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| 17 November 2015 | ESMA/2015/1736 |

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| Reply form for the Discussion Paper on the  validation and review of Credit Rating Agencies’ methodologies |
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| Date: 17 November 2015 |

Responding to this paper

The European Securities and Markets Authority (ESMA) invites responses to the specific questions listed in the ESMA Discussion Paper on the validation and review of Credit Rating Agencies’ methodologies, published on the ESMA website.

*Instructions*

Please note that, in order to facilitate the analysis of the large number of responses expected, you are requested to use this file to send your response to ESMA so as to allow us to process it properly. Therefore, ESMA will only be able to consider responses which follow the instructions described below:

* use this form and send your responses in Word format (pdf documents will not be considered except for annexes);
* do not remove the tags of type <ESMA\_ QUESTION\_VR\_CRA\_1> - i.e. the response to one question has to be framed by the 2 tags corresponding to the question; and
* if you do not have a response to a question, do not delete it and leave the text “TYPE YOUR TEXT HERE” between the tags.

Responses are most helpful:

* if they respond to the question stated;
* contain a clear rationale, including on any related costs and benefits; and
* describe any alternatives that ESMA should consider

**Naming protocol**

In order to facilitate the handling of stakeholders responses please save your document using the following format:

ESMA\_VR\_CRA\_NAMEOFCOMPANY\_NAMEOFDOCUMENT.

E.g. if the respondent were ESMA, the name of the reply form would be:

ESMA\_VR\_CRA\_ESMA\_REPLYFORM or

ESMA\_VR\_CRA\_ESMA\_ANNEX1

To help you navigate this document more easily, bookmarks are available in “Navigation Pane” for Word 2010 and in “Document Map” for Word 2007.

***Deadline***

Responses must reach us by **19 February 2016.**

All contributions should be submitted online at [www.esma.europa.eu](http://www.esma.europa.eu) under the heading ‘Your input/Consultations’.

***Publication of responses***

All contributions received will be published following the end of the consultation period, unless otherwise requested. **Please clearly indicate by ticking the appropriate checkbox in the website submission form if you do not wish your contribution to be publicly disclosed. A standard confidentiality statement in an email message will not be treated as a request for non-disclosure.** Note also that a confidential response may be requested from us in accordance with ESMA’s rules on access to documents. We may consult you if we receive such a request. Any decision we make is reviewable by ESMA’s Board of Appeal and the European Ombudsman.

***Data protection***

Information on data protection can be found at [www.esma.europa.eu](http://www.esma.europa.eu) under the headings ‘Legal notice’ and ‘Data protection’.

# Introduction

Please make your introductory comments below, if any:

< ESMA\_COMMENT\_VR\_CRA\_1>

**[TheMarketsTrust](http://www.themarketstrust.com/)** is an innovative financial technology company situated at the heart of the European and global financial centre of Luxembourg. Our core competences include:

* Strategic IT Assessment, IT Architecture, Enterprise Cloud Solutions, EU’s FIWARE Platform
* Design and Development of Software for Quantitative Finance & Credit Risk Management
* “Big Data” Technology, Machine Learning and Advanced Linguistics in the Finance Domain.

We are supported by the research team of [**prof. Wim Schoutens**](http://www.schoutens.be/), Leuven University, Belgium. Professor Schoutens is the leading expert in Europe in the area of valuation and risk measurement of Hybrid Securities. He has co-authored several books on the topic and has worked as an independent advisor to Tier 1 banks as well as to the European Commission.

The company provides advisory services to financial institutions in areas like Credit Risk, Quantitative Risk Management, Strategy & Digital Innovation and Regulatory Compliance.

