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COVER NOTE

From:	Secretary-General of the European Commission, signed by Ms Martine DEPREZ, Director
To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union
No. Cion doc.:	C(2022) 3800 final
Subject:	COMMISSION DELEGATED REGULATION (EU) …/... of 14.6.2022 supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to regulatory technical standards specifying the technical details of back-testing and profit and loss attribution requirements under Articles 325bf and 325bg of Regulation (EU) No 575/2013

Delegations will find attached document C(2022) 3800 final.

Encl.: C(2022) 3800 final

EUROPEAN
COMMISSION

Brussels, 14.6.2022
C(2022) 3800 final

COMMISSION DELEGATED REGULATION (EU) …/...

of 14.6.2022

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

(Text with EEA relevance)

EXPLANATORY MEMORANDUM

1. CONTEXT OF THE DELEGATED ACT

Articles 325bf(9) and 325bg(4) of Regulation (EU) No 575/2013 empower the Commission to adopt, following submission of draft regulatory technical standards by the European Banking Authority (EBA) in accordance with Articles 10 to 14 of Regulation No (EU) 1093/2010, respectively, delegated acts specifying the technical elements to be included in the actual and hypothetical changes in the value of the portfolio of an institution for the purposes of the back-testing; and delegated acts specifying the criteria necessary to ensure that the theoretical changes in the value of a trading desk's portfolio are sufficiently close to the hypothetical changes in the value of a trading desk's portfolio for the purposes of the Profit and Loss attribution requirements; the consequences for an institution where those changes are not sufficiently close; the frequency at which the Profit and Loss attribution test is to be performed by an institution, the technical elements to be included in the theoretical and hypothetical changes in the value of a trading desk's portfolio for the purposes of the Profit and Loss attribution requirement; the manner in which institutions that use the internal model are to aggregate the total own funds requirement for market risk for all their trading book positions and non-trading book positions that are subject to foreign exchange risk or commodity risk, taking into account the consequences of the Profit and Loss attribution requirement.

In accordance with Article 10(1) of Regulation No (EU) 1093/2010 establishing the EBA, the Commission shall decide within three months of receipt of the draft technical standards whether to endorse the drafts submitted. The Commission may also endorse the draft standards in part only, or with amendments, where the Union's interests so require, having regard to the specific procedure laid down in those Articles.

2. CONSULTATIONS PRIOR TO THE ADOPTION OF THE ACT

In accordance with the third subparagraph of Article 10(1) of Regulation No (EU) 1093/2010, the EBA has carried out a public consultation on the draft technical standards submitted to the Commission. A consultation paper was published on the EBA internet site on 27 June 2019 and the public consultation closed on 4 October 2019. Moreover, the EBA invited the EBA's Banking Stakeholder Group set up in accordance with Article 37 of Regulation (EU) No 1093/2010 to provide advice on them. Together with the draft technical standards, the EBA has submitted an explanation on how the outcome of these consultations has been taken into account in the development of the final draft technical standards submitted to the Commission.

Together with the draft technical standards, and in accordance with the third subparagraph of Article 10(1) of Regulation No (EU) 1093/2010, the EBA has submitted its Impact Assessment, including its analysis of the costs and benefits, related to the draft technical standards submitted to the Commission. This analysis is available at https://eba.europa.eu/regulation-and-policy/market-risk/draft-technical-standards-on-the-ima-under-the-frtb pages 41 - 46 of the Final Draft Regulatory Technical Standards.

3. LEGAL ELEMENTS OF THE DELEGATED ACT

The final draft technical standards specify the technical elements to be included in the actual and hypothetical changes in the value of the portfolio of an institution for the purposes of Article 325bf of Regulation (EU) No 575/2013. Accordingly, specifications are made both for

the back-testing performed at trading desk level referred in Article 325bf(3) of Regulation (EU) No 575/2013 and the back-testing at institution level referred to in Article 325bf(6) of that Regulation. In this context, the final draft technical standards identify a specific framework with respect to the inclusion of adjustments in the actual and hypothetical changes, and a specific treatment for each effect that is relevant in the computation of such changes.

For the purposes of the Profit and Loss attribution requirement in Article 325bg of Regulation (EU) No 575/2013, these final draft technical standards establish that the Kolmogorov Smirnov test metric and the Spearman correlation coefficient constitute the basis for determining the criteria ensuring that the theoretical changes are sufficiently close to the hypothetical changes. Following the calculations of those metrics, the final draft technical standards require institutions to allocate trading desks into zones to which specific consequences correspond.

