EBA Supervisory Handbook on the Validation of Rating Systems under the Internal Ratings-Based Approach

Michele Ferrandino

iason

ESSENTIAL SERVICES FOR
FINANCIAL INSTITUTIONS

iason

Front Cover: **Luigi Veronesi**, *Costruzione AX4*, 1993.

iason ESSENTIAL SERVICES FOR FINANCIAL INSTITUTIONS

Executive Summary

In August 2023, the **European Banking Authority (EBA)** published its *Supervisory handbook on the validation of rating systems under the Internal-Ratings Based approach*[5].
The handbook provides an **overview of the validation framework** and describes the **elements where the Validation function is expected to form an opinion**, without prescribing any specific methodology. It covers both the tasks related to the **model performance assessment** (including risk differentiation, risk quantification and other specific points) as well those dealing with the **modelling environment**, such as data quality and model implementation assessment. In addition, the handbook addresses some issues and **challenges** related to the **outsourcing of the validation activities**, the validation in the context of usage of **external data** and in the context of **data scarcity**, providing some recommendations and suggestions to be followed in these cases. With the publication of the handbook, the EBA aims to achieve **harmonised supervisory understanding and supervisory practices** and to **promote convergence on Competent Authorities (CA) approaches** by providing **good and best practices** for a sound IRB validation. The present document provides an **overview of the background and objectives** of the EBA supervisory handbook, and then describes the main elements on which the Validation function is expected to form an opinion when performing its **validation tasks on IRB models**, also providing details on the **peculiarities of the Validation assessment** in the **model validation cycle** (**first** vs. **on-going** validation).

About the Authors

Michele Ferrandino:
Junior Credit Risk Quant
He holds a Master's degree in Economics and Finance from Università degli Studi di Milano-Bicocca in Milan. He is currently working in projects regarding the validation of credit risk models within the Internal Validation area of a big italian bank.

Table of Content

EBA Supervisory Handbook on the Validation of Rating Systems under the Internal Ratings-Based Approach

Leonardo Bandini Riccardo Cortesi Michele Ferrandino

Vincenzo Frasca Nicolas Nedertoft Melis

Background and Objectives of the EBA supervisory Handbook

In August 2023, the **European Banking Authority (EBA)** published its *Supervisory handbook on the validation of rating systems under the Internal-Ratings Based approach*, whose main objectives are to achieve harmonised supervisory understanding and supervisory practices and to promote convergence on Competent Authorities (CA) approaches by providing good and best practices for a sound IRB validation. In more detail, the objective of the EBA supervisory handbook is to **ensure a robust measurement of credit risk within the IRB approach** and, ultimately, to contribute to reducing the unjustified variability of *Risk-Weighted Exposure Amount* (*RWEA* or *RWA*) stemming from different supervisory and bank-specific practices. At the same time, the handbook aims to achieve a **harmonized supervisory understanding** by providing an outline of best practices, promoting convergence of approaches used by Competent Authorities (CAs), within both institutions (in terms of validation frameworks) and supervisors (in terms of supervisory practices and expectations).

Legal Status

EBA is mandated to develop a supervisory handbook by Article 8(1) of EBA Regulation[9], which states that EBA shall "*develop and maintain an up-to-date Union supervisory handbook on the supervision of financial institutions in the Union which is to set out supervisory best practices and high-quality methodologies and processes and takes into account, inter alia, changing business practices and business models and the size of financial institutions and of markets*". In addition, Article 29(2) of the same Regulation specifies that "*For the purpose of establishing a common supervisory culture, the Authority shall develop and maintain an up-to-date Union supervisory handbook on the supervision of financial institutions in the Union, which duly takes into account the nature, scale and complexity of risks, business practices, business models and the size of financial institutions and of markets.*"

Specificities of the Validation in the Regulatory Framework

EBA generally defines the **model validation** activity as a process whose aim is to prevent models from producing inadequate results by effectively challenging them and by assessing and identifying possible assumptions, limitations and shortcomings. However, in the context of IRB rating systems and for the purpose of the supervisory handbook, EBA outlines that the definition of model validation entails a **broader set of activities and controls**, whose responsibility falls on several functions, each of them with its own perspective. In particular, according to EBA, the validation of IRB rating systems goes beyond the pure concept of model validation and shall **not be limited to the**

