classified as a 'green zone desk' where both of the following conditions are met:
 - (a) the Spearman correlation coefficient for the trading desk, computed in accordance with Article 11, is greater than 0.8;
 - (b) the Kolmogorov-Smirnov test metric for the trading desk, computed in accordance with Article 11, is lower than 0.09.
3. A trading desk shall be classified as a 'red zone desk' where either of the following conditions is met:
 - (a) the Spearman correlation coefficient for the trading desk, computed in accordance with Article 11, is lower than 0.7;
 - (b) the Kolmogorov-Smirnov test metric for the trading desk, computed in accordance with Article 11, is greater than 0.12.
4. Trading desks which are neither green zone nor red zone desks, shall be classified as amber zone desks.

Article 10

Determination of whether desks meet the P&L attribution requirement

1. A trading desk shall be considered as not meeting the profit and loss attribution requirements referred to in Article 325bg(1) of Regulation (EU) No 575/2013, where either of the following conditions is met:
 - (a) the trading desk has been classified as red zone desk in accordance with article 9(4);
 - (b) the trading desk meets both the following condition:
 - (i) it has been classified as amber zone desk in accordance with article 9(3);

- (ii) in the previous quarter, the institution computed the own funds requirements for its positions in accordance with Part Three, Title IV, chapter 1a of Regulation (EU) No 575/2013.
2. Trading desks which are not among those identified in paragraph 1 shall be considered as meeting the profit and loss attribution requirements referred to in Article 325bg(1).

Article 11

Consequences for trading desks based on profit and loss attribution results

1. An institution calculating the own funds requirements in accordance with Part Three, Title IV, chapter 1b of Regulation (EU) No 575/2013 for positions assigned to trading desks that have not been classified as ‘green zone desks’ shall compute a capital surcharge in accordance with the following formula with regard to these positions:

$$\text{Capital surcharge} = k * \max(SA_{ima} - IMA_{ima}; 0)$$

Where:

k = as specified in paragraph 2;

SA_{ima} = the own funds requirements calculated in accordance with Part Three, Title IV, chapter 1a of Regulation (EU) No 575/2013 for the portfolio of all positions assigned to trading desks for which the institution calculates the own funds requirements in accordance with Part Three, Title IV, chapter 1b of Regulation (EU) No 575/2013.

IMA_{ima} = the own funds requirements calculated in accordance with article 325ba of Regulation (EU) No 575/2013 for the portfolio of all positions assigned to trading desks for which the institution calculates the own funds requirements in accordance with Part Three, Title IV, chapter 1b of Regulation (EU) No 575/2013.

2. For the purpose of paragraph 1, the coefficient k shall be calculated on the basis of the following formula:

$$k = 0.5 \times \frac{\sum_{i \in NG} SA_i}{\sum_{i \in ima} SA_i};$$

Where:

SA_i = the own funds requirements capital charge calculated in accordance with Part Three, Title IV, chapter 1a of Regulation (EU) No 575/2013 for all the positions attributed to trading desk “i”;

$i \in NG$ = the indices of all trading desks that have not been classified as green desks among those for which the own funds requirements are calculated in accordance with Part Three, Title IV, chapter 1b of Regulation (EU) No 575/2013;

$i \in ima$ = the indices of all trading desks for which the own funds requirements are calculated in accordance with Part Three, Title IV, chapter 1b of Regulation (EU) No 575/2013.

Explanatory text for consultation purposes

Article 325az of Regulation (EU) No 575/2013 lays down that the competent authority must grant the permission for using the internal model approach to calculate the own funds requirements for market risk also for positions held in desks not meeting the PLA requirement (as long as all conditions in 325az(2) are met). This is in line with the international standards, where meeting the PLA requirement becomes a full condition to be met for using the internal model approach only after a transitional period of 1 year.

Recital 41 of Regulation (EU) 2019/876 amending Regulation (EU) No 575/2013 states that the European Commission should, where appropriate, submit a legislative proposal by 30 June 2020 for fully implementing the FRTB framework in the Union.

Therefore, the EBA consults on a legal text, which has been designed and drafted to comply with the current provisions in Regulation (EU) 575/2013, while also being compatible with potential future changes to Regulation (EU) No 575/2013 such as making the PLA requirement a condition for applying the IMA.