Partially funded by an innovation grant under the most competitive scheme “Open Disruptive Innovation” of the EU’s Horizon 2020 SME Instrument, our team has conducted a Feasibility Study concerning the technical and business development of a system and service for credit risk evaluation of hybrid securities and structured financial instruments. The developed prototypes and the other results of that study give us confidence that it is feasible, from a technical perspective, to design, develop and implement a software platform capable to compute credit rating assessments (for both pre-issue and existing securities) in a fully **data-driven** manner, relying on recent methodological and technological advances such as large-scale machine learning, extreme value risk modelling, behavioural finance and natural language processing. The envisioned software platform will allow multi-source data integration in **real- or near-real time**. This includes the capability to directly exchange day-to-day information with the issuers’ IT systems, validate and cross-check with third-party sources and generate financial reports and projections. This will ensure, to a large extend, **independence from the issuer** by processing raw data from source. Furthermore this will allow the system users to identify immediately any relevant movement in the underlying data, be it fundamental (like a new report released by the regulator or increased volatility in the security issuer’s earnings), market (for instance a change in the stock price of the issuer) or unstructured (for example a financial media news article describing a complex legal case in which the issuer is involved). At the core of the prospective system is a machine learning algorithm for automated risk scenario elicitation that links high-dimensional risk factors sets (from fundamental, market, or unstructured data sources) to multiple future credit risk events (such as defaults, breach of collateral or covenants, skipped payment, degeneration of market value of securities or credit spreads, etc.). The target of that algorithm is a continuous optimisation of the predictive power of the rating system, through **maximisation of objective KPIs** such as the ones described in the ESMA Discussion Paper “On the validation and review of Credit Rating Agencies’ methodologies”.

Our view-point is that, in the medium and long-term, the business model of the CRAs will shift towards technologically-powered, data-driven and self-adaptive services that minimise service costs while providing unbiased, methodologically sound and forward-looking credit risk assessments. In that respect, we view the current discussions and hopefully the subsequent regulatory implementation of objective, quantitative measures for rating quality as an excellent stepping stone in that direction.

< ESMA\_COMMENT\_VR\_CRA\_1>

1. Do you agree with ESMA’s view regarding the discriminatory power of methodologies?

<ESMA\_QUESTION\_VR\_CRA\_1>

In our view, the discriminatory power of a methodology is an important criteria for validation. While we strongly believe that there is a need for better public disclosure of methodology validation KPIs from the CRAs, we would argue against too narrow standards. Below we present a an examples that illustrate our point and we suggest an alternative formulation.

In Section 5.1., paragraph 36, ESMA narrowly defines the future status of creditworthiness as “defaulted / non-defaulted”.

1. We recall that during the 2007/08 financial crisis, numerous banks in the EU faced an extremely dangerous situation of insufficient capital and drying liquidity. In order to prevent a complete meltdown of the banking sector, many governments stepped in and bailed-out the banks, often at the expense of the taxpayer. In the aftermath of the crisis, the European Commission and the Regulatory Authorities have implemented measures to improve the resiliency of the banking sector. Hybrid Securities have come to play an increasingly important role as a market-based tool to achieve this objective. For example, Contingent Convertible Bonds (**CoCo Bonds**) have increased in popularity as banks have sought to meet new, higher regulatory requirements; the total volume of such bonds grows at an annual rate of 15%. More generally, a European Commission Communication (EU COM 2010/579) explores a framework making it possible for the debt of a bank in distress to be converted into equity (**Bonds with Bail-In Option**). For example, the German Bank Restructuring Act that came into force at the beginning of 2011 permits regulators to make bond-holders share in the bank‘s losses by having them write off claims. These developments invalidate the narrow definition of future status of creditworthiness for financial sector entities strictly as “defaulted / non-defaulted” in two main ways. First, historic data on defaults is technically skewed through the government bail-outs. In other words, an event that would count as default in economic sense as well as under the current regulatory regime was not, technically speaking, a default in 2007/8. Second, the increased “hybridisation” of bank issued securities raises the question about the very definition of default (for example, a temporary coupon cancellation or maturity extension is, from an investor perspective, equivalent to restructuring / default, while legally speaking it would not be a breach of obligations). Similar developments are underway in the insurance industry, where, due to the Solvency II Framework Directive (EU COM 2009/138) and subsequent regulations, complex hybrid securities with loss absorption and coupon cancellation features are also increasing rapidly.
2. In many asset classes, credit defaults constitute a low-probability, high-impact event. Hence, past default data within the asset class is extremely scarce, making it impossible to compute meaningful rating KPIs based on binary outcomes (default / non-default). From a methodological perspective, the obvious approach is to analyse also “near-misses” and build a modelling framework that allows for extrapolation of the “near-misses” to a default likelihood. A good example is the asset class of Catastrophe Bonds (**CAT Bonds**), instruments that transfer losses resulting from extreme events, such as large hurricanes, to the capital markets. For the insurance company, they constitute a natural hedge against fundamental social and environmental challenges, like anthropogenic climate change risk or increasing longevity. From a rating methodology standpoint, the “future status of creditworthiness” of such instruments should be based on the event occurrence likelihood, not necessarily on the binary outcome.
3. The **European Long-Term Investment** Funds Regulation (EU COM 2015/760) sets up a new type of collective investment framework allowing investors to put money into companies and infrastructure projects that need long-term capital. The regulation is part of the more general EU efforts to improve economic competitiveness through innovative structured finance. The lack of past experience for such structured financial products, combined with the long-term nature of these instruments means that the validation KPIs need to be chosen carefully in order to target the specific asset class.