These final draft technical standards specify that theoretical changes are to include only changes in all risk factors included in the risk-measurement model to which institutions apply the scenarios of future shocks for the purpose of calculating the expected shortfall risk-measure or the stress scenario risk measure. Other specifications are made to ensure a harmonised implementation of the Profit and Loss attribution requirements for example with respect to the pricing functions to be used when calculating the theoretical changes.

In addition, the final draft technical standards provide that the hypothetical changes in the portfolio's value calculated for the purpose of the back-testing requirements are to be the same as those calculated for the purpose of the Profit and Loss attribution requirements.

In the context of the Profit and Loss attribution requirement, the final draft technical standards identify conditions under which institutions may align the input data used in the computation of the theoretical changes with those used in the computation of the hypothetical changes.

Finally, these final draft technical standards specify the frequency of the Profit and Loss attribution tests and the aggregation formula that institutions are to use for calculating the own funds requirements for market risk in line with the provisions set out in international regulatory standards.

COMMISSION DELEGATED REGULATION (EU) …/...

of 14.6.2022

supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to regulatory technical standards specifying the technical details of back-testing and profit and loss attribution requirements under Articles 325bf and 325bg 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 amending Regulation (EU) No 648/2012[1], and in particular Article 325bf(9), third subparagraph, and Article 325bg(4), third subparagraph, thereof,

Whereas:

(1) Article 325bf(2) of Regulation (EU) No 575/2013 requires institutions to count daily overshootings on the basis of back-testing of the hypothetical and actual changes in their portfolio's value composed of all the positions assigned to their trading desks. Such back-testing is intended to assess, depending on the level at which it is performed, whether it is appropriate to calculate the own funds requirements for positions in a trading desk using the alternative internal model approach, and whether the own funds requirements associated with modellable risk factors are adequate. Article 325bf(4) of Regulation (EU) No 575/2013 requires institutions to use the end-of-day value of the portfolio as a starting point for such back-testing, including all adjustments, such as reserves or any valuation adjustment.

(2) In the back-testing of the value-at-risk number, some market risk effects that are not captured by the internal risk-measurement model should still be included in the actual changes in the portfolio's value. Accordingly, all adjustments related to market risk, regardless of the frequency at which they are updated by institutions, should be included in the actual changes in the portfolio's value. The back-testing of the value-at-risk number with the hypothetical changes in the portfolio's value, however, should be performed under the assumption of a static portfolio. Therefore, institutions should include in the computation of such hypothetical changes in the portfolio's value only those adjustments that are calculated daily and that are included in the internal risk-measurement model.

(3) In some cases, it is possible that, due to the nature of an adjustment and due to the internal risk management applicable to that adjustment, such adjustment is computed across sets of positions that are assigned to more than one trading desks. To ensure harmonisation across the Union, institutions should be required, when calculating the actual and hypothetical changes in a trading desk's portfolio value, to either

[1] OJ L 176, 27.6.2013, p. 1.

recalculate 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, where institutions perform the end-of-day valuation process to derive the trading desks' end-of-day portfolio values, they should not be allowed, when calculating hypothetical and actual changes at the trading desk level, to allocate the adjustment to the trading desks in a manner that is proportionate to each trading desks' contribution to the value of the adjustment.

(4) The profit and loss attribution requirement laid down in Article 325bg of Regulation (EU) No 575/2013 has a prominent role in ensuring that the theoretical changes and the hypothetical changes in the trading desk portfolio's value are sufficiently close. The statistical tests included in the international standards developed by the Basel Committee for Banking and Supervision, the Spearman correlation coefficient and the Kolmogorov-Smirnov test metric, to operationalise the profit and loss attribution requirement are appropriate for that purpose and should therefore be used by institutions.

(5) In the international standards, it is laid down that institutions should satisfy an additional capital requirement where the theoretical and hypothetical changes in the value of trading desks' portfolios are not sufficiently close. In that situation, institutions should be required to calculate and report to competent authorities that additional capital requirement for those trading desks.

