



European Securities and
Markets Authority

Final Report

Guidelines on the validation and review of Credit Rating Agencies' methodologies



Table of Contents

Definitions, Legislative References and Acronyms	3
1 Executive Summary	4
2 Feedback Statement	5
2.1 General remarks	5
2.2 Related costs and benefits	9
2.3 ESMA's expectations	9
2.4 Discriminatory power.....	13
2.5 Predictive power.....	14
2.6 Historical robustness	15
2.7 Limited quantitative evidence	16
2.8 Identifying and addressing anomalies.....	17
3 Cost-Benefit Analysis	20
3.1 Executive summary	20
3.2 Reasons for publication.....	20
3.3 Objective of the Guidelines.....	21
3.4 Impact of the Guidelines.....	21
3.4.1 CP responses.....	21
3.4.2 Baseline	22
3.4.3 Stakeholders	23
3.4.4 CBA	24
Annex I – Guidelines	27

Definitions, Legislative References and Acronyms

ESMA	European Securities and Markets Authority
CRAs	Registered Credit Rating Agencies
Consultation Paper	Consultation Paper on Guidelines on the validation and review of Credit Rating Agencies' methodologies
Guidelines	Guidelines on the validation and review of Credit Rating Agencies' methodologies
Discussion Paper	Discussion Paper on the validation and review of Credit Rating Agencies' methodologies
CBA	Cost-Benefit Analysis
CRA Regulation	Regulation (EC) No 1060/2009 of the European Parliament and of the Council of 16 September 2009 on credit ratings agencies (as last amended by Regulation (EU) No 462/2013)
RTS on rating methodologies	Commission Delegated Regulation (EU) No 447/2012 of 21 March 2012 supplementing Regulation (EC) No 1060/2009 of the European Parliament and of the Council on credit rating agencies by laying down regulatory technical standards for the assessment of compliance of credit rating methodologies
Feedback Statement	Feedback Statement on the Discussion Paper on the validation and review of CRAs' methodologies
CAP	Cumulative Accuracy Profile
ROC	Receiver Operator Characteristic
ESMA Regulation	Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Securities and Markets Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/77/EC

1 Executive Summary

Reasons for publication

The European Securities and Markets Authority (ESMA) published on 13 July 2016 a Consultation Paper on Guidelines on the validation and review of Credit Rating Agencies (CRAs)' methodologies (Consultation Paper)¹.

In this Final Report, ESMA considers the responses received to the Consultation Paper during Q3 2016. ESMA has decided to publish guidelines on the validation and review of CRAs' methodologies (Guidelines) based on its supervisory experience of CRAs' application of Articles 8(3) and 8(5) of the CRA Regulation, Articles 7 and 8 of the RTS on rating methodologies, and the views expressed to ESMA following the Consultation Paper and the Discussion Paper on the validation and review of CRAs' methodologies (Discussion Paper)². The Guidelines also reflect discussions with various stakeholders, including industry participants (mainly through feedback given to the relevant Discussion and Consultation Papers, as well as an Open Hearing held on this topic on 25 January 2016).

ESMA is of the view that guidelines on how CRAs should meet Articles 8(3) and 8(5) of the CRA Regulation will help to ensure a consistent application of validation and review measures for demonstrating the discriminatory power, predictive power and historical robustness of CRAs' methodologies, as well as to identify measures that CRAs should implement when validating and reviewing methodologies with limited quantitative evidence.

Contents

Section 2 includes the Feedback Statement on the CP, **Section 3** the Cost-Benefit Analysis (CBA) on the publication of the Guidelines and **Annex I** the Guidelines.

Next Steps

The Guidelines in Annex I will be translated into the official EU languages and published on the ESMA website. The guidelines will become effective two months after their publication on ESMA's website in all the official languages of the EU.

¹ ESMA/2016/1121 Consultation Paper on Guidelines on the validation and review of Credit Rating Agencies' methodologies https://www.esma.europa.eu/sites/default/files/library/2016-1121_cp_guidelines_on_validation_review_of_cras_methodologies.pdf

² ESMA/2015/1735 Discussion Paper on the validation and review of Credit Rating Agencies' methodologies https://www.esma.europa.eu/sites/default/files/library/2015-1735_discussion_paper_on_validation_final.pdf

2 Feedback Statement

1. This section provides a summary of the responses to the consultation and ESMA's view on those responses.

2.1 General remarks

2. ESMA received in total twelve responses, of which four were confidential. Responses were received from CRAs (9 responses), one consulting company, a public authority and a professionals (CRAs)' association.
3. **ESMA's response:** ESMA would like to thank all respondents for their comments.
4. Most of the respondents provided general remarks to the Consultation Paper. The majority of them focused on the expected effects of the Guidelines.

"Comply or Explain" principle

5. Some respondents noted that the Guidelines will offer consistency in the validation practices used, which in turn will increase the quality of the ratings assigned by CRAs, and the confidence of the market participants in the rating industry. Other respondents welcomed the flexibility offered by the Guidelines in various cases, including flexibility in the applied validation techniques, the setting of thresholds for quantitative validation techniques, the identification of limited quantitative evidence cases and the consideration for data enhancement and discriminatory power demonstration techniques under limited quantitative evidence cases. One respondent interpreted this flexibility on applied validation techniques through a 'comply or explain' principle.
6. **ESMA's response:** With regard to the 'comply or explain' interpretation of the flexibility on applied validation techniques, ESMA would like to stress that the CRAs should comply at all times with the regulatory requirements as laid down in Articles 8(3) and 8(5) of the Regulation (EC) No 1060/2009 (CRA Regulation) and Articles 7 and 8 of the Commission Delegated Regulation (EU) No 447/2012 (RTS on rating methodologies). As clarified in the Guidelines, in case a CRA chooses not to use a measure that ESMA typically expects to be used, it should use another measure that meets the regulatory requirements, and document its justification for not using the measures that ESMA typically expects and indicate how the measure(s) it has chosen meet the regulatory requirements.

The use of quantitative techniques and predictive power

7. Some respondents welcomed the additional clarity provided in the Guidelines on the reasons for focusing on quantitative techniques, the role of qualitative techniques in the validation of credit rating methodologies and the use of expert judgement by CRAs.

8. One respondent appreciated the confirmation that it is not the intention of the Guidelines to change the nature of credit ratings as defined by each CRA. The same respondent commented that even though its credit ratings are not predictive in nature, it will adapt its practices with a view to demonstrating the principles underlying discriminatory power, predictive power and historical robustness.
9. Another respondent argued that the definition of default rate expectations under the predictive power section of the Guidelines has the potential to interfere with the content and methodology of ratings, and is not required by the CRA Regulation. This respondent also noted that its ratings are forward-looking opinions about unlikely events, express creditworthiness as a relative rank order and are not predictive of a specific frequency of default or loss. The respondent added that its definition of credit ratings is permitted by law and remains unchanged since its registration with ESMA. The same respondent was concerned that the result of the Guidelines will be that its rating committees will start to assign ratings based on default expectations. This would be in opposition to its current practice of peer analysis, and consequently an important change to its methodology. The respondent continued that default rates can vary significantly through cycles and provided an example of a 'B' rating. According to its definition, the default rate could be from near to zero (no deterioration in the business and economic environment) up to one-year default levels of 20% (for sectors most vulnerable to the deterioration in the business environment), without being out of line with its definition. The respondent agreed that ratings' performance should be the primary measure by which to judge the performance of a methodology. It further argued that for ratings which are ordinal rankings, that ranking can, and should, be quantifiably tested in a more uniform way across the industry. Finally, the respondent stated that ESMA has developed a view that can lead to activity and behaviour that reintroduces expectations that are at best difficult to fulfil for its ratings given their ordinal nature.
10. In respect of predictive power techniques, another respondent expressed its view that a measure that seeks absolute targets would not be appropriate since it does not target specific default or loss rates for its rating categories. Moreover, the same respondent stressed that the approach set in the Guidelines creates pressure that could lead to a harmonisation of credit ratings if CRAs were to shy away from challenging statistical results.
11. **ESMA's response:** With regard to the predictive power requirements of the Guidelines and the related concerns, ESMA maintains its view that the Guidelines would not change the product that CRAs issuing ordinal credit ratings offer, as explained in detail in paragraph 8 of the Feedback Statement on the Discussion Paper on the validation and review of CRAs' methodologies (Feedback Statement)³.