Narrow standards put small / alternative CRAs at a disadvantage, since they often tend to work in a market niche in which they are highly specialised. The above examples illustrate that the narrow definition of “future status of creditworthiness” as (default / non-default) would eventually lead to the fact that small CRAs working in such niches would disclose mostly meaningless figures.

Our preferred alternative includes allowing the CRAs to choose an appropriate quantitative measure for the “future status of creditworthiness”, subject to the following conditions:

* The measure must be based on observable credit-related events, including defaults, breach of collateral or covenants, skipped payment, market value of relevant securities, credit spreads or reported accounting figures
* The measure must be computed with a methodologically sound and fully transparent (publically disclosed) formula
* The measure must be standardised between 0 and 1

The above definition includes, as a special case, the narrow (default/non-default) case. The quantitative measure for future status of creditworthiness would be, in that special case, simply the binary 1=default / 0=non-default. In a bit more complex setting, rating agencies that assess with their ratings both the loss likelihood and the loss severity might choose a quantitative measure of, for example, (1-Recovery Rate) for defaulted securities and 0 for non-defaulted. This would also fit the above definition, provided that the Recovery Rate can be computed from observable variables like market prices or accounting figures.

The well-known “Expected Default Frequency” (EDF) measure from KVM (now part of the rating agency Moody’s) could also fit into the definition, provided Moody’s chooses to disclose publically the exact computational methodology as well as the exact input data figures (which is currently not the case, as the EDF measure is proprietary for the company). We would like to note that it is feasible to construct similar measures based on public data (latest financial reports and market prices) only.

We believe that our suggestion will contribute to the transparency of the CRA industry, by forcing the market participants to disclose their objective definition of “credit risk”.

<ESMA\_QUESTION\_VR\_CRA\_1>

1. Do you agree that the Accuracy Ratio, as derived from the CAP curve, is the minimum statistical measure that a CRA should use as part of its validation processes for demonstrating the discriminatory power of its methodologies?

<ESMA\_QUESTION\_VR\_CRA\_2>

The Accuracy Ratio as derived from the CAP curve is a widely applied discriminatory power measure and as such belongs to the minimum set of methodology validation disclosures to be produced. We would like to note that the Accuracy Ratio in practice depends on the number of rating notches chosen in the calculation. For example, many rating agencies currently produce “outlooks” and “watch-lists” and report that these, when added as notches to the CAP curve, increase significantly the Accuracy Ratios.

In our opinion, the CRAs should disclose:

* Mandatory: The CAP Curve and the Accuracy Ratio over a fixed number of rating notches set up by the regulator (for example, 9 notches for long-term ratings)
* Optional: The CAP Curve Accuracy Ratio over any other combination of notches chosen by the CRA

<ESMA\_QUESTION\_VR\_CRA\_2>

1. Do you agree that complementary measures such as the Kolmogorov-Smirnov statistic and the ROC curve (along with a confusion matrix) add further information to the discriminatory power of methodologies? If not, please explain why.

<ESMA\_QUESTION\_VR\_CRA\_3>

We view additional disclosures on the discriminatory power as potentially beneficial; yet we believe these should be optional disclosures.

<ESMA\_QUESTION\_VR\_CRA\_3>

1. Are there additional quantitative measures that CRAs should use and which would add further insight into the discriminatory power of methodologies? If yes, please explain the measures and your rationale.