(6) When reporting the profit and loss attribution results in accordance with Article 325az(2), point (d), of Regulation (EU) No 575/2013, institutions should also highlight where the hypothetical changes and theoretical changes to the value of a trading desk's portfolio materially differ. This should help institutions to identify potential deficiencies in the calculation of the theoretical changes.

(7) When assessing compliance with the profit and loss attribution requirement, theoretical changes in a portfolio's value are compared against hypothetical changes which are calculated under the assumption of a static portfolio. That comparison aims at identifying the materiality of differences in the valuation processes of the institution's risk-measurement model producing the theoretical changes, and the valuation processes of the institution's internal systems producing the hypothetical changes. To ensure that that comparison is not affected by changes in the composition of the portfolio, the theoretical changes to a portfolio's value used in the profit and loss attribution requirement should also be calculated under the assumption of a static portfolio.

(8) To ensure consistency with international standards, the hypothetical changes in the portfolio's value that are calculated for the purpose of assessing compliance with the profit and loss attribution requirement should be aligned with the hypothetical changes in the portfolio's value, that an institution calculates for the purposes of the back-testing.

(9) Differences between the valuation processes producing hypothetical and theoretical changes in a portfolio's value may be due to omissions of certain risk factors in the risk-measurement model or simplifications of the risk-measurement model. Other differences may be due to misalignments in the data that an institution uses as inputs for determining its portfolios' value. To avoid additional sources of discrepancies

resulting from such differences in input data, institutions should be allowed to align the input data provided that some specific conditions are met.

(10) The frequency at which the results of the profit and loss attribution requirement are to be reported should be aligned to the frequency at which the modellability of the risk factors is assessed and the frequency at which the own funds requirements for market risk are reported. That way, institutions will be able to determine the own funds requirements for market risk based on consistent results for the back-testing requirements, the profit and loss attribution requirements and the assessment of modellability.

(11) The manner in which institutions should aggregate their total own funds requirements for market risk should be aligned with the international standards. Therefore, the aggregation formula should reflect the results of the profit and loss attribution requirement, including the additional capital requirement where theoretical and hypothetical changes are not sufficiently close. In addition, the aggregation formula should reflect a reduction in diversification benefits 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) In order to assist competent authorities to check compliance of institutions with this Regulation, institutions should be required to document their implementation of this Regulation.

(13) The provisions of this Regulation are closely linked to each other, since they all deal with elements to be included in changes of a trading desk portfolio's value for the purposes of calculating the own funds requirements for market risks using the alternative internal model approach. To ensure coherence between those provisions, which should enter into force at the same time, to facilitate a comprehensive understanding of those provisions and to ensure easy access to them by persons subject to the obligations set out within, it is desirable to include all the regulatory technical standards required by Article 325bf(9), third subparagraph, and Article 325bg(4), third subparagraph, of Regulation (EU) No 575/2013 in a single Regulation.

(14) This Regulation is based on the draft regulatory technical standards submitted to the Commission by the EBA.

(15) The 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 advice of the Banking Stakeholder Group established in accordance with Article 37 of Regulation (EU) No 1093/2010 of the European Parliament and of the Council[2],

[2] 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, 15.12.2020, p. 12).

HAS ADOPTED THIS REGULATION:

CHAPTER 1
TECHNICAL ELEMENTS TO BE INCLUDED IN THE ACTUAL AND HYPOTHETICAL CHANGES IN A PORTFOLIO'S VALUE FOR THE PURPOSES OF THE BACK-TESTING REQUIREMENTS

SECTION 1
TECHNICAL ELEMENTS TO BE INCLUDED IN THE ACTUAL CHANGES IN A PORTFOLIO'S VALUE

Article 1

Technical elements to be included in the actual changes in a trading desk portfolio's value for the back-testing requirements performed at trading desk level

1. For the purposes of the trading desk back-testing referred to in Article 325bf(3) of Regulation (EU) No 575/2013, institutions shall calculate the actual changes in a trading desk portfolio's value by using the same techniques, including the same pricing methods, model parametrisations and market data, as those used in the process used to calculate the end-of-day values ('end-of-day valuation process'), including the results of the independent price verification referred to in Article 105(8) of Regulation (EU) No 575/2013.

2. When calculating the actual changes in a trading desk portfolio's value, institutions shall reflect the changes in the value of that portfolio that are due to the passage of time.