With regard to the comments on interference, harmonisation and definition of credit ratings, ESMA has stressed several times that the Guidelines do not imply or suggest

³ ESMA/2016/1122 Feedback Statement on the Discussion Paper on the validation and review of Credit Rating Agencies' methodologies https://www.esma.europa.eu/sites/default/files/library/2016-1122_feedback_statement_on_cp_cra_guidelines.pdf

interference with the content, product or rating philosophy of CRA's credit ratings or methodologies (e.g. paragraph 8 of the Feedback Statement and paragraph 12 of the Guidelines). CRAs can include in their methodologies any factors/criteria/assumptions/models they deem relevant to their approach (e.g. default expectations or peer analysis). Subsequently, the rating analysts and any other person involved in the assignment of credit ratings are expected to perform their analysis according to the applicable rating methodologies.

With regard to the definition of default rate expectations as well as measures that seek absolute targets, and the argument that these are not required by the relevant regulatory requirements or appropriate for rank ordering ratings, ESMA has not received from respondents any alternative measure on how predictive power should be demonstrated and that is not already included under discriminatory power or historical robustness. ESMA is confident that the approach envisaged in the Guidelines is in line with market expectations, similar regulatory frameworks and relevant academic works, and most significantly, will enhance the validation process of CRAs by having a more consistent and objective approach for identifying and assessing when a credit rating methodology is not performing as expected, and decide on the appropriate next steps, if any.

With regard to the variation of the default rates through cycles, ESMA has noted in the Guidelines that CRAs could also define their expectation through ranges, thus giving flexibility and allowing CRAs to implicitly recognize the impact of potential factors that could influence the expectations of CRAs on rating behaviour. Therefore, ESMA has provided further flexibility in the Guidelines in describing how CRAs should define their internal expectations (e.g. by statistical calculation or by reference to the historical performance of its credit ratings). ESMA will assess the rationale and appropriateness of CRAs' chosen approaches through its on-going supervision, in order to ensure the quality of the credit ratings and a level-playing field.

12. A respondent noted that the Guidelines remain mainly focused on quantitative techniques and argued that quantitative measures are tools in an analysis that is ultimately subjective in nature and should be primarily guided by judgement. This respondent also presented a number of limitations with the use of statistical tests. Moreover, the same respondent recommended that ESMA should proactively support CRAs making qualitative judgements in the validation and review of methodologies, even where such judgment leads to a different conclusion from those reached through any statistical test.
13. **ESMA's response:** With regard to quantitative measures and the recommendation to ESMA to support CRAs making qualitative judgment on validation and review of methodologies, ESMA maintains its view that i) good quality validation is the outcome of the processes, governance, measures, and equally important, the expert judgement used by CRAs, ii) quantitative measures provide further objectivity to the validation process and iii) good quality validation strikes a balance between the application of

quantitative and qualitative technique, as explained in detail in paragraphs 14 and 15 of the Feedback Statement.

With regard to the limitations of statistical tests, ESMA maintains its view that all statistical tests have certain assumptions but they have the benefit that the assumption can be clearly and transparently articulated when interpreted, as explained in detail in paragraphs 18, 20 and 21 of the Feedback Statement.

With regard to the value added by the tests proposed in the Guidelines, if a CRA is of the opinion that these specific measures do not add any valuable information in their validation process, they may use other statistical measures / tests that provide better insight into the validation of their methodologies, by providing the relevant justification for the measures that ESMA typically expects. With regard to the number of tests and their relationship with the likelihood of false positives, ESMA has noted several times that good quality validation strikes a balance between the application of quantitative and qualitative techniques (e.g. paragraph 14 of the Feedback Statement and paragraph 10 of the Guidelines). It should also be noted that ESMA typically expects only four quantitative measures: accuracy ratio, binomial test, chi-square test and transition (migration) matrices with movement analysis.

The use of quantitative techniques with limited quantitative evidence

14. One respondent noted that the validation techniques should take into account the nature, size and complexity of CRAs' business and structure, especially for new and smaller CRAs, given their limited track record. This respondent further argued that validation techniques envisaged by the Guidelines on limited quantitative evidence methodologies will be applicable only in a few market segments and the applicability will be even more limited for CRAs entering new market segments. Therefore, the respondent advised that in these cases the qualitative analysis performed by CRAs should be taken into account, which builds on the experience of CRAs as well as the feedback received during the consultation of the methodologies.
15. **ESMA's response:** With regard to the comment that validation techniques should take into account the nature, size and complexity of CRAs' business and structure, ESMA notes that the ultimate goal of these Guidelines is the enhancement of the validation process used by CRAs, and consequently of the quality of the credit ratings of all CRAs regardless of their individual characteristics. At the same time, ESMA acknowledges the challenges in validating methodologies with limited quantitative evidence and the Guidelines take this into account through proportionate measures. As noted in paragraph 16 of the Feedback Statement, when validating methodologies with limited quantitative evidence CRAs may need to apply more interpretation and expert judgment than they would have to in the validation of methodologies with sufficient quantitative evidence. ESMA does nonetheless expect that CRAs will make appropriate assessment and take appropriate action in order to ensure that they have made sufficient effort to perform a robust validation, particularly in the demonstration of historical robustness and discriminatory power which is a requirement under Article 8

of the RTS on rating methodologies (paragraph 17 of the Feedback Statement). ESMA also notes that it does not consider as a qualitative validation technique the subjective assessment of methodologies by CRAs' responsible persons without explanation of the considerations and conclusions made (paragraph 10 of the Guidelines).

16. The same respondent suggested that the first-time validation of a methodology should undergo a stringent process while the review may be performed in a lighter format if the envisaged changes are not material to the methodology.
17. **ESMA's response:** With regard to the difference between first-time validation and subsequent reviews of a methodology, ESMA has clarified that the Guidelines refer to both the validation and review of a CRA's methodologies. CRAs may decide that one of the two processes could be more demanding.

2.2 Related costs and benefits

Q1: Has ESMA captured all related costs and benefits in its analysis under Annex II?

18. Please refer to section 3.4.1 of the CBA for the main comments received by the respondents.
19. **ESMA's response:** ESMA thanks respondents who have provided further data and has reflected this information in its CBA.

2.3 ESMA's expectations

Q2: Do you agree that it is appropriate to set out certain measures as ones that ESMA "typically expects"? If not, please explain why.