proper functioning of the model from a statistical perspective. As a matter of fact, it also includes the **assessment of data quality**, the **structure of the rating system** and its **correct application** as well as the set of **policies, processes and procedures** put in place to assess the **accuracy and performance of the rating systems** on the institution-specific portfolios and to verify that the models used by the institutions work properly. Moreover, the activities related to IRB models validation are not exclusively attributable to the Internal Validation function but follow **specific organizational requirements**. In particular, the assessment of the model performance is conducted by several functions, each of them with its own perspective. While the Credit Risk Control Unit (CRCU) is the first function to analyse and validate the model, a **specific independent Validation function** with its own responsibilities is required and essential to allow for an objective assessment of the rating systems by people not involved in the development process. Other activities can fall under the responsibility of other organizational units, such as the Data Quality unit and Internal Audit function, which are however not in scope of the present document.

1. General Principles for the Validation Framework

1.1 Scope and Objectives of the Validation

The internal validation activities should be performed at each level where a CA has granted approval for a rating system. In the case where a rating system is used at different levels of a group, the Validation functions of the involved entities are expected to share their findings. The **Validation function is expected to form an opinion on whether the final rating system meets the regulatory requirements**, and to this aim, it is expected to **provide a list of all the deficiencies identified** along with an assessment of their materiality and severity, an assessment of the consequences of these deficiencies on the performance of the rating system, and an evaluation on the level of confidence in the results of its assessments. **Outcomes of the validation analyses shall be communicated to the senior management and the management body**, who are expected to understand the model deficiencies and be able to decide on a remediation action plan.

1.2 Independence of the Validation Function

As a second layer of defence, **the Validation function should challenge in an independent manner the choices made by the CRCU during the model development. Independence of the Validation function** is crucial to **prevent any conflict of interest** and to ensure no subordination in relation to the CRCU, and is guaranteed by two means:

- **Structural independence**, ensured via an adequate organizational setup;

- **Sufficient resource allocation**, i.e., the number, seniority and expertise of the validation staff should be commensurate with the complexity and materiality of the rating systems to be validated.

In this context, Article 10 of the Commission Delegated Regulation on assessment methodology for IRB models[8] foresees three different types of allowed **organizational setups**, depending on the nature, size and scale of the institution and on the complexity of the risks inherent to its activities:

1. The **Validation function** is in a unit **separated from the CRCU**, with the units **reporting to different members of the senior management**;

2. The **Validation function** is in a unit **separated from the CRCU**, but both units **report to the same member of the senior management**;

3. The **Validation function** and the CRCU coexist in a single unit (**no separated validation unit exists**) but the staff performing the validation activities is different from the staff responsible for the design and development of the rating system, and from the staff responsible for the credit risk control function.

1.3 Validation Tasks

Institutions shall have **robust systems** in place to **validate the accuracy and consistency of rating systems, processes and the estimation of relevant risk parameters**, with validation methods appropriate to the nature, complexity and range of application of rating systems and to the data availability. This should be done by the Validation function by:

- **Assessing the CRCU's work and related documentation**, reviewing and challenging the steps performed and the decisions made;

- Forming an **opinion on the accuracy and consistency of the rating system** as a whole, also via statistical tests;

- **Reviewing the materiality of all rating systems changes and extensions** and their overall effects;

- **Developing and implementing validation methods and procedures** which should be consistent and meaningful across rating systems as well as over time.

Two fundamental elements of a sound and robust validation framework are the **validation policy** and the **validation report**. The former documents the validation framework, roles, responsibilities, processes and content of the validation activities, while the latter has the goal to communicate, in a clear and comprehensive manner, how the validation policy has been applied to a particular rating system and the results of the validation activity.

- **Validation policy**: it aims to document the validation framework, i.e., **it defines the roles, responsibilities, processes and content of the validation activities** that are expected to be performed in a sufficiently precise manner such that a third party can gain a good understanding of the tasks the Validation function will perform. It is expected to include:

  - a **description of how the validation forms its opinion on the rating system** and the **aggregation methodologies** used across different analyses;

  - a **description of the data collection and selection process** underlying the **construction of the validation datasets**;

  - the **list of analyses** to be performed and a description of their purposes, limitations, scope, frequency and methodology, including details on data preparation, computation, targets and tolerance thresholds for quantitative analyses;

  - the **conditions** under which the Validation function may **leverage on the work performed by the CRCU**;

  - the main **content, frequency and recipients of the validation reports**.