Precisely, the draft RTS specify that a capital surcharge will apply to all trading desks meeting both the following conditions:

- (1) the desk meets all conditions set out in Article 325az(2) for calculating the own funds requirements for the positions in the relevant trading desks with the internal model approach;
- (2) the desk shows misalignment in its HPL and RTPL (i.e. the desk has been allocated in the amber or red zone in accordance with these RTS).

With such conditions in place, as soon as a new version of Article 325az(2) starts applying with the PLA requirement as a condition to be met for using the internal model approach, it will be automatic that:

- (a) institution will have to calculate the own funds requirements for trading desks not meeting the PLA requirement in accordance with the standardised approach;
- (b) trading desks not meeting the PLA requirement (e.g. red desks) will not meet the above-mentioned condition (1) identifying desks which positions are subject to a capital surcharge, and accordingly, only amber desks would be subject to such surcharge.

As a result, the EU would automatically be in line with the Basel standards without the need to perform any amendment to the RTS around this aspect.

An alternative way that would ensure a timely implementation of the Basel standards in the EU legislation, while complying with the current provisions in Regulation (EU) 575/2013, could be to add an extra-layer of reporting requirements (through these RTS) as a consequence for institutions with trading desks not meeting the PLA requirement.

Such institutions would be required to report (on top of the requirements set out in 430b(3)) the own funds requirements for market risk including positions in desks not meeting the PLA requirement in the 'standardised approach portfolio', and accordingly, excluding such positions from the portfolio for which the institution reports the own funds requirements with the internal model approach ('IMA portfolio'). In other words, for reporting purposes, the institution would need to recompute the own funds requirements with the standardised approach by including in the SA portfolio also positions in trading desks not meeting the PLA requirement, and to recompute the own funds requirements with the internal model approach by excluding such positions from the IMA portfolio (i.e. by calculating - also on the basis of this new portfolio - the expected shortfall risk measure, the stress scenario risk measure, the own funds for default risk, and the VaR for the top of the house backtesting).

Such supplementary reporting requirements would make the PLA effective as agreed in the international standards for the purpose of obtaining the relevant capital figures for reporting purposes, while still ensuring compliance of these RTS with the provisions in Regulation (EU) 575/2013.

The EBA did not include this option in the proposed draft RTS. However, during the consultation period, the EBA will further analyse whether this option could lead to a faster (or even smoother) implementation of the FRTB standards in the EU. If the EBA assesses this to be the case, the EBA would implement this option in its final draft RTS.

SUB-SECTION 3

FREQUENCY OF THE PROFIT AND LOSS ATTRIBUTION TEST

Article 12

Frequency of the Profit and Loss Attribution test

The Profit and Loss Attribution test shall be performed on a quarterly basis for all trading desks for which the institution has the permission referred to in Article 325az(2) to calculate the own funds requirements by using their internal models.

SUB-SECTION 4

TECHNICAL ELEMENTS TO BE INCLUDED IN THE THEORETICAL AND HYPOTHETICAL CHANGES IN A TRADING DESK PORTFOLIO'S VALUE FOR THE PROFIT AND LOSS ATTRIBUTION REQUIREMENT IN ACCORDANCE WITH ARTICLE 325bh OF REGULATION (EU) No 575/2013

Article 13

Technical elements to be included in the theoretical changes in the portfolio's value for the profit and loss attribution in accordance with Article 325bg of Regulation (EU) No 575/2013

1. For the purposes of Article 325bg of Regulation (EU) No 575/2013, institutions shall calculate the theoretical changes in a trading desk's portfolio value based on a comparison between the portfolio's end-of-day value and, assuming unchanged positions, its value at the end of the subsequent day.
2. Theoretical changes in a trading desk's portfolio shall be based on the pricing methods, model parametrisations, market data and any other technique used in the risk measurement model.
3. Theoretical changes in a trading desk's portfolio value shall only include the changes in the value of all risk factors included in the risk-measurement model to which the institution applies the scenarios of future shocks for the purpose of calculating the expected shortfall risk-measure referred to in Article 325bb of Regulation (EU) No 575/2013 or the stress scenario risk measure referred to in Article 325bk of that Regulation.

Article 14

Technical elements to be included in the hypothetical changes in a trading desk portfolio's value for the profit and loss attribution in accordance with Article 325bg of Regulation (EU) No 575/2013

Institutions shall compute hypothetical changes in a trading desk portfolio's value for the purpose of Article 325bg of Regulation (EU) No 575/2013 as set out in Article 3.