20. Most of the respondents agreed that the Guidelines should include measures that ESMA typically expects a CRA to use. One respondent further agreed with the discretion given for the complementary measures, so that CRAs do not over rely on particular measures and outcomes.
21. **ESMA's response:** ESMA will include in the Guidelines measures that it typically expects a CRA to use, as well as examples of complementary measures which a CRA should consider, among other appropriate complementary measures.
22. Some respondents noted that there is still a risk that the measures which ESMA typically expects will be considered as de facto standard measures and this could potentially yield unintended consequences.
23. **ESMA's response:** ESMA has reflected the concern in the use of de facto measures in the Guidelines by mirroring current good industry practice when setting out the measures it 'typically expects', and giving CRAs discretion in the further complementary measures they may choose to apply. Where a CRA chooses to diverge

from the measures ESMA ‘typically expects’, it should document its rationale, explaining how it meets the regulatory requirements (Articles 8(3) and 8(5) of the CRA Regulation and Articles 7 and 8 of the RTS on rating methodologies), as clarified in the Guidelines. The examples of complementary measures are also not intended to be an exhaustive list. ESMA believes that the suite of measures that CRAs will use, including qualitative analysis and expert judgement, alongside the quantitative measures that ESMA expects, will ensure that no measure is over-dependent on.

24. One of these respondents called for more flexibility; more specifically, this respondent asked for a list of ‘alternative measures’ to be part of the Guidelines. This list should include the measures suggested by the respondents of the Discussion Paper and considered by ESMA as meeting the regulatory requirements, but not finally mentioned in the Guidelines since there was a lack of industry usage. The aim of such a list would be to expand the measures that ESMA typically expects.
25. **ESMA’s response:** ESMA is of the opinion that the measures included in the Guidelines (typically expected measures and complementary measures) provide the necessary flexibility for CRAs to choose measures that best fit to their situation. As explained in the Guidelines, a CRA may choose not to use the measures that ESMA typically expects, if it can justify why it does not use these measures and how the alternative measures it has chosen meet the regulatory requirements. In addition, the complementary measures included in the Guidelines are examples of measures a CRA should consider, among other appropriate complementary measures. ESMA does not intend to list other potential complementary measures in order to promote flexibility among CRAs as well as because this list would inevitably be incomplete.
26. The same respondent requested ESMA to define in the Guidelines the criteria for limited quantitative evidence.
27. **ESMA’s response:** As noted in the Guidelines, a CRA should establish itself the minimum number of ratings and / or defaults that a methodology should have in order to be validated in accordance with Article 7 of the RTS on rating methodologies (sufficient quantitative evidence). CRAs should internally establish the relevant policies and procedures for deciding if there is limited quantitative evidence to support the predictive power of a methodology. Such an approach allows CRAs the necessary flexibility in order to decide if their available data could support the performance of the validation measures expected when there is sufficient quantitative evidence.
28. One respondent requested further guidance on the measures that can be considered complementary measures.
29. **ESMA’s response:** All measures that meet the regulatory requirements, as clarified in the Guidelines, can be considered complementary measures. For example, for the validation of methodologies with sufficient quantitative evidence, measures based on the clarifications provided in the Guidelines’ introductory paragraph (paragraphs 17, 20

and 25) of each of the three dimensions (discriminatory power, predictive power and historical robustness respectively), can be considered as complementary measures.

30. Another respondent commented that it would be beneficial if CRAs published a comparable set of measures demonstrating discriminatory power, predictive power and historical robustness.
31. **ESMA's response:** ESMA notes this view related to further disclosure. However, these recommendations sit outside the CRA Regulation and consequently ESMA does not require CRAs to publish the results of their validation. ESMA notes that market participants may find useful information on the performance of CRAs through the statistics of the central repository (CEREP⁴) established by ESMA. ESMA would welcome CRAs to publish, on a voluntary basis, further information regarding the outcome of their methodologies' validation.
32. One respondent noted that for demonstrating the discriminatory power through the measures that ESMA typically expects, a certain amount of quantitative evidence (ratings and defaults) is needed.
33. Another respondent noted that the validation of a new or materially changed methodology would not require the same kind of validation testing as the periodic review of in-use methodologies. According to the respondent, this would not be realistic since for the new or materially changed methodologies there is typically a lack of performance data. Therefore, proportionality should be considered by ESMA for such cases that CRAs cannot apply the measures that ESMA typically expects.
34. **ESMA's response:** ESMA has a dedicated section in the Guidelines for cases of limited quantitative evidence. ESMA understands that for new methodologies there is no performance data; however, this does not automatically mean that quantitative measures cannot be applied (for example, please refer to the data enhancement techniques for cases of limited quantitative evidence). With regard to the materially changed methodologies⁵, CRAs would have to justify why they would disregard previous performance data (which most probably would have already taken into account when deciding the implementation of material changes to the methodology) and potentially consider this case as limited quantitative evidence. As already stated, ESMA is of the view that the validation of the methodologies should include both qualitative and quantitative techniques. ESMA does not consider as a qualitative validation technique the subjective assessment of methodologies by the CRAs' responsible persons without explanation of the considerations and conclusions made.

⁴ <https://cerep.esma.europa.eu/cerep-web/homePage.xhtml>

⁵ ESMA notes that question 7 in document 'Questions and Answers - Implementation of the Regulation (EU) No 462/2013 on Credit Rating Agencies' (ESMA/2015/1877) refers to Articles 8(5a) and 14(3).

Q3: Where a CRA diverges from measures ESMA typically expects to be used, do you agree that it should document its rationale and explain how it meets the regulatory requirements? If not, please explain why.

35. Most of the respondents agreed that where a CRA does not use measures that ESMA typically expects, the CRA should document its justification for not using these measures and how the measures it has chosen meet the regulatory requirements, as clarified in the Guidelines.
36. **ESMA's response:** ESMA will note in its Guidelines that where a CRA does not use measures that ESMA typically expects, a CRA should document its justification for not using these measures and how the measures it has chosen meet the regulatory requirements (Articles 8(3) and 8(5) of the CRA Regulation and Articles 7 and 8 of the RTS on rating methodologies), as clarified in the Guidelines.
37. One respondent requested further information on how ESMA would determine if a measure, other than those it typically expects, meets the regulatory requirements.
38. **ESMA's response:** ESMA will determine if a measure meets the regulatory requirements through the clarifications it has provided in the Guidelines. For example, for the validation of methodologies with sufficient quantitative evidence, ESMA will assess such measures based on the clarifications provided in the Guidelines' introductory paragraph (paragraphs 17, 20 and 25) of each of the three dimensions (discriminatory power, predictive power and historical robustness respectively). In any case, the burden of proof is on the supervised entities and ESMA will assess the justifications provided by them.
39. Another respondent noted that by explaining the rationale for deviating from ESMA expected measures, a documentation requirement to ESMA has been created.
40. **ESMA's response:** ESMA is of the view that the justifications to be provided by CRAs, when they are not using measures that ESMA typically expects, are of paramount importance for assessing the quality of the validation of the methodologies of the CRAs. ESMA does not expect that this documentation requirement will be burdensome to CRAs; ESMA would anyway expect that CRAs document the reasons for using the techniques included in their validation policies and procedures.
41. A respondent commented that for the complementary measures, CRAs should not document the rationale every time such measures are used but it should suffice to document the reasons for using each measure only once.
42. **ESMA's response:** ESMA requires in the Guidelines such justifications only in cases where a CRA does not use measures that ESMA typically expects. As a result, the Guidelines do not set such requirements for the complementary measures but as mentioned above, ESMA would anyway expect that CRAs document the reasons for

using the techniques included in their validation policies and procedures. ESMA agrees that CRAs do not have to document their rationale every time a measure is used.