- **Validation report**: the structure of this document is left to the Validation function's judgement, so as to optimise the communication of its opinion, and is not expected to be harmonized across institutions, nor across different rating systems within the same institution. Nevertheless, such report shall at least detail:

  - the **rating system version subject to validation**, and a description of the on-going model development activities, as well as an opinion of the Validation function on the rating system changes, including their materiality assessment;

  - the **relevant tests performed** to challenge the rating system along with a description of the **data preparation steps** and the related **data quality of the validation samples**;

  - the **outcomes of the validation analyses** and clear opinions on the performance of the rating system, with findings categorized in accordance with their materiality (e.g., traffic light approach);

  - a **comparison** between the latest results of the validation and the ones observed in the previous years.

2.   Validation Content

2.1   The Validation Cycle: First Validation and On-going Validation

Regarding the validation content, the actual tasks to be performed by the Validation function may differ depending on the position in the **validation cycle**, which leads to the distinction between **first validation**, which is the assessment conducted on the rating system **before submitting the application to the Competent Authority (CA)**, and **on-going validation**, which includes the activities to be conducted **after the rating system has been approved by the CA**.

2.1.1   First Validation

The **first validation activities** take place during or subsequently to the model development, to assess the **regulatory compliance** and **performance of the rating system**, in view of receiving approval from the CA. The first validation aims at ensuring:

- The **appropriateness of the rating system** once being used for own funds requirements and internal risk management;

- That the newly developed rating system is **ready for a supervisory assessment**.

An important focus point is then on the **methodological choices** of the CRCU regarding the **model design** and the **risk quantification**, since they are assessed by the Validation function for the first time. The Validation function is then expected to **assess and challenge the modelling and calibration choices** in a comprehensive and independent manner. The first validation of the rating system can be used as a **starting point for the on-going validation** and the related validation activities that are required to be conducted after the granting of regulatory approval.

2.1.2   On-going Validation

On-going validation aims at ensuring an **effective challenge** for the **adequate model performance and appropriateness of the rating system on an on-going basis**. In this regard, the outcome of the on-going validation will typically be taken into account in the on-going supervisory assessment performed by the CA. The on-going validation differs from the first validation as it benefits from **additional data** and from **previous conclusions** from the first validation, on which the assessment of the Validation function can be based for some specific tasks. During on-going validation:

- On the **empirical side**, the Validation function should form an opinion on the **performance of the model over time**, comparing results obtained using latest available data with those observed in the previous periods;

- On the **methodological side**, the Validation function is expected to **assess the identified deficiencies over time**, i.e., to verify that all planned changes have been implemented;

- In case of a rating system change, the Validation function is expected to **check the materiality of rating system changes** that occurred since its last review.

2.2   Validation Content: General Overview of Areas of Assessment

The activities the Validation function is expected to perform according to the EBA handbook focus on two main areas: the **assessment of the core model performance** of the rating system and the **assessment of modelling environment**. For what concerns the assessment of the core model performance, it follows the structure defined by **Regulation EU 575/2013 (CRR)**[10], distinguishing between **risk differentiation** and **risk quantification**:

- **Risk differentiation**: IRB models should allow for a **meaningful differentiation of risk** to ensure grouping of sufficiently homogenous exposures into the same grade or pool. To this end, the Validation function is expected to evaluate the **model's discriminatory power**, as well as the **homogeneity** within and **heterogeneity** across grades or pools.
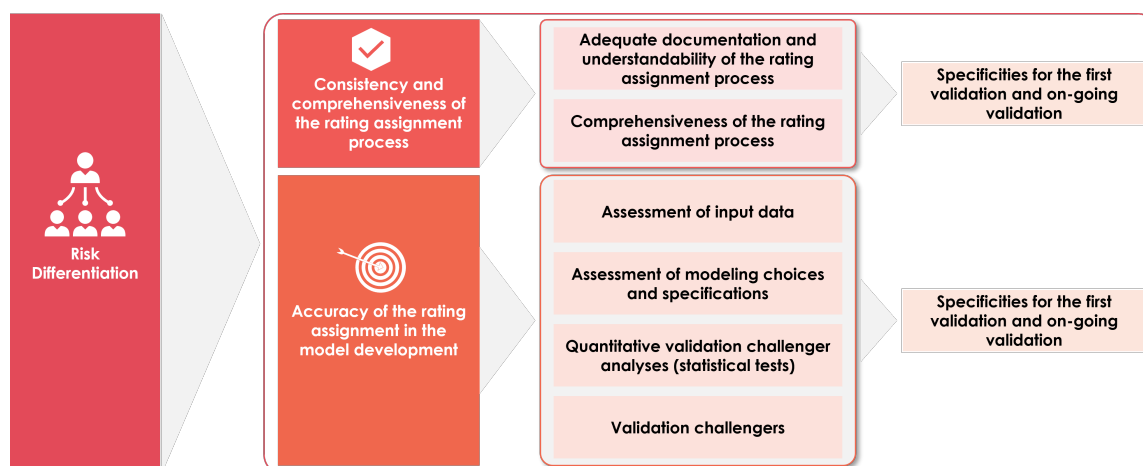
FIGURE 1: *Risk differentiation dimensions for the Validation function assessment*