3. When calculating the actual changes in a trading desk portfolio's value, institutions shall include in that value all those adjustments that have been considered in the end-of-day valuation process referred to in paragraph 1 and that are market risk related, with the exception of all of the following adjustments:

(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 in accordance with Article 33(1), point (b) or (c), of Regulation (EU) No 575/2013;

(c) additional value adjustments deducted from Common Equity Tier 1 capital in accordance with Article 34 of Regulation (EU) No 575/2013.

4. Institutions shall calculate the value of an adjustment as referred to in paragraph 3 on the basis of all positions that are assigned to the same trading desk. Institutions shall include changes in the adjustment's value only on the date on which the adjustment is calculated.

5. In addition to the exclusions laid down in paragraph 3, points (a), (b), and (c), institutions may exclude from the calculation of the actual changes in a trading desk portfolio's value an adjustment that is calculated in the end-of-day valuation process across sets of positions assigned to more than one trading desk on a net basis, where all of the following conditions are met:

(a) that adjustment is, due to its nature, calculated on a net basis across sets of positions that are assigned to more than one trading desk;

(b) the internal risk management of that adjustment is consistent with the level at which the adjustment is calculated;

(c) the institution concerned documents all of the following:

(i) the sets of positions across which the adjustment is calculated;

(ii) the reasoning underpinning the calculation of the adjustment across the sets of positions referred to in point (i);

(iii) the justification for not calculating the adjustment on the basis of positions assigned to that trading desk only.

Article 2

Technical elements to be included in the actual changes in the portfolio's value for the back-testing requirements performed at institution level

1. For the purposes of the back-testing referred to in Article 325bf(6) of Regulation (EU) No 575/2013, institutions shall calculate the actual changes in a portfolio's value by using the same techniques, including the same pricing methods, model parametrisations and market data, as those used in the end-of-day valuation process, including the results of the independent price verification referred to in Article 105(8) of Regulation (EU) No 575/2013.

2. When calculating the actual changes in a portfolio's value, institutions shall reflect the change in the value of that portfolio that are due to the passage of time.

3. When calculating the actual changes in a portfolio's value, institutions shall include in that value all the adjustments that have been considered in the end-of-day valuation process referred to in paragraph 1 and that are market risk related, with the exception of all of the following adjustments:

(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 in accordance with Article 33(1), point (b) or (c), of Regulation (EU) No 575/2013;

(c) additional value adjustments deducted from Common Equity Tier 1 capital in accordance with Article 34 of Regulation (EU) No 575/2013.

4. Institutions shall calculate the change in the value of the adjustments referred to in paragraph 3 on the basis of either of the following:

(a) all positions that are assigned to trading desks for which institutions calculate the own funds requirements for market risk in accordance with the alternative internal model approach set out in Part Three, Title IV, Chapter 1b of Regulation (EU) No 575/2013;

(b) all positions subject to the own funds requirements for market risk.

5. Institutions shall include changes in the adjustment's value only on the date on which the adjustment is calculated.

SECTION 2
TECHNICAL ELEMENTS TO BE INCLUDED IN THE HYPOTHETICAL CHANGES IN A PORTFOLIO'S VALUE REQUIREMENTS

Article 3

Technical elements to be included in the hypothetical changes in a trading desk portfolio's value for the back-testing requirements performed at trading desk level

1. For the purposes of the trading desk back-testing referred to in Article 325bf(3) of Regulation (EU) No 575/2013, institutions shall calculate the hypothetical changes in a trading desk portfolio's value by using the same techniques, including the same pricing methods, model parametrisations and market data, as those used in the end-of-day valuation process, without considering any fees and commissions.

2. When calculating the hypothetical changes in the trading desk portfolio's value, institutions shall reflect the changes in the value of the trading desk portfolio that are due to the passage of time in the same way they reflect such changes in the calculation of:

(a) the expected shortfall risk measure referred to in Article 325ba(1), point (a), of Regulation (EU) No 575/2013;

(b) the stress scenario risk measure referred to in Article 325bk of Regulation (EU) No 575/2013.

3. When calculating the hypothetical changes in a trading desk portfolio's value, institutions shall include in that value all those adjustments that have been considered in the end-of-day valuation process referred to in paragraph 1 and that are market risk related, that are calculated on a daily basis, and that are included in the institution's risk-measurement model, with the exception of all of the following adjustments:

(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 in accordance with Article 33(1), point (b) or (c), of Regulation (EU) No 575/2013;

(c) additional value adjustments deducted from Common Equity Tier 1 capital in accordance with Article 34 of Regulation (EU) No 575/2013.