2.4 Discriminatory power

Q4: Do you agree that where a CRA does not use the Cumulative Accuracy Profile (CAP) curve, the Receiver Operator Characteristic (ROC) curve should be added as an alternative measure that ESMA should typically expect? If not, please explain why.

43. Most of the respondents agreed that ROC curve should be added as an alternative measure that ESMA should typically expect since the accuracy ratio can be calculated from both the ROC and the CAP curves.
44. **ESMA's response:** ESMA will include in the Guidelines the ROC curve as an alternative measure to the CAP curve that it typically expects, in order to allow flexibility for CRAs to decide the calculation method of the accuracy ratio.
45. One respondent argued that there is no benefit in adding the ROC curve as an alternative measure since the accuracy ratio adequately summarizes the discriminatory power of rating methodologies and it would be unlikely that the examination of the curve could provide a different conclusion from the one drawn through the accuracy ratio.
46. **ESMA's response:** ESMA agrees that the accuracy ratio adequately summarizes the discriminatory power of rating methodologies. In addition, ESMA sees value on the calculation of the ROC or the CAP curve when validating CRAs' methodologies. For example, the visual examination of the curves could further enhance the understanding of potential weaknesses of the methodologies.
47. Another respondent argued that it would be beneficial to define for all CRAs in advance the specific time horizon over which their methodologies should be able to rank order rated entities as well as that the publication of the distribution of observed default rates per rating grade and asset class would be welcomed.
48. **ESMA's response:** With regard to the time horizon of the methodologies, ESMA notes that, in accordance to Article 23 of the CRA Regulation, it cannot interfere with the content of credit ratings or methodologies. With regard to the publication of the distribution of observed default rates per rating grade and asset class, ESMA notes that these statistics are publicly available at the CEREP. ESMA would welcome CRAs to publish, on a voluntary basis, further information regarding the outcome of their methodologies' validation.
49. Other respondents noted that when there is limited quantitative evidence, these curves as well as the accuracy ratio cannot be calculated.
50. **ESMA's response:** In limited quantitative evidence cases, ESMA acknowledges the challenge of demonstrating the discriminatory power of the methodologies. In the

Guidelines, ESMA provides some measures which CRAs should consider when assessing the discriminatory power in these circumstances.

2.5 Predictive power

Q5: Do you agree that ESMA should include a reference to qualitative measures under potential complementary measures? If not, please explain why.

51. Most of the respondents agreed that a reference to qualitative measures under potential complementary measures should be included in the Guidelines with regard to the demonstration of the predictive power.
52. **ESMA's response:** ESMA will include in the Guidelines a reference to qualitative measures under potential complementary measures with regard to the demonstration of the predictive power.
53. One respondent noted that CRAs which assign credit ratings that refer to creditworthiness measures other than default probabilities should also have the ability to include qualitative measures as complementary measures.
54. **ESMA's response:** ESMA agrees that CRAs which assign credit ratings that refer to creditworthiness measures other than default probabilities should also have the ability to include qualitative measures as complementary measures and has made this point explicit in the Guidelines.
55. Some respondents provided general remarks in response to this question. One respondent noted that CRAs should be free to decide which qualitative measures to use. Another respondent recommended that ESMA should make clear that the classification of qualitative measures as complementary does not mean that these measures are of lesser importance than quantitative measures and that it is not necessary for ESMA to prescribe specific qualitative measures. A different respondent argued that tests are inputs into a process that is qualitative in nature and a CRA should take a holistic approach in combining a range of inputs as part of its validation.
56. **ESMA's response:** ESMA notes that for the validation of methodologies of both sufficient and limited quantitative evidence it has included qualitative measures as complementary ones. In some cases, ESMA has provided some examples of these supplementary qualitative measures but CRAs may choose different ones. In addition, ESMA has made clear in the Guidelines that good quality validation strikes a balance between the application of quantitative and qualitative techniques, that both kinds of techniques can provide valuable insight into the performance of methodologies and that the validation of the methodologies should include both qualitative and quantitative techniques. ESMA also made clear that quantitative measures should not solely drive a validation process and that validation outcomes should not mechanically rely on quantitative measures.

57. One respondent noted that for ratings which refer to creditworthiness measures other than default probabilities, comparable measures of predictive power would be welcomed, so that statistics would remain comparable, since market participants and policymakers tend to view them interchangeably. Another respondent argued that in the proposed Guidelines of the Consultation Paper it is implied that ESMA expects a different validation process in the case of credit ratings that refer to default probabilities and a different one for credit ratings that refer to creditworthiness measures other than default probabilities.
58. **ESMA's response:** For credit ratings which refer to creditworthiness measures other than default probabilities, ESMA has not specified in the Guidelines the predictive measures it typically expects or provided examples of complementary measures. CRAs that assign such ratings should choose the measures that in their judgement are most relevant for demonstrating the predictive power of such methodologies (by comparing the expected behaviour of the credit ratings to the observed results) and they should document the rationale for their choices. In cases where a CRA chooses to demonstrate the predictive power of such a methodology through the measures that ESMA typically expects for credit ratings which refer to default probabilities, the rationale for such a choice should be documented and ESMA will assess this rationale.

2.6 Historical robustness

Q6: Do you agree that the Population / System Stability Index is more appropriate as a complementary measure? If not, please explain why.

59. Most of the respondents agreed that the Population / System Stability Index is more appropriate as a complementary measure for demonstrating the historical robustness.
60. **ESMA's response:** ESMA will include in the Guidelines the Population / System Stability Index as a complementary measure under historical robustness.
61. One respondent argued that the Population / System Stability Index does not add any further value beyond a transition matrix since the index reduces overall system stability to a single number while a transition matrix provides an understanding of rating stability at a more granular level. Another respondent argued that the index provides an indication of the shift as opposed to a reason for the shift, thus an unfavorable index value suggests further review activity.
62. **ESMA's response:** ESMA sees value in the calculation of the index since it objectively summarizes the extent of all rating changes to a single number. Based on this number, CRAs can further review, if necessary, their methodologies for understanding the reasons behind these changes. ESMA understands that by applying the measures that ESMA typically expects for demonstrating the historical robustness of the methodology (i.e. by producing transition (migration) matrices and analyzing the movement of the credit ratings), a CRA could have an indication of the magnitude of the rating movements. However these measures are calculated mainly to understand the

direction of these changes. By calculating the index (or other stability statistics), CRAs have a clear view on the magnitude of the rating changes.

63. Another respondent suggested as an additional approach for demonstrating the historical robustness of a methodology a comparison of the methodology or model-implied rating to the actual observed rating over an extended time period.
64. **ESMA's response:** ESMA would like to thank the respondent for suggesting another approach for demonstrating the historical robustness of a methodology. ESMA notes this approach, along with the other approaches suggested by respondents under the Discussion Paper (please refer to the Feedback Statement), as measures CRAs may choose to use as complementary ones.

2.7 Limited quantitative evidence

Q7: Do you agree that where a CRA chooses to use data enhancement techniques it should be subject to verifying data quality and safeguarding the characteristics of the rated population, including its default rate? If not, please explain why.