- **Risk quantification**: the Validation function should assess the **compliance of risk estimates with all regulatory requirements**, including a **comparison of realised default rates with estimated PDs** for each grade or pool, and **analogous analyses for LGDs and CFs** (in case of advanced IRB approach). For LGD and CF estimates, this should include an assessment of their **appropriateness for an economic downturn**.

In addition to the two points above, **other specific points** must be assessed by the Validation function in terms of performance of the rating system, including the methodology used to derive **LGD in-default** and **Expected Loss Best Estimates (ELBE)** for **defaulted exposures**, the methodology used to manage **credit risk mitigation (CRM) techniques**, and the **exposure weighting according to the slotting approach**. Regarding the **assessment of the modelling environment**, it includes **two main areas of assessment**: the **data quality assessment**, aimed at evaluating the **degree of quality of the data used for the development of the IRB models**, and the evaluation of the **IT implementation**, aimed at assessing the **adequacy of the implementation of internal ratings and risk parameters** in IT systems. All these aspects are described in more detail in the following chapters.

2.3 Assessment of the Core Model Performance

2.3.1 Risk Differentiation

As introduced in the previous section, the Validation function is expected to **evaluate the risk differentiation of IRB models**, focusing on two main dimensions:

1. The **consistency and comprehensiveness of the rating assignment process**;

2. The **accuracy of the rating assignment** in the model development.

Each of the two dimensions should be assessed on specific aspects, as illustrated in figure 1.

Consistency and Comprehensiveness of the Rating Assignment Process

In order to validate the on-going rating assignment process, the Validation function is expected to **review the framework used for the rating assignment process**, such that:

1. The **rating assignment process is adequately documented and understandable** by a third party, such that it can be performed in a consistent manner, both in terms of **definition of the scope of application of the rating system** as well as in terms of **definition of rating criteria** (including the assignment to a ranking method and to a calibration segment);

2. The **rating assignment process is performed in a comprehensive manner**. In this regard, the Validation function is expected to analyse the policy for the treatment of those cases where the obligor or facility could not be assigned to an obligor grade or pool based on the 'standard'

rating assignment and assess the materiality of these cases in the application portfolio. Such circumstances include missing ratings and cases where the assignment was based on outdated or missing data, or where the assignment could not be renewed in time (outdated ratings). A good practice observed in institutions is to make the assessment of materiality in terms of exposure value and Risk Weighted Exposure Amount (RWEA), as well as in terms of number of obligors or facilities to monitor the magnitude of the deficiencies.

In addition to the two points above, the Validation function is expected to **review the incorporation of subjective data** in the model for the assignment of the exposures to grades or pools, focusing on the clarity of the definitions, processes and criteria defined by the CRCU to ensure the consistency of the rating assignment, and on the **integration of the human judgment in the overall rating assignment**.

Specificities of the Assessment within the Validation Cycle

Regarding the **evaluation of the rating assignment process** during **first validation**:

- The **evaluation of documentation** (point 1. above) should focus on whether **the documentation allows for a consistent application of the human judgment** in the rating assignment;

- The **evaluation of materiality** (point 2.) should be performed in the context of a model change on the 'application test sample'[1], leaving aside the analysis of outdated ratings. In the context of the first validation of a new rating system, the evaluation is expected to be performed on all dimensions and using the most recent application portfolio.

For what concerns the **evaluation of the rating assignment process** in the **on-going validation**, the Validation function can use its **previous assessment of the documentation** (point 1.) of the assignment process and of the **policy for the treatment of non-standard rating** (point 2.). However, it is expected to **assess the potential occurrence of deficiencies** detected in the **actual implementation of the model**, and to **perform the materiality assessment of non-standard ratings on the latest years available**.