4. Institutions shall calculate the value of an adjustment as referred to in paragraph 3 on the basis of all the positions assigned to that trading desk. Institutions shall include changes in an adjustment's value based on a comparison between the end-of-day adjustment's value and, assuming unchanged positions in the trading desk portfolio, the adjustment's value at the end of the subsequent day.

5. In addition to the exclusions laid down in paragraph 3, points (a), (b), and (c), institutions may also exclude from the calculation of the hypothetical changes to a trading's desk portfolio's value an adjustment that is calculated on a net basis in the end-of-day valuation process across sets of positions assigned to more than one trading desk, where all of the following conditions are met:

(a) that adjustment is, due to its nature, calculated on a net basis across sets of positions that are assigned to more than one trading desk;

(b) the internal risk management of that adjustment is consistent with the level at which the adjustment is calculated;

(c) the institution documents all of the following:

(i) the sets of positions across which the adjustment is calculated;

(ii) the reasoning underpinning the calculation of the adjustment across the sets of positions referred to in point (i);

(iii) the justification for not calculating 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 requirements performed at institution level

1. For the purposes of the back-testing referred to in Article 325bf(6) of Regulation (EU) No 575/2013, institutions shall calculate the hypothetical changes in the portfolio's value by using the same techniques, including the same pricing methods, model parametrisations and market data, as those used in the end-of-day valuation process, without considering any fees and commissions.

2. When calculating the hypothetical changes in the portfolio's value, institutions shall reflect the changes in the value of the portfolio that are due to the passage of time in the same way they reflect such changes in the calculation of:

(a) the expected shortfall risk measure referred to in Article 325ba(1), point (a), of Regulation (EU) No 575/2013;

(b) the stress scenario risk measure referred to in Article 325bk of Regulation (EU) No 575/2013.

3. When calculating hypothetical changes in a portfolio's value, institutions shall include in that value all those adjustments that have been considered in the end-of-day valuation process referred to in paragraph 1 and that are market risk related, that are calculated on a daily basis and that are included in the institution's risk-measurement model, with the exception of all of the following adjustments:

(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 in accordance with Article 33(1), point (b) or (c), of Regulation (EU) No 575/2013;

(c) additional valuation adjustments deducted from Common Equity Tier 1 capital in accordance with Article 34 of Regulation (EU) No 575/2013.

4. Institutions shall calculate the changes in the value of the adjustments referred to in paragraph 3 on the basis of either of the following:

(a) all those positions that are assigned to trading desks for which institutions calculate the own funds requirements for market risk in accordance with the alternative internal model approach set out in Part Three, Title IV, Chapter 1b of Regulation (EU) No 575/2013.

(b) all positions subject to own funds requirements for market risk.

Article 5

Documentation requirements

Institutions shall have policies and procedures in place setting out how they calculate the actual and hypothetical changes in a trading desk portfolio's value or in a portfolio's value in accordance with Articles 1 to 4 of this Regulation. Those policies and procedures shall contain all of the following elements:

(a) when describing how the actual changes in value of the portfolio concerned are calculated, an outline of 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 value of the portfolio concerned;

(b) the fees and commissions and how the exclusion referred to in Article 325bf(4), point (b), of Regulation (EU) No 575/2013 is applied;

(c) a list of all adjustments, specifying for each adjustment all of the following:

(i) a description and purpose of the adjustment;

(ii) the methodology and process used for the calculation of the adjustment;

(iii) the frequency of the calculation of the adjustment and, where the frequency is less than daily, the reasoning for such frequency;

(iv) whether the adjustment is sensitive to market risk;

(v) the sets of positions across which the adjustment is calculated and the reasons for performing the calculation across such sets;

(vi) whether and how the risk stemming from changes in the adjustment is actively hedged and which trading desk or desks are responsible for such hedging;

(vii) whether and how the adjustment is taken into account in the actual changes in the value of the portfolio concerned for the purposes of the back-testing referred to in Article 325bf(3) of Regulation (EU) No 575/2013 and the back-testing referred to in Article 325bf(6) of that Regulation;

(viii) whether and how the adjustment is taken into account in the hypothetical changes in the value of the portfolio concerned for the purposes of Articles 325bf and 325bg of Regulation (EU) No 575/2013, and an outline of how the change in the adjustment is calculated if unchanged positions in the portfolio are assumed.