65. Most of the respondents agreed that CRAs should verify the data quality and safeguard the characteristics of the rated population when using data enhancement techniques.
66. **ESMA's response:** ESMA will note in its Guidelines that when CRAs use data enhancement techniques, they should, where applicable, verify the data quality and safeguard the characteristics of the rated population.
67. One respondent argued that when a CRA uses data enhancement techniques, it should adopt reasonable measures so that the information it uses is of sufficient quality and from reliable sources. The same respondent disagreed with the creation of hypothetical transactions since the outcome of the validation would be determined by the formation of the test (if the hypothetical transactions are in accordance with the methodology then the validation techniques would be passed; analogously, if the hypothetical transactions are not in accordance with the methodology then the validation techniques would not be passed).
68. Another respondent noted the challenge of introducing significant assumptions when creating hypothetical transaction and the potential for inaccurate data when using third party data.
69. **ESMA's response:** With regard to the challenges noted by the respondents, ESMA reiterates, as in the Feedback Statement, that it acknowledges the limitations to potential data enhancement techniques and it expects that CRAs will tackle or take into account these challenges when considering / applying these approaches. The techniques that ESMA has put forward are a list of non-exhaustive examples, and while ESMA believes that these examples for enhancing data are generally low risk, it is ultimately a decision for a CRA to assess whether data enhancements (including ones

not noted in the proposed guidelines) are an appropriate tool to aid in the validation of its limited quantitative evidence methodologies.

70. Some respondents argued that data enhancement techniques are mainly applicable for entities / sectors where data is to a large extent publicly available.
71. **ESMA's response:** ESMA is of the view that not all data enhancement techniques are mainly applicable for entities / sectors where data is to a large extent publicly available. This may be the case for the first example of the Guidelines, i.e. third party data. However, the two other examples of the Guidelines could be applied as well for entities / transactions and sectors where data is not to a large extent publicly available.
72. Other respondents noted that, while data quality reviews could be performed, CRAs cannot be held responsible for the quality of data received from external parties.
73. Another respondent commented that since data enhancement techniques are used in limited quantitative evidence cases, it is likely that the characteristics of the rated population will be changed. Some respondents commented that in practice it can be difficult to get data proxies which are perfectly representative.
74. A respondent asked for guidance on the term 'safeguarding' and how ESMA will evaluate whether characteristics of the rated population have been sufficiently 'safeguarded'.
75. **ESMA's response:** With regard to the third party data, ESMA expects CRAs to verify the data quality and safeguard the characteristics of the rated population. ESMA understands that the quality of the third party data does not depend on the CRAs that make use of them, however CRAs should arrange the necessary processes in order to verify the quality of these data. ESMA also understands that i) in most cases CRAs may not be able to find perfectly representative third party data and ii) through data enhancement techniques the characteristics of the rated population could be changed. However, CRAs should make sure that when they use data enhancement techniques, they should safeguard the characteristics of the rated population and not allow significant changes to these characteristics. Each CRA has to define internally how it will safeguard these characteristics; ESMA will monitor these practices through its on-going supervision.

2.8 Identifying and addressing anomalies

Q8: Do you agree that a CRA needs to adopt a consistent approach in setting thresholds for both qualitative and quantitative validation techniques? If not, please explain why.

76. Some respondents agreed that when a CRA chooses to set thresholds for its qualitative validation techniques, then such an approach should be consistent with the approach for setting the quantitative thresholds.

77. **ESMA's response:** ESMA will note in its Guidelines that when a CRA chooses to set thresholds for its qualitative validation techniques, then such an approach should be consistent with the approach for setting the quantitative thresholds with regard to the Guidelines' requirements (for example, the thresholds should be appropriately documented and recorded and the Review Functions of CRAs should be responsible for deciding these thresholds).
78. Other respondents noted that it would be difficult to set thresholds for qualitative validation techniques since thresholds typically have a quantitative nature while such techniques rely on experience and judgement.
79. **ESMA's response:** ESMA does not require from CRAs to set thresholds for their qualitative validation techniques and leaves this to the discretion of CRAs.
80. Two respondents argued that the threshold setting approaches between quantitative and qualitative techniques are not necessary / likely to be consistent due to the different natures of these techniques, thus different approaches should be allowed.
81. **ESMA's response:** If a CRA chooses to set thresholds for its qualitative validation techniques, then ESMA does not expect the threshold-setting approaches for both quantitative and qualitative validation techniques to be technically consistent but both should follow the Guidelines' requirements under section 5.3.
82. Another respondent argued that thresholds need to take into account various factors such as the rating methodologies, the product range and the CRA-specific business case. A different respondent mentioned that it uses data from a scoring model for establishing thresholds for its quantitative validation techniques. Another respondent commented that thresholds (e.g. significance levels) could vary across tests and thresholds could be set only after rigorously back-testing the performance of the tests.
83. **ESMA's response:** ESMA will not determine how CRAs should set their thresholds, however these thresholds should be i) relevant to the methodology being validated, ii) a challenging and consistently applied component of the validation process by being set at appropriate levels and iii) adequately justified. ESMA will not require CRAs to have the same thresholds across their quantitative validation techniques, however CRAs should adequately justify their threshold setting decisions, including potential differences in thresholds for techniques that have similar characteristics.
84. A respondent suggested that for quantitative measures a CRA could have two thresholds: one for an in-depth analysis of anomalies and one for revising the methodology if it is exceeded repeatedly.
85. **ESMA's response:** ESMA will not determine the number of thresholds that CRAs shall set for each of their quantitative techniques, however, as indicated in the Guidelines, CRAs should distinguish systemic deviations from non-systemic ones and explain how the predefined actions would differ in such a case.

86. One respondent argued that expert judgement should be a possibility for CRAs since setting unique thresholds across asset classes will be difficult.
87. **ESMA's response:** With regard to the expert judgement, please refer to ESMA's opinion under the section of the general remarks.

3 Cost-Benefit Analysis

3.1 Executive summary

88. ESMA notes that a general obligation exists for CRAs under Article 8(3) and Article 8(5) of the CRA Regulation, as further detailed in articles 7 and 8 of the RTS on rating methodologies, to use credit rating methodologies which shall be subject to validation and review. For this purpose, CRAs shall be sufficiently resourced to enact such requirements and for that employ staff with the skills, knowledge and expertise and have processes, measures and policies necessary for the discharge of the responsibilities allocated to them.
89. ESMA considers that meeting ESMA's expectations with regard to the application of Article 8(3) and Article 8(5) of the CRA Regulation will result in a consistent application of validation and review measures for demonstrating the discriminatory power, predictive power and historical robustness of methodologies, as well as identifying measures that CRAs should implement when validating and reviewing methodologies with limited quantitative evidence.
90. Although stakeholders are likely to incur some initial set-up and on-going validation / review costs, ESMA considers that these arise from Level 1 and Level 2 provisions. Further, ESMA considers that the Guidelines will allow for a more efficient allocation of existing resources in the CRAs' Review Functions.