<ESMA\_QUESTION\_VR\_CRA\_4>

Often, a rating methodology consists of not just one method but a suite of methods (e.g. scorecards) built on different segments of the issuer population. There are multiple reasons for the multi-method approach, including but not limited to:

* Data constraints – newly issued securities under a new regulatory regime vs older securities might need a substantially different methodology / scorecard
* Industry and sub-industry focus – for example, within the financial sector issuers, it is appropriate to apply different scorecard for insurers and re-insurers, for private banks, for investment banks and for universal banks, etc.
* Geographical focus, e.g. Corporates in OECD vs non-OECD countries, etc.

This poses the question if the CRAs should only calculate discrimination measure for each methodology / scorecard separately or for whole system after methodologies have been calibrated on a common scale. In the second case, it is important to assess how much of the discriminatory power is due to the methodology strength and how much to the segmentation itself.

In our view, the CRAs should disclose:

* Accuracy Score and ROC Curve per segment (financials, corporates, insurances, sovereigns, structured financial products and covered bonds)
* For each segment, a list of sub-segments for which separate scorecards are applied with accuracy scores within each sub-segment
* Optionally, analysis on the discriminatory power of the segregation criteria used for segmentation in isolation, through computation of Accuracy Ratios for a methodology based entirely on the chosen sub-segmentation criteria.

<ESMA\_QUESTION\_VR\_CRA\_4>

1. Are there qualitative measures that are appropriate for demonstrating the discriminatory power of methodologies? If yes, please explain the measures and your rationale.

<ESMA\_QUESTION\_VR\_CRA\_5>

In reference to the answer on question 4 above, a reasonable qualitative assessment would refer to the appropriateness of the number of sub-segments and sub-segmentation criteria the CRA has chosen to disclose as compared to the CRA’s market penetration. Furthermore, qualitative arguments should be used to justify exceptionally low Accuracy Scores within a sub-segment as well as the Accuracy Ratios of a methodology that is due mainly to a single sub-segmentation criteria.

For example, we would expect that the major CRAs should report Accuracy Ratios on a large number of sub-segments (geographical, industry-wise, security-type-wise, etc.) and explain in detail the impact of the segmentation criteria in relation to the specific methodology they are applying.

<ESMA\_QUESTION\_VR\_CRA\_5>

1. Do you agree with ESMA’s view regarding the predictive power of methodologies?

<ESMA\_QUESTION\_VR\_CRA\_6>

We fully support the efforts of ESMA to strengthen the quality of the rating services by establishing a disclosure framework with a particular focus towards the predictive power of the rating assessments. In our opinion and contrary to the CRA Industry status-quo, the predictive power of the rating assessments is of higher importance for the financial investors than the discriminatory power.

Indeed, increasing the predictive power of the credit ratings is challenging for the established CRAs. First, actual defaults and other credit events tend to exhibit quite erratic behaviour over time, with huge peaks and then prolonged periods of virtually no defaults, making for example simple binomial tests difficult to meet consistently. Second, a rating methodology that is optimised to deliver higher predictive power would almost necessarily produce also more volatile ratings. Given the established “issuer-paid” business model which is predominant in the industry, we believe that one of the implications of the “moral hazard” embedded in the system is that the CRA methodologies focus overwhelmingly on stability of the rating assessment (keeping rating unchanged = keeping paying customers happy). This leads, for example, to significant delays in the reactions of the CRAs to new information, to extend to which the majority of professional investors today consider rating down- or upgrades as largely irrelevant for their decision making.

Major CRAs have tried to work around this problem by producing "outlooks" and “watch-lists”, which, when added to the rating, indeed tend to improve the predictive power of the rating methodology. However, we view this merely as a “trade-off” solution. The lack of forward-looking credit risk assessments comes at a significant cost for the financial investors and impacts negatively the ability of the financial markets to allocate efficiently funds and risk.

In our view, credit rating methodologies should be aggressively focused on optimising predictive power. We would view any disclosure requirements in this direction as a necessary first step towards this goal.

<ESMA\_QUESTION\_VR\_CRA\_6>

1. Do you agree that statistical measures of predictive power increase the quality of validation of CRAs methodologies and should be performed by the CRAs?

<ESMA\_QUESTION\_VR\_CRA\_7>

We believe that data-driven, forward-looking and self-adaptive rating assessments are the future of the CRA industry. Therefore we strongly support the introduction of disclosure requirements for statistical measures of predictive power.

