FINANSTILSYNET

MEMO

DANISH FINANCIAL
SUPERVISORY AUTHORITY

23 March 2022

J.no. 22-005247

Guidance on the treatment of underestimation

According to Article 185(1)(e) of the CRR, IRB institutions shall establish sound internal standards for situations where the realised values of the probability of default (PD), loss given default (LGD) and conversion factor (CF) differ so much from the expected values that it creates uncertainty about the validity of these estimates[1].

The Danish FSA (Finanstilsynet) has found it necessary to issue guidance focusing on the current practice on the treatment of underestimation in relation to IRB models. As a general point, it should be noted that deviations from this guidance can be accepted if they are well-founded taking the totality and materiality into consideration.

The guidance describes Finanstilsynet's expectations of IRB institutions when institutions observe underestimation in their PD, LGD, or CF models. These expectations also apply to the underlying PIT models if the institution applies a TTC approach for PD models based on underlying PIT models. Specific requirements for TTC models are described in the memo "IRB Rating Philosophy (Systems sensitivity to cyclicality)" which is available on Finanstilsynet's webpage. This memo also includes definitions of the TTC and PIT approach.

The guidance describes Finanstilsynet's expectations both for implemented models and for not yet implemented models which the institution applies for approval to use for regulatory capital purposes. Finanstilsynet's expectations also apply to material sub-segments of the PD, LGD, and CF models.

General aspects

To begin with, it is relevant to outline some general aspects, which has significance for the interpretation of the subsequent sections. In this regard, Finanstilsynet wants to clarify the following:

[1] REGULATION (EU) No 575/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012.

- When splitting a portfolio into sufficiently small sub-segments, there will always be areas of underestimation. Conversely, some sub-portfolios are so material that underestimation is unacceptable. This guidance only concerns these material sub-portfolios.
- As a starting point, it is up to each institution to define the materiality of sub-portfolios. This will vary across institutions and can depend on group structure and the number of markets in which the institution operates, among other things. It could also depend on whether the institution uses of a large number of specialised models or a few more generalised models.
- For the assessment of underestimation, institutions may use statistical methods. However, institutions should not use statistical methods mechanically and should always use qualitative assessments as a supplement.
- As a main rule, Finanstilsynet expects that deficiencies relating to underestimation are resolved directly in the models. This is particularly important for models used directly in the daily risk management or for regulatory capital purposes. However, Finanstilsynet does not exclude the possibility of deviations from this main rule if a margin of conservatism or the like is added to the model estimates before they are used for risk management etc.

New models

New models, for which the institution applies for approval, can only be expected to be approved if they perform adequately when implemented. Hence, Finanstilsynet expects that new models do not underestimate at the time of implementation. This is also the case even if the underestimation is not statistically significant. In addition, Finanstilsynet expects that at implementation new models address all known issues in the areas covered by the models.

Implemented models

It is reasonable to expect that over time currently implemented models start to show indications of weaknesses, e.g. in relation to underestimation. Consequently, Finanstilsynet's requirements are less restrictive for already implemented models than for new models for which the institution is applying for approval. Still, Finanstilsynet does not accept several years of underestimation. This also applies even if the observed values are within a statistical confidence level. In addition, Finanstilsynet does not find material underestimation in a single year acceptable.

Finanstilsynet finds it important that underestimation does not occur on model level, even if it does not lead to an insufficient level of capital on an overall level. This is, among other things, considering that the results of the models are used in the daily risk management in the institution.

Finanstilsynet finds that underestimation in one model cannot be offset by overestimation in another model. Likewise, the underestimation of one parameter (PD, LGD, or CF) within a certain segment, e.g. private customers, cannot be offset by overestimation of another parameter within the same segment.

Hence, in case of underestimation, Finanstilsynet expects that the institution initiates a process with the purpose of identifying a Pillar 1 solution either by adjusting the current model or by developing a new model. Until the Pillar 1 solution is in place, a Pillar 2 add-on should be implemented to cover the underestimation.

If a model underestimates in a back-test, Finanstilsynet finds it reasonable to assume that the underestimation of the model will also apply going forward. The institution should therefore determine the Pillar 2 add-on by scaling the estimate from the back-test, where the underestimation is identified, to the observed level in the same back-test. The institution cannot determine the Pillar 2 add-on by comparing the observed level from the back-test with the current estimates even if the current estimates have increased since the back-test was performed. If the institution has adjusted the model after the back-test to address the underestimation, this can of course be included in the overall assessment of the underestimation of the model and the Pillar 2 add-on. Until the institution has developed a Pillar 1 solution, the add-on should be adjusted in line with changes in the observed underestimation in newer back-test results.

Concerning PD models

Finanstilsynet finds it important that the model performs adequately across the entire rating scale. In addition to an overall comparison of the expected and observed defaults, the institution should therefore also focus on the ability of the model to predict the PD level in each rating grade.

Regarding already implemented models, Finanstilsynet wants to emphasise the importance of ensuring that recurring underestimation in the same rating grades does not occur year after year. This applies even if the underestimation is not statistically significant.

Regardless of whether the models are new or already implemented, Finanstilsynet finds that underestimation in a large number of rating grades should not occur. Underestimation in one or a few rating grades may be acceptable if the predictive power of the model is otherwise adequate. Still, Finanstilsynet finds that underestimation in several rating grades is an indication of more fundamental problems that should be addressed.

The institution should include the number of customers and the EAD share of the rating grades in the assessment of underestimation. In this context, Finanstilsynet expects a quicker reaction from the institution in cases where the underestimation concerns a rating grade with a relatively high number of customers or a large share of EAD.

Conversely, Finanstilsynet acknowledges that in some cases the number of customers in the rating grades can be so small that it can be difficult to perform a meaningful assessment. In this situation, it may be relevant to assess multiple rating grades as one.