3.2 Reasons for publication

91. Pursuant to Article 16(2) of ESMA Regulation, ESMA shall, where appropriate, conduct open public consultation regarding the guidelines and, where appropriate, analyze the potential costs and benefits relating to the proposed guidelines. Such analyses must be proportionate in relation to the scope, nature and impact of the proposed guidelines.
92. ESMA published on 13 July 2016 a CP with the aim to gather information from CRAs and other interested parties in preparing the Guidelines and the analysis of the potential related costs and benefits.
93. In preparing the CBA of the Guidelines, ESMA has followed ESMA's CBA template and methodology, under which ESMA establishes a baseline to determine the incremental obligation deriving from the Guidelines. This CBA sets out an assessment of the potential costs and benefits of the Guidelines.
94. The CBA tries to evaluate, to the extent possible, the effect of the Guidelines on the stakeholders directly and indirectly affected, as well as the indirect costs that the Guidelines may create. However, it may be difficult to disentangle the effects of the CRA Regulation and the RTS on rating methodologies, for which impact assessments

have been already performed and published by the European Commission and ESMA, and the effects of these Guidelines.

95. Although stakeholders are likely to incur some initial set-up and on-going validation / review costs, ESMA considers that these arise from Level 1 and Level 2 provisions. Further, ESMA considers that the Guidelines will allow for a more efficient allocation of existing resources in the CRAs' Review Functions.

3.3 Impact of the Guidelines

96. This section presents a qualitative assessment of the potential costs and benefits of the Guidelines.

3.3.1 CP responses

97. It should be noted that ESMA received a limited number of responses from stakeholders. These responses are summarized below.
98. Most of the respondents agreed that ESMA captured the main costs and benefits in its preliminary high-level CBA.
99. With regard to the costs, some respondents argued that ESMA did not capture the cost of obtaining, if necessary, third party data, and of the subsequent analysis. Other respondents noted that ESMA did not capture the cost of outsourcing (in part or fully) the validation of the methodologies. Another respondent expressed its view that the implementation of the Guidelines may also require IT and data infrastructure costs.
100. One respondent provided a detailed breakdown of the estimated costs of implementing the measures from the Guidelines. With regard to additional set-up costs related to researching, developing, testing and finalizing new metrics as well as documenting the new processes and establishing procedures for identifying and addressing anomalies, the respondent estimated that these costs would be up to EUR 100 000, plus a sunk cost of re-tasking 15% of certain resources' man-hours for a 3-months period. With regard to ongoing costs related to additional resources required to apply the new processes and procedures, the respondent estimated that these costs would result to the hiring of one additional senior staff member, or an incremental requirement in certain resources of around 15%, for an approximate total estimated annual cost of around EUR 275 000.
101. With regard to the benefits, one respondent argued that through the Guidelines, the competition among the CRAs will increase and this will affect positively the quality of the ratings. A different respondent argued that the benefits of the Guidelines depend on how they will be implemented (if, for example, the focus is on the quantitative measures, then the quality of the ratings, according to the respondent, will decrease).

102. It is worth noting that the costs outlined by the respondents include not only an estimate of the cost of compliance with these Guidelines but also estimated costs of compliance with the existing requirements of the CRA Regulation and the RTS on rating methodologies, which should have already been borne by CRAs and are not an effect of the Guidelines. However, based on the information provided, it is not possible to disentangle the impacts which arise as a consequence of the CRA Regulation and the RTS on rating methodologies from the impacts of the Guidelines.

3.3.2 Baseline

103. From a legal perspective the legislation to consider is included in the following paragraphs.

104. In respect of the requirements related to CRAs' methodologies, Article 8(3) of the CRA Regulation indicates that 'a credit rating agency shall use rating methodologies that are rigorous, systematic, continuous and subject to validation based on historical experience, including back-testing'. Furthermore, Article 8(5) of the CRA Regulation states that 'a credit rating agency shall monitor credit ratings and review its credit ratings and methodologies on an ongoing basis and at least annually, in particular where material changes occur that could have an impact on a credit rating. A credit rating agency shall establish internal arrangements to monitor the impact of changes in macroeconomic or financial market conditions on credit ratings'.

105. In addition, Article 7 of the RTS on rating methodologies specifies that for 'assessing that a credit rating methodology is subject to validation based on historical experience including back testing' the following requirements shall be met:

'(1) A credit rating agency shall use credit ratings methodologies that are supported by quantitative evidence of the discriminatory power of the credit rating methodology.

(2) A credit rating agency shall use credit rating methodologies that describe the following:

(a) the historical robustness and predictive power of credit ratings issued using the relevant methodology over appropriate time horizons and across different asset classes;

(b) the degree to which the assumptions used in the rating model deviate from the actual default and loss rates.

(3) The validation of a credit rating methodology shall be designed to:

(a) examine the sensitivity of a credit rating methodology to changes in any of its underlying assumptions, including qualitative or quantitative factors;

(b) perform an adequate and appropriate assessment of historic credit ratings produced by means of that credit rating methodology;

(c) use reliable inputs, including appropriate size of the data samples;

(d) take appropriate account of the main geographical areas of the rated entities or financial instruments for each of the credit rating categories rated such as structured finance, sovereign, corporates, financial institutions, insurances, public finance.

(4) A credit rating agency shall have processes in place to ensure that systemic credit rating anomalies highlighted by back-testing are identified and are appropriately addressed.

(5) In the process of reviewing credit rating methodologies, a credit rating agency shall include:

(a) regular credit rating and performance reviews on rated entities and financial instruments;

(b) in-sample and out-of-sample testing;

(c) historic information on validation or back-testing’.

106. Similarly, Article 8 of the RTS on rating methodologies specifies that ‘in cases where there is limited quantitative evidence to support the predictive power of a credit rating methodology, a credit rating agency shall be exempt from complying with Article 7 of this Regulation if it:

(a) ensures that credit rating methodologies are sensible predictors of credit worthiness;

(b) applies internal procedures in a consistent way and over time and across different market segments;

(c) has processes in place to ensure that systemic credit rating anomalies highlighted by back-testing are identified and are appropriately addressed’.

3.3.3 Stakeholders

107. We believe there are two types of stakeholders that could potentially be affected by the Guidelines:

108. **Some CRAs** may need to establish additional quantitative measures in order to meet the requirements of the Guidelines where their current approaches cannot be demonstrated to result in the same outcome as the outcome of the measures ESMA typically expects. This may require additional resources in their Review Functions and may also result in training costs for staff. CRAs may also have to perform further

documentation of decisions. This should be incorporated into already established procedures, so a minimal effect is expected.

109. **ESMA** may incur additional staff costs for determining whether the policy objectives of the Guidelines are being met.

3.3.4 CBA

110. The purpose of this section is to provide a CBA of the obligations considered incremental against a baseline that is aligned with the Level 1 and Level 2 baseline described above. In this regard, ESMA considers that the costs for CRAs related to validation which are described below arise from Level 1 and Level 2 provisions.

111. As stated in the preliminary CBA annexed to the CP, only a qualitative assessment of costs and benefits of the Guidelines can be developed since quantitative data on the cost that may be incurred was very limited.