<ESMA\_QUESTION\_VR\_CRA\_7>

1. Do you agree that the binomial and the chi-square tests are the minimum statistical measures that a CRA (when its ratings refer to default probabilities) should use as part of its validation processes for demonstrating the predictive power of its methodologies?

<ESMA\_QUESTION\_VR\_CRA\_8>

As discussed under question 1 above, we do not support a narrow definition of “future state of creditworthiness” as a binary (default/non-default) measurement. Consequently we believe that the proposed statistical tests should accommodate for a full range of creditworthiness measures. This is not necessarily the case for the binomial test (although it can be possibly adapted).

<ESMA\_QUESTION\_VR\_CRA\_8>

1. Do you agree that complementary measures such as the Brier score and the Vasicek one-factor model test add further information to the predictive power of methodologies (when the CRAs’ ratings refer to default probabilities)? If not, please explain why.

<ESMA\_QUESTION\_VR\_CRA\_9>

We recall that the capital requirements formula under Internal Rating-Based Approach in the Capital Adequacy Standards commonly known as Basel II/III is closely related to the Vasicek one-factor model. We would argue for a stronger alignment between the disclosure requirements applied for banks and the requirements for CRAs.

<ESMA\_QUESTION\_VR\_CRA\_9>

1. Are there additional measures that CRAs should use and which would add further insight into the predictive power of methodologies when the CRAs’ ratings refer to default probabilities? If yes, please explain the measures and your rationale.

<ESMA\_QUESTION\_VR\_CRA\_10>

Extrapolating upon question 9: In our opinion, CRA should present their “expectations” under Section 5.2., paragraph 40, in terms of the following statistical measures per rating notch, segment and sub-segment:

* Expected Losses, based on long-term, through-the-cycle assessment of average loss rates
* Unexpected Losses, based on the maximum loss rate (estimated at a high confidence level) in a period of significant economic distress

The goal of the methodology validation would be a comparison between the actual realised losses and the range of the expectations provided. This is, technically speaking, conducted in a similar fashion to the capital adequacy assessment at a bank.

For CRAs that base ratings exclusively on default probabilities, the regulator should provide supervisory values for the remaining parameter in the Vasicek-based formulas for expected and unexpected losses.

<ESMA\_QUESTION\_VR\_CRA\_10>

1. Are there qualitative measures that are appropriate for demonstrating the predictive power of methodologies when the CRAs’ ratings refer to default probabilities? If yes, please explain the measures and your rationale.

<ESMA\_QUESTION\_VR\_CRA\_11>

Based on the comparison between the actual loss rates and the CRA’s expectations, a qualitative analysis should be done to explain any unusual deviation; for example, actual loss rates exceeding expected losses in a period of economic expansion.

<ESMA\_QUESTION\_VR\_CRA\_11>

1. Do you agree that CRAs using methodologies related to creditworthiness measures other than default probabilities should use statistical measures to demonstrate the predictive power of their methodologies? If yes, please state the potential creditworthiness measures that methodologies could relate to and the corresponding statistical measures as well as any appropriate qualitative measures.

<ESMA\_QUESTION\_VR\_CRA\_12>

Please refer to questions 1 and 10 above. We believe that the CRAs should define objectively and fully transparently their measures of future creditworthiness. The same measure should be targeted in both the discriminatory power and predictive power analysis. Furthermore, we think that CRAs should define their forward-looking risk assessments in terms of expected and unexpected loss rates using the chosen measures of creditworthiness (and whenever necessary augmented with supervisory parameters).

<ESMA\_QUESTION\_VR\_CRA\_12>

1. If ESMA establishes that there is a need for further guidance to the industry, should this guidance also cover the demonstration of predictive power of methodologies related to creditworthiness measures other than default probabilities?

<ESMA\_QUESTION\_VR\_CRA\_13>

We strongly support the need for a detailed disclosure guidance to the CRA industry. In line with the above answers, we would argue against focussing on credit defaults as a sole measure of future creditworthiness. Instead, we support the development of a more generic framework for rating validation, including:

* Requirement for an objective, fully transparent definition of “credit risk” / “credit event” / “credit worthiness” and consequent application of this definition in the validation process
* Requirement for disclosure of detailed, forward-looking and economically meaningful assessments of the future creditworthiness, in terms of standardised statistical measures over the population of rated issuers or securities (expected / unexpected losses)
* Requirement for on-going validation and reporting on the comparison between these statistical measures and the actual outcomes.