CHAPTER 2
TECHNICAL SPECIFICATION OF THE PROFIT AND LOSS ATTRIBUTION REQUIREMENT

SECTION 1
CRITERIA NECESSARY TO ENSURE THAT THE THEORETICAL CHANGES AND THE HYPOTHETICAL CHANGES IN THE VALUE OF A TRADING DESK PORTFOLIO ARE SUFFICIENTLY CLOSE AND CONSEQUENCES FOR TRADING DESKS THAT DO NOT MEET THAT CONDITION

Article 6
General requirements

1. For the purposes of Article 325bg(2) of Regulation (EU) No 575/2013, institutions shall calculate, for a given trading desk's portfolio, the Spearman correlation coefficient laid down in Article 7 of this Regulation, and the Kolmogorov-Smirnov test metric laid down in Article 8 of this Regulation and, based on the results of those calculations, apply the criteria referred to in Article 9 of this Regulation. Where, according to those criteria, the theoretical changes and the hypothetical changes in the value of a trading desk portfolio are not sufficiently close, institutions shall be subject to the consequence set out in Article 10 of this Regulation.

2. For the purposes of paragraph 1, institutions may align the point in time (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 that value.

Article 7
Calculation of the Spearman correlation coefficient

1. Institutions shall calculate the Spearman correlation coefficient referred to in Article 6(1) of this Regulation by performing the following steps in the following order:

(a) they 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), institutions shall produce the corresponding time series of ranks in accordance with paragraph 2, treating the time series of the hypothetical and theoretical changes as the originating time series;

(c) they shall calculate the Spearman correlation coefficient in accordance with the following formula:

$$r_s = \frac{cov(R_{HPL}, R_{RTPL})}{\sigma_{R_{HPL}} \cdot \sigma_{R_{RTPL}}}$$

Where:

R_{HPL} = the time series of ranks produced from the time series of hypothetical changes referred to in point (b);

R_{RTPL} = the time series of ranks produced from the time series of theoretical changes referred to in point (b);

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

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

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

2. Institutions shall produce the time series of ranks referred to in paragraph 1, point (b), from an originating time series by performing the following steps in the following order:

(a) for each observation within the originating time series, institutions shall count the number of observations with a lower value than that observation within that time series;

(b) institutions shall label each observation with the number resulting from the calculation set out in point (a) increased by one;

(c) where, as a result of the labelling in accordance with point (b), two or more observations are labelled with the same number, institutions shall in addition increase the numbers of those labels with the following fraction:

$$\frac{(N-1)}{2}$$

where *N* equals the quantity of the labels with the same number;

(d) institutions shall consider as time series of ranks, the time series of the labels obtained in accordance with points (b) and (c).

3. Institutions shall calculate the standard deviation of the time series of ranks R_{HPL} in accordance with the formula laid down in point (a), the standard deviation of the time series of ranks R_{RTPL} in accordance with the formula laid down in point (b), and the covariance between those time series in accordance with the formula laid down in point (c) as follows:

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

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

$(c) cov\,(R_{HPL}, R_{RTPL}) = \frac{\sum_{i=1}^{250}\left(R_{HPL_i} - \mu_{R_{HPL}}\right)\cdot\left(R_{RTPL_i} - \mu_{R_{RTPL}}\right)}{249}$;

Where:

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

R_{HPL_i} = 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_{RTPL_i} = 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. Institutions shall calculate the Kolmogorov-Smirnov test metric referred to in Article 6(1) of this Regulation by performing the following steps in the following order:

(a) they 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) they shall calculate 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) they shall calculate the empirical cumulative distribution function of the theoretical changes in the trading desk portfolio's value from the time series of the theoretical changes referred to in point (a);

(d) they shall obtain the Kolmogorov-Smirnov test metric by calculating the maximum difference 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 purposes 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 of the number of observations within the time series with lower or equal value than the input number to the total number of observations within the time series.

Article 9

Specification of criteria necessary to ensure that the theoretical changes and the hypothetical changes in the value of a trading desk portfolio are sufficiently close

1. For the purposes of Article 325bg(2) of Regulation (EU) No 575/2013, institutions shall classify each of the trading desks as a green, orange, yellow or red zone desk in accordance with paragraphs 2 to 5.