Policy objective	Outlining how CRAs should demonstrate rating methodologies' 'discriminatory power', 'historical robustness' and 'predictive power' and that their methodologies are 'sensible predictors of credit worthiness' where there is limited quantitative evidence.
Technical proposal	Clarifying the measures that ESMA typically expects a CRA to use and examples of complementary measures which a CRA should consider, among other appropriate complementary measures.
<i>Benefits</i>	<p>Better understanding of the objectives of the CRA Regulation through:</p> <ul style="list-style-type: none"> - A consistent application of validation and review measures for demonstrating the discriminatory power, predictive power and historical robustness of methodologies, as well as identifying measures that CRAs should implement when validating and reviewing methodologies with limited quantitative evidence. - Further clarity with respect to ESMA's expectations for the registered CRAs as well as those entities considering applying for registration as a CRA. <p>Better quality of credit ratings and credit methodologies through:</p> <ul style="list-style-type: none"> - An improvement in the quality of the quantitative measures used in validation across the industry. This should help improve the overall quality of validation performed by CRAs and subsequently the quality of credit rating methodologies and credit ratings, which should result in a benefit to users of ratings. Through the increase

	<p>in the quality of ratings, it also increases the confidence of the market participants in the rating industry.</p> <ul style="list-style-type: none"> - Sufficient flexibility to the CRAs for choosing the approaches that are the most relevant and appropriate to their business, size and activity areas. - Clarifications related to the roles of quantitative techniques and qualitative techniques in the validation of credit rating methodologies and the use of expert judgement by CRAs.
<p><i>Compliance costs</i></p> <p>Initial set-up costs (one-off)</p> <p>Ongoing costs</p> <p>Initial set-up costs (one-off)</p>	<p>Some CRAs may incur initial set-up and ongoing validation / review costs.</p> <p>Quantitative measures costs</p> <p>Some CRAs may need to:</p> <ul style="list-style-type: none"> - Introduce new quantitative measures as well as processes for identifying and addressing anomalies in order to meet the requirements of the Regulation (where their current approaches cannot be demonstrated to result in the same outcome as the outcome of the measures ESMA <i>typically expects</i>). - Incur additional resource and training costs in their Review Functions. - Develop / amend and document relevant policies and procedures. - Incur additional resource and training costs in their Review Functions. - Perform further documentation of decisions. This should be incorporated into already established procedures, so a minimal effect is expected. <p>IT and data related costs</p> <p>Some CRAs may incur one-off and on-going IT and data costs to improve current arrangements for the demonstration of compliance with the objectives set in the Guidelines including:</p> <ul style="list-style-type: none"> - CRAs may incur one-off IT costs for complying with the objectives of the Guidelines in relevant IT systems and data infrastructures.

Ongoing costs	<ul style="list-style-type: none"> - Third party data providers associated costs in case where the CRA chooses to use data enhancement techniques (where their current approaches cannot be demonstrated to result in the same outcome as the outcome of the measures ESMA typically expects). - Costs of maintenance of the IT and data infrastructure.
<i>Cost to supervisor</i>	<p>ESMA may incur additional staff costs for determining whether the policy objectives of the Guidelines are being met.</p> <p>The magnitude of costs is likely to depend on the contribution of CRAs for the demonstration of compliance with the objectives set in the Guidelines.</p>

Annex I – Guidelines

1 Scope

Who?

1. These guidelines apply to Credit Rating Agencies (CRAs) registered in accordance with the Regulation (EC) No 1060/2009 of the European Parliament and of the Council of 16 September 2009 on credit ratings agencies (as last amended by Regulation (EU) No 462/2013 – CRA Regulation). These guidelines do not apply to certified CRAs.

What?

2. These guidelines apply in relation to articles 8(3) and 8(5) of the CRA Regulation and to the Commission Delegated Regulation (EU) No 447/2012 of 21 March 2012 supplementing Regulation (EC) No 1060/2009 of the European Parliament and of the Council on credit rating agencies by laying down regulatory technical standards for the assessment of compliance of credit rating methodologies (RTS on rating methodologies).

When?

3. These guidelines will become effective two months after their publication on the European Securities and Markets Authority's (ESMA's) website in all official languages of the EU.

2 Definitions, Legislative References and Acronyms

CRAs	Registered Credit Rating Agencies
CRA Regulation	Regulation (EC) No 1060/2009 of the European Parliament and of the Council of 16 September 2009 on credit ratings agencies (as last amended by Regulation (EU) No 462/2013)
RTS on rating methodologies	Commission Delegated Regulation (EU) No 447/2012 of 21 March 2012 supplementing Regulation (EC) No 1060/2009 of the European Parliament and of the Council on credit rating agencies by laying down regulatory technical standards for the assessment of compliance of credit rating methodologies
ESMA	European Securities and Markets Authority
ESMA Regulation	Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Securities and Markets Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/77/EC
CAP	Cumulative Accuracy Profile
ROC	Receiver Operator Characteristic

3 Purpose

4. The purpose of these guidelines is to clarify ESMA's expectations and ensure consistent application of Article 8(3) of the CRA Regulation which states that '*a credit rating agency shall use rating methodologies that are rigorous, systematic, continuous and subject to validation based on historical experience, including back testing*'. These guidelines focus on the last part of Article 8(3), i.e. '*subject to validation based on historical experience, including back testing*'. These guidelines also clarify ESMA's expectations and ensure consistent application of Article 8(5) of the CRA Regulation which states, *inter alia*, that a CRA shall '*review its credit ratings and methodologies on an ongoing basis and at least annually*'.
5. ESMA is of the view that guidelines on how CRAs should meet Articles 8(3) and 8(5) of the CRA Regulation will help to ensure a consistent application of validation and review measures for demonstrating the discriminatory power, predictive power and historical robustness of methodologies, as well as to identify measures that CRAs should implement when validating and reviewing methodologies with limited quantitative evidence.
6. These guidelines support the RTS on rating methodologies, which set out the rules to be used in the assessment of compliance of credit rating methodologies with the requirements laid down in Article 8(3) of the CRA Regulation, and in particular Articles 7 and 8 of the RTS on rating methodologies.
7. These guidelines clarify ESMA's expectations of the terms '*discriminatory power*', '*historical robustness*' and '*predictive power*' used in Article 7 of the RTS on rating methodologies. In addition, these guidelines also clarify ESMA's expectations as to how CRAs with limited quantitative evidence can ensure that their methodologies are '*sensible predictors of credit worthiness*', as stated in Article 8 of the RTS on rating methodologies while being exempted from complying with Article 7. Finally, ESMA also clarifies its expectations on how CRAs should meet the requirement in both Articles 7 and 8 of the RTS on rating methodologies that the CRAs shall have '*processes in place to ensure that systemic credit rating anomalies highlighted by back-testing are identified and are appropriately addressed*'.
8. These guidelines refer to both the validation and review of a CRA's methodologies. In the remainder of this document both the words 'validation' and 'review' are used interchangeably instead of 'validation and review' for ease of reading.
9. The word 'methodology' is used in this document as to mean all components that a credit rating methodology may consist of, including models, key rating assumptions and criteria.
10. ESMA recognizes that good quality validation is the outcome of the processes, governance, measures, and equally important, the expert judgment used by CRAs. ESMA is of the view that good quality validation strikes a balance between the

application of quantitative and qualitative techniques. ESMA understands that both kinds of techniques can provide valuable insight into the performance of methodologies, and that, dependent on the circumstances (e.g. asset class or data availability), the degree to which quantitative and qualitative techniques are applied may differ. ESMA is of the view that the validation of the methodologies should include both qualitative and quantitative techniques. ESMA does not consider as a qualitative validation technique the subjective assessment of methodologies by the CRAs' responsible persons without explanation of the considerations and conclusions made.

11. ESMA has focused these guidelines on quantitative measures, as this is where the industry appears least clear on ESMA's expectations. A benefit of quantitative measures is that they provide further objectivity to the validation process, particularly as it can be harder to recognize and articulate the inherent assumptions used in interpreting qualitative measures. However, this does not mean that ESMA believes that quantitative measures should solely drive a validation process and ESMA does not expect that validation outcomes should mechanistically rely on quantitative measures.
12. These guidelines are solely in relation to the validation of the CRAs' methodologies and, per article 23 of the CRA Regulation, do not imply or suggest interference with the content of credit ratings or methodologies.