Accuracy of the Rating Assignment Process

In the context of the validation of IRB models, the Validation function should form an opinion on **two dimensions of the accuracy** of the rating assignment:

1. The **discriminatory power of the model**, i.e., its capacity to efficiently discriminate riskier obligors or facilities from less risky ones, based on the difference in the level of default (for the PD), loss given default (for the LGD) and conversion (for the CF) risk;

2. The **homogeneity within each grade or pool**, in terms of default, loss given default and conversion risk, and the **heterogeneity between grades or pools**, in terms of distributions' overlaps of default, loss given default and conversion risk between all grades or pools.

In order to do so, the Validation function should assess the **input data**, **challenge all methodological choices** used during the risk differentiation, and **perform statistical tests on the model performance**.

Assessment of the Input Data

The **assessment of the input data** performed by the Validation function should include:

1. An **opinion on the data quality of the RDS**.

2. A **review of the completeness of the RDS**.

3. A **review of all the procedures applied to the data** used for the model development, including **data collection, data cleansing, data processing** (e.g., normalisation, treatment of collinearity)

---

[1]The EBA supervisory handbook defines the 'application test sample' as a sample whereby the obligors or facilities are assigned to grades or pools, but there has not been enough time to observe the empirical realisations to assess the model.

and **data estimation** (e.g., cash flow projections used for specialised lending). For the latter, a good practice observed in institutions is to complement the review of the framework used for these estimated input data with back-testing comparisons between these estimations (including the projections which go beyond the one-year time-horizon) and the subsequently realised values (out-of-time (OOT) validation tests).

4. The **analysis of representativeness of the development sample vis-à-vis the application sample**, considering: the **scope of application**, the **definition of default**, the **distribution of relevant risk characteristics** as well as the lending **standards and recovery policies**. It is expected to subsequently evaluate the measures taken by the CRCU to deal with any deficiencies in these areas.

Specificities of the Assessment within the Validation Cycle

With respect to the **assessment of the input data** during the **first validation**, **all the four elements** listed above are expected to be assessed. In particular, the **analysis of the representativeness** should be conducted **between the development sample and the current application portfolio at the time of the first validation**, and assessing also the activities performed by the CRCU as part of the model (re)development.

Regarding the **assessment of the input data** during the **on-going validation**:

- For the **analysis of data quality** (point 1.) and for the **assessment of completeness of the RDS** (point 2.) the Validation function **can use its previous assessments**.

- For the **procedures applied to the data** (point 3.), the Validation function **can use its previous assessment**. However, for **data estimation**, a good practice is to perform the **back-testing using the new data available**.

- For the **analysis of the representativeness** (point 4.) the Validation function is expected to **perform the assessment with respect to the application portfolio**. For this analysis, it can take into account the analyses performed by the CRCU but with its own **independent conclusions**.

Assessment of the Modelling Choices and Specifications

Such assessment should ensure that the chosen input variables form a **reasonable and effective basis for the resulting predictions** and that the model does not have any material bias. In this context, the Validation function is expected to have a good understanding of the **documentation** and the **features of the model**, including its scope of application, limitations and weaknesses, main and alternative assumptions or approaches to those finally chosen, in order to effectively challenge them. To do so, the Validation function is expected to assess:

1. The **selection process** and related outcomes of **risk drivers**, whose results are expected to be consistent with the results of statistical tests and with **business expectations**. This analysis should include, among others, a review of the **minimum list of risk drivers** considered.

2. Any **functional form** or **hyperparameters** used in the model development, including how statistical results and **human judgment** are combined to derive the final assignment of exposures to grades or pools.

3. **How obligor and facility grades or pools are defined**, such that the methodology used **ensures the homogeneity** of obligors and exposures assigned to the same grade or pool over time. In this regard, the Validation function is expected to assess whether:

    - the definition of grades or pools is sufficiently **clear**, and the **rating scale is not too granular** so to allow for a consistent assignment of obligors or facilities posing similar risks to the same grade or pool.

    - the number of rating grades meets the **regulatory requirements** in terms of minimum number (as prescribed by Art. 170 CRR).

- the **number of exposures in a given grade or pool is sufficient** to allow for **meaningful quantification** and validation of the default or loss characteristics at the grade or pool level; on the contrary, a high number of rating grades can be an indication of a **lack of heterogeneity** between grades or pools.

