

MEMO

**DANISH FINANCIAL
SUPERVISORY AUTHORITY**

23 March 2022

J.no. 22-005247

Guidance on IRB model validation

According to Article 185 of the CRR, institutions shall have robust systems in place for the validation of internal risk estimates (PD, LGD, and CF) when applying the IRB approach¹. The validation shall ensure that the internal risk estimates used for the calculation of own funds requirements (Pillar 1) and for internal risk management give a true picture of the risks in the institution.

The validation function plays an essential role in the independent assessment of the internal estimates and in the internal reporting of validation results to senior management.

In this guidance, the Danish FSA (Finanstilsynet) principally describes the current practice concerning the annual validation of IRB models. The guidance only considers aspects of the IRB validation where Finanstilsynet has found a need for clarification. Hence, this guidance does not contain an exhaustive list of all specific tasks, which shall be carried out by the validation function in an IRB institution.

Freedom of method

Generally, institutions are not limited in terms of methods regarding the validation tasks. However, the validation function is responsible for ensuring that the chosen methods are suitable for a critical assessment of the IRB models. The validation methods shall therefore be well-founded and included in the documentation of the validation process.

As a starting point, the validation function should use both quantitative and qualitative methods in the validation.

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.

Selected segments

In Finanstilsynet's experience, some models do not perform adequately for certain segments within a portfolio. For example, this can be the case for group-level models, which may not perform as intended on certain geographical areas, even if there is no indication of model weaknesses on group level.

The need to analyse model performance on relevant segments of a portfolio may vary according to diversity and composition of the obligors/facilities within the specific portfolio. Validation of models covering broader portfolios is associated with a higher risk of not detecting model weaknesses on relevant segments when validation analyses only focus on the full portfolio.

In general, Finanstilsynet expects that the validation function analyses model performance on relevant segments of the portfolio and reacts to weaknesses such as material underestimation and low ranking power on segment level². For group-level models, Finanstilsynet expects the validation to include separate analyses of legal entities and relevant geographical business areas to which the models are applied.

The validation function should consider how to best specify the relevant segments for the analyses. This can be based on segmentation criteria ensuring a meaningful segmentation of portfolio risk. Segmentation could for example be based on exposure size, geography, business areas, customer type, or product type.

However, Finanstilsynet acknowledges that in practice there may be cases, where the models have a certain level of specialisation, and a further segmentation of the portfolio might not be meaningful for validation purposes. In addition, there may be cases where limited data (e.g. too few defaults) could complicate a quantitative analysis on segment level.

Analyses of representativeness

In Finanstilsynet's experience, there is a need for a greater focus in the validation on portfolio developments after the initial model approval.

Data used to develop the models shall be representative of the current portfolio. Material changes in the current portfolio compared to the initial data used for model development can lead to uncertainties regarding the stability (robustness) of the models. Portfolio developments could for example stem from changes in credit policies (e.g. relaxation/tightening of lending to certain segments and the introduction of new product types) and the workout process.

² See the Danish FSA's guidance on the treatment of underestimation.

Finanstilsynet expects the validation function to analyse (e.g. in the form of stability analyses) if there are material differences between the current portfolio and the initial data used for model development. This should be included in a concrete assessment of the representativeness of the models in terms of application on the current portfolio.

In Finanstilsynet's experience, challenges regarding representativeness can especially arise for LGD and CF. This is often due to the fact that LGD and CF models are developed on data from facilities in default, but the models are applied to non-defaulted facilities. In practice, this could appear from the inability of model factors (input variables) to capture the risk in the non-defaulted portfolio. For example, this may apply in situations where the variables only react when the customer has already defaulted (e.g. variables such as credit obligations more than 90 days past due).

In this context, Finanstilsynet finds it relevant to specify that the validation function should also assess representativeness and the ability of model factors to capture the risk for the non-defaulted portfolio. This should include an assessment of whether the estimates produced from applying the models on the non-defaulted portfolio correspond to the historically observed long-run levels or downturn levels for defaulted facilities.

Data quality

Institutions should focus on data quality and the correct application of the IRB models on an ongoing basis. Hence, it is not sufficient only to assess data quality in the models at initial model approval.

Finanstilsynet expects the validation function to have a continuous focus on the accuracy of model input data. The validation function should either perform the necessary data quality controls itself or make sure that the institution has another similar function that ensures the accuracy of the inputs used in the validated models.

Regardless of the chosen approach, Finanstilsynet expects the validation process to include an adequate assessment of the quality of the data used in the validated models. In the occurrence of material data-related challenges, Finanstilsynet expects that this is explicitly highlighted as a key action area in the validation.

Sub-components

The internal models estimating the risk parameters (PD, LGD, and CF) can consist of different sub-components constituting each risk parameter. One such example is a LGD model consisting of the model components "Loss rate" and "Loss given Loss". In this case, it is not enough to validate the overall model.

Finanstilsynet expects a separate validation of each model component. This shall ensure that deficiencies (e.g. underestimation) in each model component are identified and rectified.

Explanatory factors (input variables)

The explanatory factors (input variables) may lose explanatory power or ranking/scoring ability over time without it necessarily showing in the overall model validation.

In Finanstilsynet's experience, analyses of each explanatory factor (input variable) could contribute to identifying incipient model weaknesses. In addition, it is inadequate if some factors no longer capture the true risks.

Finanstilsynet expects that the validation function, as a starting point, analyses each explanatory factor (input variable) included in the models, so the institution is able to react if the factors do not perform as expected (e.g. inadequate explanatory power or ranking/scoring ability).

Exposures in default

In accordance with Article 153 and 154 of the CRR, the own funds requirements (Pillar 1) under the advanced IRB approach for exposures in default shall be calculated using a specific risk weight formula.

Finanstilsynet expects that institutions validate the methods used to calculate own funds requirements (Pillar 1) for exposures in default under the advanced IRB-approach.

Reporting and follow-up

The validation should include a brief and accurate summary of the identified model deficiencies. In addition, the validation should include a brief status on recommendations from earlier validation reports, such that there is no doubt whether the deficiencies from the previous validations have been resolved or not.

Finanstilsynet emphasises that the validation reports explicitly highlight the identified model deficiencies and that the institution takes the necessary steps to rectify the deficiencies within a reasonable time horizon. The time horizon should be adapted according to the scale and materiality of the identified deficiency.