4 Compliance and reporting obligations

4.1 Status of the guidelines

13. This document contains guidelines pursuant to Article 16 of Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Securities and Markets Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/77/EC (ESMA Regulation). In accordance with Article 16(3) of the ESMA Regulation, CRAs must make every effort to comply with the guidelines.

4.2 Reporting requirements

14. ESMA will assess the application of these guidelines by the CRAs through its ongoing supervision and monitoring of CRAs' periodic reporting to ESMA. These guidelines apply without prejudice to the guidelines on periodic information to be submitted to ESMA by CRAs (ESMA/2015/609) which require CRAs to report semi-annually the internal review function reports and the outcomes of the methodology reviews, including information on any back-testing performed in the period, details of any key findings as well as actions taken by the CRA as a result.

5 Guidelines on the validation and review of CRAs' methodologies

15. The guidelines include:

- a. Measures that ESMA *typically* expects a CRA to use.
- b. **Examples of complementary** measures which a CRA should consider, among other appropriate complementary measures.

16. The measures⁶ that will be used as part of the validation process should be included in a CRA's validation documentation. Where a CRA does not use measures that ESMA typically expects, a CRA should document its justification for not using these measures and how the measures it has chosen meet the regulatory requirements (Articles 8(3) and 8(5) of the CRA Regulation and Articles 7 and 8 of the RTS on rating methodologies), as clarified in these guidelines.

5.1 Validation of Methodologies with Sufficient Quantitative Evidence

5.1.1 Discriminatory Power

17. The discriminatory power of a methodology relates to its ability to rank order the rated entities in accordance to their future status (defaulted or not defaulted) at a predefined time horizon.
18. In demonstrating the discriminatory power of a methodology, ESMA typically expects a CRA to use the cumulative accuracy profile (CAP) or the receiver operator characteristic (ROC) curve in conjunction with the accuracy ratio⁷.
19. A CRA should consider complementing the above measures with additional quantitative measures, for example the Kolmogorov-Smirnov statistic, and qualitative measures, such as the distribution of the observed default rates.

5.1.2 Predictive Power

20. The predictive power of a methodology can be demonstrated by comparing the expected behaviour of the credit ratings to the observed results.

⁶ The term "measures" is used throughout the guidelines in the sense of the CRA Regulation, i.e. internal measures taken by a CRA in order to comply with such Regulation.

⁷ In these guidelines, the term 'accuracy ratio' also encompasses the Gini coefficient or other similar measures.

21. For performing this comparison, ESMA typically expects a CRA to define internally its expectations (absolute numbers or ranges) per credit rating category with regard to the measure of creditworthiness its credit ratings refer to.
22. A CRA may use different approaches for defining its internal expectations (e.g. by statistical calculation or by reference to the historical performance of its credit ratings).
23. For credit ratings which refer to default probabilities, ESMA typically expects a CRA to compare the expected probabilities of default to the observed default rates using the binomial and the chi-square tests. A CRA should consider complementing these measures with further quantitative measures, for example the Brier Score or the Vasicek one-factor model test, as well as any qualitative measures that are most appropriate for the methodologies' validation.
24. For credit ratings which refer to creditworthiness measures other than default probabilities, ESMA typically expects a CRA to compare the expected behaviour of the credit ratings to the observed results using relevant quantitative measures and to document the rationale for its choices. A CRA should consider complementing these measures with further relevant quantitative measures as well as any qualitative measures that are most appropriate for the methodologies' validation.

5.1.3 Historical Robustness

25. The historical robustness of a methodology can be demonstrated by assessing other dimensions that do not relate to its discriminatory or predictive power, such as the stability of the credit ratings assigned by the methodology, the stability of the characteristics of the rated entities / instruments covered by the methodology and the distribution of the assigned credit ratings.
26. As a quantitative measure, ESMA typically expects a CRA to demonstrate the stability of the credit ratings assigned by its methodologies by producing transition (migration) matrices and analyzing the movement of the credit ratings. Examples of this type of analysis include the upgrade / downgrade / diagonal ratios as well as statistics that demonstrate the absolute degree of change, the direction of change or a combination.
27. A CRA should consider complementing these measures with further qualitative analysis, for example the analysis of the ratings' distributions, univariate analysis of key determinants of credit ratings, the benchmarking of the ratings to external credit risk measures (e.g. ratings of other CRAs, credit default swaps spreads, bond yields), and the use of quantitative measures such as the Population / System Stability Index.

5.2 Validation of Methodologies with Limited Quantitative Evidence

28. A CRA should establish itself the minimum number of ratings and / or defaults that a methodology should have in order to be validated in accordance with Article 7 of the RTS on rating methodologies. CRAs should internally establish the relevant policies and procedures for deciding if there is limited quantitative evidence to support the predictive power of a methodology. These policies and procedures should at a minimum define the responsible persons / parties for taking this decision as well as the relevant criteria that this decision will be based on.

29. A CRA should, as part of the process of validating its methodologies with limited quantitative evidence, consider enhancing the data sample in order to, if possible, apply Article 7 of the RTS on rating methodologies. A CRA should consider data enhancement techniques (subject to, where applicable, verifying data quality and safeguarding the characteristics of the rated population, including its default rate), for example:

- expanding the data sample with the use of third party data (if available);
- combining (if meaningful) asset classes or sub-asset classes with similar risk characteristics in order to perform joint validation assessments; or
- creating (if possible) hypothetical transactions that can be used to expand the available data.

A CRA should document its decision making process for determining whether or not to use data enhancement techniques.

30. A CRA should also consider techniques enabling it to perform quantitative measures for demonstrating the discriminatory power of its methodologies. A CRA should consider relevant techniques, for example:

- the use of a 'relaxed' default definition for the purposes of validation;
- combining rating categories; or
- using an extended time period.

A CRA should document its decision making process and set out the rationale for the methods it uses to enhance its ability to perform quantitative measures for demonstrating the discriminatory power of its methodologies, including whether it has rejected the use of a method.

31. ESMA typically expects a CRA to produce transition (migration) matrices and analyze the movement of the credit ratings as well as benchmark the ratings to external credit risk measures (e.g. ratings of other CRAs, credit default swaps spreads, bond yields).
32. A CRA should consider complementing these measures with other historical robustness measures such as those noted in section 5.1.3.

5.3 Identifying and addressing anomalies

33. A CRA should internally set thresholds for its quantitative validation techniques in order to identify and address potential anomalies highlighted by back-testing.
34. These thresholds should be appropriately documented and recorded. The Review Function of the CRAs should be responsible for deciding these thresholds, by making sure that they are i) relevant to the methodology being validated, ii) a challenging and consistently applied component of the validation process by being set at appropriate levels and iii) adequately justified.
35. A CRA should provide appropriate justifications if thresholds differ per asset class, especially in cases where the rating categories have the same characteristics across asset classes.
36. A CRA should predefine and justify the actions that deviations from the thresholds will result in. ESMA does not expect that a breach of a threshold will always lead to methodology changes.
37. A CRA should distinguish systemic deviations from non-systemic ones and explain how the predefined actions would differ in such a case.
38. In case a CRA chooses to set thresholds for its qualitative validation techniques, the above paragraphs under this section apply.