Specificities of the Assessment within the Validation Cycle

With respect to the **assessment of the modelling choices and specifications** during the **first validation**, the Validation function is expected to assess all the elements described above, while in the **on-going validation** it can use its previous **assessments**.

Quantitative Validation Challenger Analyses

The **empirical assessment** of the model performance carried out by the Validation function is expected to be based on **rigorous statistical tests**; such tests are expected to be **documented in the validation policy** (as explained in section "Validation Tasks"), be **sound and adequate** and **consider all available data**. These tests are expected to:

1. Cover the **three dimensions** of 1) **discriminatory power**, 2) **homogeneity** and 3) **heterogeneity**. In this context, it is considered as best practice to complement the empirical assessment based on the final rating by a **deep dive analysis** based on the **intermediate steps** of the model for the analysis of discriminatory power. For the evaluation of the homogeneity and heterogeneity, the evaluation is expected to be performed **within (homogeneity) and across (heterogeneity) grades**.

2. Allow for an **evaluation of the performance of the model under various economic conditions**.

The quantitative validation challenger analyses described above are strictly interconnected with the assessment that institutions are expected to perform regarding the **stability of the model use and performance over time**. For this purpose, institutions shall establish a **rigorous statistical process** including *out-of-time (OOT)* and *out-of-sample (OOS)* performance tests for validating the model. These tests are expected to be used primarily by the CRCU in the model development phase, but the Validation function is **expected to perform additional tests** to form its own opinion on the performance of the model.

Specificities of the Assessment within the Validation Cycle

During the **first validation**, the Validation function should pay particular attention to the **robustness of the model**, and is expected to:

- **Assess if due measures were taken in the model development to avoid overfitting**, checking if OOT and OOS-testing was performed as part of the model development;

- **Perform additional tests** to have an independent view on the performance of the model. Where a sufficient amount of more recent data as in model development is available, the Validation function is **expected to perform at least an OOT-validation** using that data.

During the **on-going validation**, for the purpose of the quantitative analyses described above the Validation function **can take into account the analyses performed by the CRCU**, and is expected to **form an opinion on**:

- **The performance of the model on the sample composed of only the new data available since the last validation** (as part of OOT tests);

- **The evolution of the performance over time** (for instance by performing tests separately for each year of observation) and in comparison with the performance reached in the model development.

Validation Challengers

In addition to the statistical tests described in the previous slide, the Validation function is expected to assess also the following aspects:

1. The **impact of overrides on the performance of the rating assignment process**, evaluating the performance of the model before and after overrides.

2. The **number of overrides applied on the model outcomes**, assessing their materiality (in terms of number of obligors or facilities, exposure value and related RWEA) for the application portfolio, and reviewing the threshold set as maximum acceptable rate of overrides for the model.

3. The **stability of the ratings assigned to individual obligors or facilities** (e.g., using migration matrices) in relation to the economic cycle, in comparison to the outcome expected due to the **rating philosophy**. In addition, the Validation function is expected to be aware of the rating philosophy and rating stability properties of the model, and their adequacy for the respective scope of application, also considering the result of this analysis for back-testing purposes.

4. The **monotonicity of the one-year DR or long-run average DR between obligor grades**. The Validation should have a good understanding of the reasons for the non-monotonicity, and should conduct similar analyses for the realised LGD or realised CF in the case where rating grades are used.

5. Other **relevant external data sources**, where available (e.g., where sufficient external ratings are available, a best practice is to use them as a challenger).

6. The **potential concentration in rating grades**, which could be an indication of a lack of homogeneity within grades or pools and therefore of missing risk drivers.

Specificities of the Assessment within the Validation Cycle

During the **first validation**, the Validation function should perform **all the analyses** defined above, considering the following:

- The analysis mentioned in point 1. is not expected to be performed in case of a material change if **historical overrides are not meaningful for the new model**;

- The analysis mentioned in point 2. can be done on the **most recent application sample** or, in case of a model change, on the **'application test sample'**;

- The stability analysis mentioned in point 3. can be performed using the **backward simulated ratings** where possible in case of model changes;

- The monotonicity analysis mentioned in point 4. is **expected to be performed on the RDS used for risk quantification**;

- The analyses based on external data as mentioned in point 5. **should be performed**;

- The concentration analyses mentioned in point 6. **are expected to be performed on the RDS used for risk quantification and on the application portfolio**.