Article 15

Alignment of data for the P&L attribution requirements

1. For the purpose of Article 325bg of Regulation (EU) No 575/2013, an institution may replace the value of an input data of a risk factor used in the calculation of the theoretical changes in the trading desk portfolio's value by value of an input data of the same nature used for the same risk factor in the calculation of the hypothetical changes in the trading desk portfolio's value, only in the following situations:

- (a) differences in the input data are due to the fact that the data is sourced from different providers of data;
 - (b) differences in the input data are due to different times during the same business day at which the input data are extracted from the market data source.
2. For the purpose of Article 325bg of Regulation (EU) No 575/2013, an institution may replace the value of a risk factor used in the calculation of the theoretical changes in the trading desk portfolio's value by the value of the same risk factor used in the calculation of the hypothetical changes in the trading desk portfolio's value, where all of the following conditions are met:
- (a) the risk factor used in the calculation of the hypothetical changes in the trading desk portfolio's value does not directly correspond to an input data;
 - (b) the risk factor has been derived from input data using any techniques of the valuation systems used for the hypothetical changes in the trading desk portfolio's value;
 - (c) none of the techniques of the valuation systems referred to in (b) have been rebuilt in the valuation systems used in the risk measurement model to derive the value of the risk factor used in the calculation of the theoretical changes in the trading desk portfolio's value.

Explanatory text for consultation purposes

The PLA tests are designed to assess the materiality of risks that may be missing from the internal risk-measurement model and simplifications in the model's approaches to valuation. Beyond these sources of discrepancy between the HPL and RTPL, additional differences may arise as the result of misalignments in the data that the institution uses as inputs for determining their respective values. To avoid issues resultant from such differences, the EBA proposes, in line with the international standards, that institutions are allowed to align the data used in the RTPL with those used in HPL as long as some specific conditions are met.

Question for consultation

Q9. Do you agree with the criteria outlined in this article for the alignment of input data? Please provide some examples where an institution could use the provision set out in paragraph 2.

Article 16 *Documentation requirements*

1. Institutions shall have policies and procedures in place defining how they calculate the theoretical changes in accordance with Articles 13 and Article 15, which shall include at least how the theoretical changes in the trading desk portfolio's value are calculated for modellable and non-modellable risk factors.
2. Where designing the procedures for aligning the data in accordance with article 15, institutions shall apply both of the following:
 - (a) they shall compare the theoretical changes in the trading desk portfolio's value without the alignments referred to in article 15, and the theoretical changes in the trading desk

portfolio's value with the alignments referred to in article 15 and they shall document such that comparison;

- (b) they shall assess the effect of the alignments on the profit and loss attribution test metrics referred to in articles 7 and 8 and document that assessment.
3. Institutions shall document any adjustments to input data for the risk factors within the calculation of the theoretical changes in the trading desk portfolio's performed in accordance with Article 14, as well as the rationale for such adjustments.

SUB-SECTION 5

OWN FUNDS REQUIREMENTS FOR INSTITUTIONS USING THE INTERNAL MODEL

Article 17

Computation of the Own Funds requirements for Market Risk for institutions having trading desks under the Internal Model Approach

1. An institution calculating the own funds requirements in accordance with Part Three, Title IV, chapter 1b for the positions assigned to some of its trading desks shall calculate the own funds requirements for all its trading book positions and all its non-trading book positions generating foreign exchange or commodity risks as the sum of the following:
 - (a) $\min(IMA_{ima} + \text{Capital surcharge} + C_U ; SA_{all desks})$
 - (b) $\max(IMA_{ima} - SA_{ima}; 0)$

Where:

IMA_{ima} = as specified in Article 11;

SA_{ima} = as specified in Article 11;

Capital surcharge = the capital surcharge calculated in accordance with article 11;

C_U = The own funds requirements calculated in accordance with Part Three, Title IV, chapter 1a of Regulation (EU) No 575/2013 for the portfolio of positions not assigned to trading desks for which the institutions calculates the own funds requirements in accordance with Part Three, Title IV, chapter 1b of Regulation (EU) No 575/2013;

$SA_{all desks}$ = the own funds requirements of all trading book positions and all non-trading book positions generating foreign exchange or commodity risks in accordance with Part Three, Title IV, chapter 1a of Regulation (EU) No 575/2013.