<ESMA\_QUESTION\_VR\_CRA\_13>

1. Do you agree with ESMA’s view regarding the historical robustness of methodologies?

<ESMA\_QUESTION\_VR\_CRA\_14>

Historic robustness tests essentially answers the question what extend the multivariate distribution of rating migrations is stationary over time. In other words, CRAs need to ensure that ratings do not degenerate, do not tend to improve over time, nor tend to decrease over time, nor tend to group around a certain grade over time, etc.

We would like to note that this type of analysis can be done on long histories of rating transitions. This puts newcomers in the CRA industry at a disadvantage compared to the established big CRAs which are better equipped with long-term data. In particular, excessive disclosure requirements on historical robustness might stop emerging players from entering the market from a specific niche of newly created, innovative types of financial instruments or funding arrangements.

Since this contradicts to the general goals of the regulator to support more competition in the CRA industry, we would argue against high disclosure requirements on historical robustness.

<ESMA\_QUESTION\_VR\_CRA\_14>

1. Do you agree that stability statistical measures and the transition (migration) matrices are the minimum measures that a CRA should use as part of its validation processes for demonstrating the historical robustness of its methodologies?

<ESMA\_QUESTION\_VR\_CRA\_15>

Transition / Migration matrices are an excellent tool to assess historical robustness of methodology and should be disclosed by all CRAs.

<ESMA\_QUESTION\_VR\_CRA\_15>

1. Do you agree that complementary measures such as distribution analysis, the univariate analysis of rating determinants and benchmarking add further information to the historical robustness of methodologies? If not, please explain why.

<ESMA\_QUESTION\_VR\_CRA\_16>

We view the univariate analysis of rating determinants (risk factors) as an important tool to assess predictive power as well as historical robustness. Due to the reasons indicated in our answer under question 14, we would suggest to make these disclosures mandatory for the big CRAs and optional for the small / niche players.

We believe that the benchmarking requirements are best solved through the creation of an ESMA-sponsored and maintained web-based rating platform. Ideally, a user-friendly interface should allow the users, for each financial obligation of interest, to get immediate access to the relevant validation results of the CRAs for the same segment.

<ESMA\_QUESTION\_VR\_CRA\_16>

1. Are there additional measures (qualitative or quantitative) that CRAs should use and which would add further insight into the historical robustness of methodologies? If yes, please explain the measures and your rationale.

<ESMA\_QUESTION\_VR\_CRA\_17>

We would argue against excessive requirements on that point, as these might put an unnecessary barrier to competition. Please refer to our answer of question 14.

<ESMA\_QUESTION\_VR\_CRA\_17>

1. Do you agree with ESMA’s view regarding the validation of methodologies with limited quantitative evidence?

<ESMA\_QUESTION\_VR\_CRA\_18>

We are strongly in favour of data-driven rating methodologies with objective, quantitative validation criteria. Our feasibility study conducted under the “Open Disruptive Innovation” scheme of the EU’s Horizon 2020 SME Instrument as described in the introduction provides us with sufficient confidence that such methodologies are applicable even to highly complex, new types of financial obligations.

<ESMA\_QUESTION\_VR\_CRA\_18>

1. Do you agree that CRAs should, as a first step, investigate data enhancement in validating methodologies with limited quantitative evidence?

<ESMA\_QUESTION\_VR\_CRA\_19>

Data enhancements are essential for the development and validation of rating methodologies, in particular when it comes to relatively new types of financial obligations. In the absence of sufficient data points, we strongly support the following measures:

* Extending the data scope with third-party data from any reliable sources, such as financial data vendors, industry-wide data pools and public statistics offices. The data extension should include also any relevant market data, such as asset prices, indices or market spread rates
* Data extrapolation across related sub-segments of the issuer population, subject to disclosure requirements as the ones suggested under our answers to questions 4 and 5 above
* Objective and fully transparent extensions of the definition of “future state of creditworthiness”; for example, incorporation of model-based concepts like “near misses” or “expected default frequency” into the very core definition of credit risk.

<ESMA\_QUESTION\_VR\_CRA\_19>

1. Do you agree that CRAs should, as a second step, investigate measures that may enable them to perform statistical tests to demonstrate the discriminatory power of their methodologies?