During the **on-going validation**, **all the analyses** described above **should be conducted**. For the analyses of **overrides** (points 1. and 2.), the Validation function can take into account the **analyses performed by the CRCU** (described in paragraphs 205, 206 and 207[2] of the EBA Guidelines on PD and LGD Estimation[4]).

---

[2]Paragraph 205 provides that 'Institutions should regularly monitor the level and justifications for overrides of inputs and outputs of the rating assignment process. They should specify in their policies the maximum acceptable rate of overrides for each model. Where those maximum levels are breached, adequate measures should be taken by the institution. The rates of overrides should be specified and monitored at the level of calibration segment. Where there is a high number of overrides institutions should adopt adequate measures to improve the model.'; paragraph 206 states that 'Institutions should regularly analyse the performance of exposures in relation to which an override of input or output of the rating assignment process has been performed in accordance with Article 172(3) of Regulation (EU) No 575/2013.'; finally, paragraph 207 foresees that 'Institutions should regularly assess the performance of the model before and after the overrides of outputs of the rating assignment process. Where the assessment concludes that the use of overrides significantly decreased the model's capacity to accurately quantify the risk parameters ('predictive power of the model'), institutions should adopt adequate measures to ensure the correct application of overrides.'
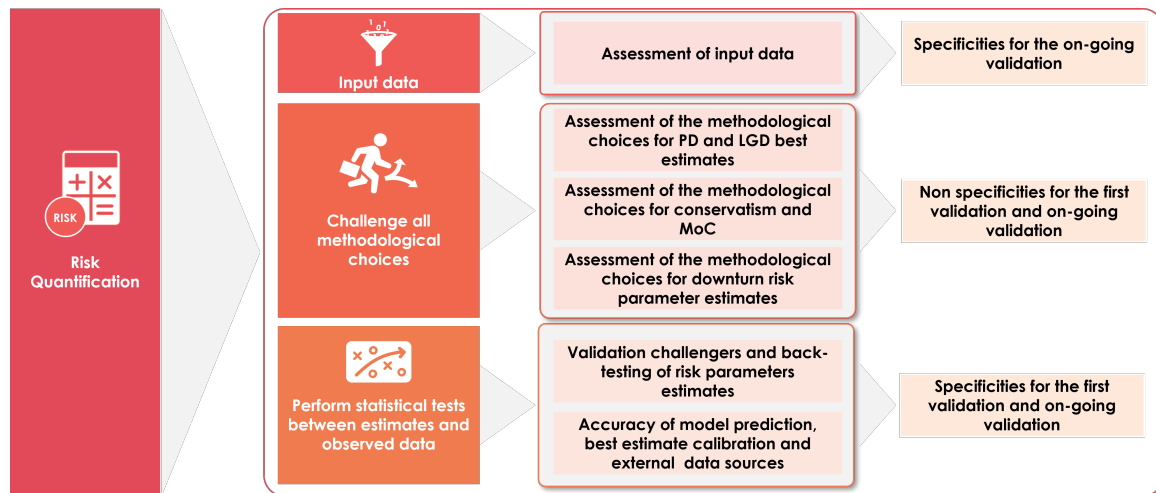
FIGURE 2: *Risk quantification dimensions for the Validation function assessment*

2.3.2   Risk Quantification

The Validation function is expected to evaluate the risk quantification of IRB models, focusing on three main dimensions:

1. The **input data**;

2. **Challenge all methodological choices** used during the risk quantification: in particular, three different assessments are foreseen at this stage:

   (a) the assessment of the **methodological choices for PD and LGD best estimates**;

   (b) the assessment of the **methodological choices for conservatism and MoC**;

   (c) the assessment of the **methodological choices for downturn risk parameter estimates**.

3. Perform **statistical tests between estimates and observed data**.

The goal is to form an opinion on **three dimensions** of the risk quantification performance of the model:

1. The **accuracy of the best estimates** in terms of alignment with the long-run averages per grades or pools, in relation with the observed realized DR, LGD and CF respectively;

2. The **conservatism of the risk estimates**, taking into account in particular the quantification of the MoC;

3. For the LGD and CF parameters, the **appropriateness of the estimates for an economic downturn**, if those are more conservative than the long-run average.

The diagram depicted in figure 2 provides a graphical overview of the dimensions on which the risk quantification of IRB models is expected to be assessed, with an indication of any additional specificities expected on these dimensions in the cases of first validation and on-going validation.