Article 18
Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

For the Commission
The President

[For the Commission
On behalf of the President

[Position]

5. Accompanying documents

5.1 Draft cost-benefit analysis / impact assessment

Article 325bf of the CRR2 requires the EBA to develop draft RTS to specify the technical elements that shall be included in the actual and hypothetical changes the portfolio's value of an institution for the purpose of the back-testing requirements. In addition, under Article 325bg the EBA is mandated to implement in the EU the Profit and Loss attribution (PLA) requirement; in particular the EBA is mandated to specify: (a) criteria that shall ensure that the theoretical changes in a trading desk portfolio's value is sufficiently close to the hypothetical changes in the trading desk portfolio's value for the purposes of the P&L attribution requirement; (b) the consequences for an institution where the theoretical changes in a trading desk portfolio's value is not sufficiently close to the hypothetical changes in the trading desk portfolio's value for the purposes of the P&L attribution requirement; (c) the frequency at which the P&L attribution has to be performed by an institution; (d) the technical elements that shall be included in the theoretical and hypothetical changes in a trading desk portfolio's value for the purpose of the P&L attribution requirement; (e) how institutions using the internal model have to aggregate the total own funds requirement for market risks of all their trading book positions taking into account the consequences specified under point (b).

As per Article 10(1) of Regulation (EU) No 1093/2010 (EBA Regulation), any regulatory technical standards developed by the EBA shall be accompanied by an Impact Assessment (IA), which analyses 'the potential related costs and benefits'.

This section presents the cost-benefit analysis of the provisions included in the RTS described in this CP. The analysis provides an overview of identified problems, the proposed options to address those problems and the costs and benefits of those options.

A. Problem identification

In January 2019, the Basel Committee on Banking Supervision (BCBS) finalised the standards on Minimum capital requirement for market risk⁸. Under the revised framework, the model approval process has been enhanced. To use internal models to determine capital requirements for the positions in a given trading desk, the institution must perform and pass two at the level of such trading desk:

- Profit and loss attribution. A test to determine whether the internal model comprehensively measures the risks that drive the daily profits and losses (P&L) of the trading desk. The test compares daily risk-theoretical P&L (RTPL) with the daily HPL for each trading desk.

⁸ <https://www.bis.org/bcbs/publ/d457.htm>

- **Backtesting.** A test to determine if the risk estimated by the internal model is sufficiently conservative to cover observed trading losses. The test compares the value-at-risk (VaR) against the actual P&L (APL) and hypothetical P&L (HPL) at trading desk level.

The FRTB sets that trading desks failing these tests must use the standardised approach.

In addition, once the institution has identified the trading desks meeting all conditions for using the internal model approach, it has to perform the ‘top of the house’ backtesting on the portfolio of all positions attributed to these trading desks. The ‘top of the house’ backtesting is performed to define the multiplication factor that institutions use when calculating the own funds requirements for market risk under the FRTB framework.

The CRR2, requires the EBA to set the definition of APL and HPL for the backtesting, and to implement in the EU several features of the PLA requirement (i.e. definition of the tests, consequences for failing the tests, frequency of the tests, definition of RTPL and HPL for PLA and aggregation formula for the own funds requirements).

The lack of the aforementioned specifications would result in an inconsistent implementation of the regulatory backtesting requirements and PLA test across banks.

B. Policy objectives

The specific objective of the RTS are to establish a common definition for HPL, APL for the purpose of the backtesting and HPL and RTPL for the purpose of the PLA test. In this way, the RTS aim to ensure a consistent implementation of the regulatory backtesting programme and the PLA test across EU institutions. Moreover, they also aim to ensure that the technical implementation of the backtesting and PLA tests do not undermine their usefulness in assessing model performance. Finally, the RTS aim to harmonise the assessment criteria for the PLA requirement, the consequences for institutions with desks that fail the PLA test, the frequency of the PLA test and the way institutions using the internal model for some desks have to aggregate the total own funds requirements for market risk.

Generally, the RTS aim to create a level playing field, promote convergence of institutions practises and enhance comparability of own funds requirements across EU. Overall, the RTS are expected to promote the effective and efficient functioning of the EU banking sector.

C. Baseline scenario

The baseline scenario aims to describe the regulatory environment and regulatory developments, as well the institutions’ practises.

In terms of regulatory environment, the baseline assumes the entry into force of the CRR2, which does not provide any definition of APL, HPL, RTPL, nor any assessment criteria for the PLA test.

Moreover, it does not specify the frequency of the PLA test or what would be the implications for a desk when it fails such test.