Where a trading desk is classified as a green zone desk, theoretical changes and the hypothetical changes in the value of that trading desk's portfolio shall be considered sufficiently close.

Where a trading desk is classified as an orange, yellow or red zone desk, theoretical changes and the hypothetical changes in the value of that trading desk's portfolio shall not be considered sufficiently close.

2. A trading desk shall be classified as a 'green zone desk' where all of the following conditions are met:

(a) the Spearman correlation coefficient for the trading desk, calculated in accordance with Article 7 of this Regulation, is greater than 0,8;

(b) the Kolmogorov-Smirnov test metric for the trading desk, calculated in accordance with Article 8 of this Regulation, 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, calculated in accordance with Article 7 of this Regulation, is lower than 0,7;

(b) the Kolmogorov-Smirnov test metric for the trading desk, calculated in accordance with Article 8 of this Regulation, is greater than 0,12.

4. A trading desk shall be classified as an 'orange zone' desk where all of the following conditions are met:

(a) the trading desk is not classified as either a green or a red zone desk;

(b) the own funds requirements for all the positions assigned to that trading desk were calculated in the previous quarter based on the alternative standardised approach set out in Part Three, Title IV, Chapter 1a of Regulation (EU) No 575/2013.

5. A trading desk which is not classified as a green, orange or red zone desk, shall be classified as a 'yellow zone desk'.

Article 10

Consequences for trading desks that are classified as yellow, orange or red zone desks

1. Institutions calculating the own funds requirements in accordance with the alternative internal model approach set out in Part Three, Title IV, Chapter 1b of Regulation (EU) No 575/2013 for positions assigned to trading desks that have been classified as red, orange or yellow zone desks in accordance with Article 9 of this Regulation shall calculate, in relation to those positions, a capital surcharge in accordance with the following formula:

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

Where:

k = as specified in paragraph 2;

SA_{ima} = the own funds requirements for market risks calculated in accordance with the alternative standardised approach set out in 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 for market risks in accordance with the alternative internal model approach set out in Part Three, Title IV, Chapter 1b of Regulation (EU) No 575/2013;

IMA_{ima} = the own funds requirements for market risks calculated in accordance the alternative internal model approach set out in Part Three, Title IV, Chapter 1b 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 purposes of paragraph 1, the coefficient k shall be calculated in accordance with the following formula:

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

Where:

SA_i = the own funds requirements for market risks calculated in accordance with the alternative standardised approach set out in 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 been classified as red, orange or yellow zone desks in accordance with Article 9 of this Regulation among those for which the own funds requirements for market risks are calculated in accordance with the alternative internal model approach set out in 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 for market risks are calculated in accordance with the alternative internal model approach set out in Part Three, Title IV, Chapter 1b of Regulation (EU) No 575/2013.

3. Institutions calculating the own funds requirements for market risks in accordance with the alternative internal model approach set out in Part Three, Title IV, Chapter 1b of Regulation (EU) No 575/2013 for positions assigned to trading desks that have been classified as red or orange zone desks in accordance with Article 9 of this Regulation shall inform the competent authority thereof when reporting the results of the profit and loss attribution requirement in accordance with Article 325az(2), point (d), of Regulation (EU) No 2013/575.

Article 11

Frequency of the assessment of compliance with the profit and loss attribution requirement

Institutions shall assess compliance with the profit and loss attribution requirement on a quarterly basis for all trading desks for which those institutions have the permission referred to in Article 325az(2) of Regulation (EU) No 575/2013 to calculate the own funds requirements using internal models.

SECTION 2

TECHNICAL ELEMENTS TO BE INCLUDED IN THE THEORETICAL AND HYPOTHETICAL CHANGES IN A TRADING DESK PORTFOLIO'S VALUE FOR THE PURPOSES OF THE PROFIT AND LOSS ATTRIBUTION REQUIREMENT

Article 12

Technical elements to be included in the theoretical changes in the trading desk portfolio's value

1. For the purposes of Article 325bg of Regulation (EU) No 575/2013, institutions shall calculate the theoretical changes in a trading desk portfolio value based on a comparison between the portfolio's end-of-day value and, assuming unchanged positions in the trading desk portfolio, the value of that portfolio at the end of the subsequent day.