<ESMA\_QUESTION\_VR\_CRA\_20>

We believe that the performance of statistical tests on the predictive power of the rating methodologies should have higher importance than the discriminatory power tests. The approaches we describe in our answer of question 19 above are sufficient to compensate for limited quantitative data.

Predictive power is of uppermost importance for investors. In the absence of sufficient data points to validate the predictive power, we would strongly argue for objective, transparent data extrapolations and/or “softening” of the definition of “future state of creditworthiness” based on observable inputs other than defaults.

Discriminatory power KPIs come, in our opinion, as a third step.

<ESMA\_QUESTION\_VR\_CRA\_20>

1. Do you agree that historical robustness measures should be performed when validating methodologies with limited quantitative evidence?

<ESMA\_QUESTION\_VR\_CRA\_21>

We would argue against excessive requirements on that point, as these might put an unnecessary barrier to competition. Please refer to our answer of question 14.

<ESMA\_QUESTION\_VR\_CRA\_21>

1. Do you agree that the transition (migration) matrices and benchmarking are the minimum measures that a CRA should use as part of its validation processes for methodologies with limited quantitative evidence?

<ESMA\_QUESTION\_VR\_CRA\_22>

Regardless of the availability of direct quantitative evidence, we support the following minimum set of disclosures:

* Objective Definition of Future State of Creditworthiness, including data inputs and exact model/formula per segment and sub-segment
* Predictive Power: expected and unexpected losses per segment and sub-segment
* Discriminatory Power: CAP Curve and Accuracy Ratio (for a predefined number of rating notches) per segment and sub-segment
* Segmentation Report: Assessment of Predictive Power and Accuracy Ratios per sub-segment
* Rating Transition matrices per segment and sub-segment

As described under our answer of question 16, we believe that the benchmarking issue is best solved through an independent, centralised, and technology-based service, rather than as a part of the CRA validation disclosures.

<ESMA\_QUESTION\_VR\_CRA\_22>

1. Do you agree that complementary historical robustness measures add further information to the validation processes for methodologies with limited quantitative evidence? If not, please explain why.

<ESMA\_QUESTION\_VR\_CRA\_23>

Due to the reasons indicated in our answer under question 14, we would suggest to make additional disclosures on historical robustness mandatory for the big / older CRAs and optional for the small / niche players.

<ESMA\_QUESTION\_VR\_CRA\_23>

1. Are there additional measures that CRAs should use when validating methodologies with limited quantitative evidence? If yes, please explain the measures and your rationale.

<ESMA\_QUESTION\_VR\_CRA\_24>

Qualitative description of the approaches taken to enhance the data are a necessary part of the disclosures.

<ESMA\_QUESTION\_VR\_CRA\_24>

1. Do you agree that thresholds should be set for the quantitative validation techniques?

<ESMA\_QUESTION\_VR\_CRA\_25>

Given the complexity of the problem at hand, we would strongly argue against industry-wide, regulatory-set thresholds.

While we believe that all CRAs should aim at optimising their rating methodologies on objective validation KPIs and that, as a part of this optimisation, threshold monitoring can be a valuable tool, we see little added value in CRAs disclosing specific details on the chosen thresholds.

<ESMA\_QUESTION\_VR\_CRA\_25>

1. Do you agree that the Internal Review Function should decide on these values?

<ESMA\_QUESTION\_VR\_CRA\_26>

Setting and reviewing thresholds is one of the multiple methods to set-up a validation business process within the CRA. We see very limited added value in regulatory scrutiny about the exact method of operation chosen by the CRA in this respect.

<ESMA\_QUESTION\_VR\_CRA\_26>

1. **Do you agree that predefined actions should be defined by the CRAs when the thresholds are met?**

<ESMA\_QUESTION\_VR\_CRA\_27>

We believe that the costs, for both the regulator and the CRAs, resulting from describing, disclosing and analysing the internal business processes of the Internal Review Function of the CRA are higher than the potential benefits. Consequently we would kindly recommend to the regulator to focus the resources on setting up and maintaining an appropriate disclosure framework, strengthening objectivity in the validation of methodologies and supporting the implementation of an independent benchmarking platform for the CRAs.

<ESMA\_QUESTION\_VR\_CRA\_27>