The FRTB standards provides some guidance on the definition of APL, HPL, RTPL. In addition, they prescribe a quarterly frequency for the PLA test and two test metrics: the Spearman correlation metric and the Kolmogorov-Smirnov test metric. Finally, they outline the consequences of failing the PLA test and the formula to aggregate the total own funds requirements for market risks of all their trading book positions.

In terms of institutions' practices, the baseline scenario considers that banks use the current definition of HPL and APL.

D. Options considered, Cost-Benefit Analysis and Preferred Options

With regard to the assessment criteria for the PLA requirement, the consequences for institutions with desks that fail the PLA test, the frequency of the PLA test and the way institutions using the internal model for some desks have to aggregate the total own funds requirements for market risk, the EBA did not consider any option that could deviate from the international standards, as this could undermine the level playing field. Accordingly, options presented below mainly deal with the calculation of HPL and APL for the purpose of the backtesting and the Profit and Loss attribution requirements, where the EBA developed further specifications with respect to those agreed in the standards.

Treatment of adjustments in the HPL

In the DP, one of the implementation issues identified as potentially having a significant impact on institutions is the definition of the scope of technical elements to be included in the HPL and APL for the purpose of the regulatory backtesting and in the HPL and RTPL for the purpose of the PLA test. While the basic principles for the definition of the APL, HPL and RTPL are set out in the CRR2, the treatment of adjustments is a key aspect in the calculation of APL and HPL for which further clarification is needed. Accordingly, several options have been considered:

Option 1a: To include in the HPL adjustments that are sensitive to market risk regardless of the frequency at which they are calculated.

Option 1b: To include in the HPL adjustments that are sensitive to market risk only if updated daily.

Under Option 1a, all adjustments regardless of their updating frequency would be included in the hypothetical P&L. However, including adjustments updated less frequently than daily (for example monthly) in the hypothetical P&L would affect the PLA results, as it would lead to a (for example monthly) bump in hypothetical P&L versus risk-theoretical P&L. Consequently, there is the potential of increasing the number of desks failing the PLA tests, since these adjustments are usually not taken into account in the calculation of the ES or the SSRM.

Option 1b, would produce a 'smoother' hypothetical P&L. However, it might give the incentive to start calculating adjustments using a less than daily frequency just for the purpose of sidestepping the effect of the adjustments on the PLA test. For example, adjustments calculated every 2 days, would be excluded under Option 1b, even though they are not expected to lead to bumps in the HPL. For this reason, the EBA has put in place certain criteria that would avoid creating a competitive disadvantage for institutions calculating VAs daily. In particular, institutions should provide a list with the frequency of the VAs calculation and the rationale behind this frequency, which will be subject to supervisory approval as part of the internal model approval process.

Option 1b is retained.

Computation of adjustments at top of the house

Where an adjustment is included in the actual and hypothetical P&L for the purpose of the top of the house backtesting, the following options were considered on how institutions should compute such adjustments:

Option 2a: Compute such adjustments only on the basis of positions assigned to desks for which the institution calculates the own funds requirements for market risk with the IMA (Stand-alone approach). Under this option, the diversification effect with positions assigned to desks capitalised with the SA is not be captured when computing the adjustment.

Option 2b: Allow institutions to compute such adjustments on the portfolio including all positions subject to market risk own funds requirements (i.e. also on those held in SA desks) and proportionally allocate the total value of the adjustments to the IMA portfolio considering the contribution of the IMA desks to the total value of the adjustments based on the approach the institution uses in the end-of-day valuation process (Reallocation approach).

Option 2a does not allow the recognition of any diversification effect between adjustments stemming from desks under IMA and desks under SA. This is in line with the FRTB philosophy where there is a clear distinction between what is held in desks under the IMA and desks under the SA.

On the other hand, Option 2b recognises that there might be cases where (in the end-of-day valuation process) an institution calculates an adjustment on all positions subject to market risk own funds requirements (i.e. also on those held in SA desks), and it could be too burdensome for the bank to re-compute such adjustment only on positions in desks that are capitalised under the IMA just for the purpose of the top of the house backtesting. However, given that there is not an established/common methodology to reallocate these adjustments to desks that are capitalised under the IMA, this option can lead to an inconsistent implementation of the top of the house backtesting requirement across EU institutions, and potentially to regulatory arbitrage.

Option 2a is retained. To alleviate some of the operational burden that Option 2a can create, the EBA has provided for a derogation, where institutions can compute such adjustments on all positions subject to market risk own funds requirements (i.e. also on those held in SA desks) and use the total value of adjustments in the APL and HPL.