2. Institutions shall calculate the theoretical changes in a trading desk portfolio by using the same techniques, including the same pricing methods, model parametrisations and market data as those used in the risk measurement model.

3. Theoretical changes in a trading desk portfolio value shall only include the changes in the value of all risk factors included in the risk-measurement model to which institutions apply the scenarios of future shocks.

Article 13

Technical elements to be included in the hypothetical changes in a trading desk portfolio's value for the profit and loss attribution requirement

For the purposes of Article 325bg of Regulation (EU) No 575/2013, institutions shall calculate hypothetical changes in a trading desk portfolio's value in accordance with Article 3 of this Regulation.

Article 14

Alignment of data for the profit and loss attribution requirements

1. For the purposes of Article 325bg of Regulation (EU) No 575/2013, institutions may replace the value of input data for a given risk factor used in the calculation of the theoretical changes in the trading desk portfolio's value with the value of the input data of the same nature for the same risk factor used in the calculation of the hypothetical changes in the trading desk portfolio's value, provided either of the following conditions is met:

(a) differences in the input data are due to the fact that the data are sourced from different data providers;

(b) differences in the input data are due to the fact that the input data are extracted from the market data source at different times during the same business day.

2. For the purposes of Article 325bg of Regulation (EU) No 575/2013, institutions may replace the value of a risk factor used in the calculation of the theoretical changes in the trading desk portfolio's value with 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 the input data;

(b) the risk factor has been derived from the input data using 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 point (b) have been rebuilt in the valuation systems used in the risk measurement model in order to derive the value of the risk factor which is used in the calculation of the theoretical changes in the trading desk portfolio's value.

Article 15

Documentation requirements

1. Institutions shall have in place policies and procedures setting out how they calculate the theoretical changes in accordance with Articles 12 and 14 of this Regulation, which shall contain an explanation of how the theoretical changes in the trading desk portfolio's value are calculated for modellable and non-modellable risk factors.

2. When designing the procedures for aligning the data as referred to in Article 14 of this Regulation, 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 14 of this Regulation with the theoretical changes in the trading desk portfolio's value with the alignments referred to in Article 14 of this Regulation, and they shall document that comparison;

(b) they shall assess the effect of the alignments on the metrics of the tests used for assessing compliance with the profit and loss attribution requirement referred to in Articles 7 and 8 of this Regulation and document that assessment.

3. Institutions shall document any adjustments, performed in accordance with Article 14 of this Regulation, to the input data for the risk factors within the calculation of the theoretical changes in the trading desk portfolio, as well as the rationale for such adjustments.

SECTION 3

OWN FUNDS REQUIREMENTS CALCULATED IN ACCORDANCE WITH THE ALTERNATIVE INTERNAL MODEL APPROACH

Article 16

Calculation of the own funds requirements for market risk under the alternative internal model approach for institutions having trading desks

Institutions calculating the own funds requirements for market risks in accordance with the alternative internal model approach set out in Part Three, Title IV, Chapter 1b of Regulation (EU) No 575/2013 for the positions assigned to some of their trading desks shall calculate the own funds requirements for all their trading book positions and all their non-trading book positions generating foreign exchange or commodity risks as the sum of the results of the formulas set out in points (a) and (b) as follows:

$$(a) min\{IMA_{ima} + Capital\ surcharge + C_U ; SA_{all\ desks}\}$$

$$(b) max\{IMA_{ima} - SA_{ima}; 0\}$$

Where:

IMA_{ima} = IMA_{ima} as specified in Article 10 of this Regulation;

SA_{ima} = SA_{ima} as specified in Article 10 of this Regulation;

Capital surcharge = the capital surcharge calculated in accordance with Article 10 of this Regulation;

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 institutions calculate the own funds requirements for market risks in accordance with the alternative internal model approach set out in Part Three, Title IV, Chapter 1b, of Regulation (EU) No 575/2013;

$SA_{all\ desks}$ = the own funds requirements for market risks of all trading book positions and all non-trading book positions generating foreign exchange or commodity risks in accordance with the alternative internal model approach set out in Part Three, Title IV, Chapter 1a of Regulation (EU) No 575/2013.

Article 17

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, 14.6.2022

For the Commission
The President
Ursula VON DER LEYEN