Computation of adjustments at trading desk-level

Where an adjustment is included in the actual and hypothetical P&L for the purpose of the backtesting at trading desk level and for the purpose of the P&L attribution test (which is performed at trading-desk level), the following options were considered on how institutions should compute such adjustments:

Option 3a: Compute such adjustments by considering only positions within the desk (i.e. on a stand-alone basis). Under this option, the diversification effect between positions assigned to different desks is not captured when computing the adjustment.

Option 3b: Allow institutions to compute such adjustments at a different level than the trading desk level (i.e. considering positions across multiple trading desks, e.g. on a funding set spanning multiple trading desks for the FVA) and proportionally allocate the total value of the adjustments to various trading desks by considering the contribution of the positions in a desk to the total value of the adjustments based on the approach the institution uses in the end-of-day valuation process (Reallocation- approach).

Option 3c: Allow institutions to exclude from the APL and HPL of the trading desks, adjustments that in the end of-day valuation process are calculated on sets of positions assigned to multiple trading desks due to the nature of the adjustment. The exclusion is subject to a number of conditions.

Option 3a is a simple and straightforward approach. In general, respondents to the DP said it would be possible to calculate adjustments at trading desk level although the process for doing so could be too burdensome.

Option 3b allows institutions to calculate adjustments on a valuation set basis, which might make more meaningful from an economic perspective e.g. an institution may compute the Funding Valuation Adjustment at funding set level which might include positions that are actually held in multiple trading desks. However, there is not a common/unique approach to reallocate these adjustments across trading desks. Accordingly, this can lead to an inconsistent implementation across EU institutions, and potentially to regulatory arbitrage.

Option 3c, on the other hand, allows institutions to exclude those adjustments from the APL and HPL of the trading desk. To avoid institutions starting including an adjustment only at top-of-the-house just with the purpose of sidestepping the effect of the adjustment in the trading desk backtesting and in the PLA, the institution must be able to prove that its internal risk-management is consistent with the level at which the adjustment is calculated (e.g. for institutions calculating the FVA on a funding set basis, the institution should be able to prove that the risk stemming from its changes is actually managed on a funding set basis as well), and should fulfil specific documentation requirements.

Option 3a and Option 3c are retained.

5.2 Overview of questions for consultation

Q1. Which are the adjustments that institutions include in the fair value of a financial instrument that you consider not sensitive to market risk? Please provide a list of adjustments or a list of types of adjustments.

Q2. Which are the adjustments that institutions include in the fair value of a financial instrument that you consider market risk sensitive? Please provide a list of adjustments or a list of types of adjustments.

Q3. Paragraph 4 specifies that no smoothing of adjustments is permitted over the readjustment period. Do you agree with the provision? Do you consider the provision clear?

Q4. Paragraph 4 requires institutions to compute (for the purpose of the backtesting) the value of an adjustment (that is included in the changes in the portfolio's value) performing a stand-alone calculation, i.e. considering only the positions in the trading desk. Do you agree with the provision? Do you consider the provision clear?

Q5. Do you agree with the criteria in paragraph 5 allowing institutions to exclude an adjustment from the changes in the trading desk's portfolio value? Are there any other criteria you deem useful for this purpose?

Q6. How do institutions identify client margins and day-one profits/losses in the systems (e.g. as commissions, margins)? Please specify if currently they are taken into account in the end-of-day valuation process, in the actual P&L and in the hypothetical P&L.

Q7. Paragraph 4 requires institutions to compute (for the purpose of the backtesting) the value of an adjustment (that is included in the changes in the portfolio's value) performing a stand-alone calculation, i.e. considering only the positions in trading desks that are calculating the own funds requirements using the internal model approach (i.e. desks meeting all conditions in article 325az(2)). Do you agree with the provision? Do you consider the provision clear?

Q8. Do you agree with the possibility outlined in paragraph 5 to include in the portfolio's changes the value of an adjustment stemming from the entire portfolio of positions subject to own funds requirements (i.e. both positions in standard-approach desks and positions in internal model approach desks)? Or do you think it would not be overly burdensome for institutions to compute adjustments on the positions in trading desks that are calculating the own funds requirements using the internal model approach only?

Q9. Do you agree with the criteria outlined in this article for the alignment of input data? Please provide some examples where an institution could use the provision set out in paragraph 2.