Assessment of the Input Data

The input data is expected to be reviewed to ensure that any uncertainty related to a deficiency is sufficiently covered through a MoC, as indicated in the EBA Guidelines on PD and LGD Estimation[4]. The Validation function is expected to assess during the **first validation** all the elements described below:

1. An opinion on the **data quality of the full RDS**.

2. A review of the **completeness of the RDS**, in terms of historical experience and empirical evidence in order to check that all the available data was considered for the risk quantification,

as well as in terms of scope and information. For example, risk driver values on the relevant dates and the data needed to calculate realised DR, realised LGD and realised CF need to be checked.

3. A **review** of all procedures for **data collection** and **data cleansing** applied to the data used by the rating system and the compliance of the data preparation with the regulatory requirements. For the years used for the risk quantification, the Validation function is expected to **check that all observations have been taken into account** (the exclusions and data cleansing are expected to be duly documented). In particular, the treatment of cases with non-standard or outdated ratings are expected to be carefully reviewed. In fact, when human judgement is involved, the rating assignment of obligors or facilities of the past years should not include the additional conservatism added due to insufficient information and may also require some assumptions and limitations. In this context, the Validation function is expected to assess the materiality of these cases, as well as the severity of the deficiency in the calibration segment, and check that related uncertainty is sufficiently covered by a MoC.

4. A review of the **representativeness of the data used for the risk quantification**. The Validation function is expected to develop statistical tests or metrics for this task, checking if any related **uncertainty is sufficiently covered by a MoC**. The representativeness should be assessed in terms of **scope of application**, **definition of default**, **distribution of relevant risk characteristics**, the **current and foreseeable economic or market conditions**, **lending standards and recovery policies**. This assessment is expected to be performed at the calibration segment level.

Specificities of the Assessment within the Validation Cycle

With respect to the **assessment of the input data in the first validation**, the Validation function is expected to assess all the elements described above. During the **on-going validation**:

- For the analyses described in points 1., 2. and 3. of the previous paragraph, the Validation function can use its **previous assessments**;

- For the analyses described in point 4. regarding **representativeness**, the Validation function is expected to perform this assessment with respect to the **application portfolio** and to challenge the continuous **appropriateness of all appropriate adjustments** applied on the risk estimated due to a **lack of representativeness**. For this analysis the Validation function can take into account the analyses performed by the CRCU.

Assessment of the Methodological Choices for PD and LGD Best Estimates

In order to challenge the **methodological choices used to derive the PD and LGD best estimates** in relation to the long-run average DR and to the long-run average realized LGD, respectively, per grades or pools, the Validation function is expected to assess during the **first validation** all the elements described below:

1. The **choice of the general calibration methodology**, checking all the points described in the previous section regarding both internal and external input data. As such, the Validation function is expected to **check that the approaches used are appropriate for the portfolio and the available data**, such as a strong reliance on external data is justified by insufficient internal data. Finally, the validation function should assess different peculiarities of the calibration methodology, in case the focus is on PD or LGD:

   (a) **PD focus**: the use of continuous PD estimates should meet the requirements indicated in paragraph 96[3] of the EBA Guidelines on PD and LGD Estimation[4];

   (b) **LGD focus**: the use of external data in the form of market prices of financial instruments should only be used to supplement experience. In addition, the number of closed recovery processes should be sufficient to provide robust LGD estimates.

---

[3]'Under no circumstances should the use of continuous PDs or any smoothening of default rates be adopted in order to overcome the lack of data, low discriminatory capacity or any other deficiencies in the rating assignment or PD estimation process, or to reduce the own funds requirements'.

2. The **choice of the approach used to calculate the observed average one-year DRs**: in practical terms, the Validation function should assess the choice of the approach with respect to the use of **overlapping vs. non-overlapping one-year time windows**, which should be appropriately justified.

3. The choices underlying the calculation of the **long-run average DR** (for PD) and of the **long-run-average LGD** (for LGD). Again, the Validation function should assess different peculiarities in case the focus is on PD or LGD:

   (a) **PD focus**: the Validation function should evaluate choices related to the **length of the historical period used for PD**;

   (b) **LGD focus**: the choice of the approach used includes the proper **calculation of the arithmetic average**, and the choices made for the **treatment of incomplete recovery processes** to calculate the observed average loss rate. In this regard, the Validation function should evaluate the following:

      i. choice of the length of the period for the **maximum recovery process**;

      ii. choice of the method and data set used for the **estimation of future costs and recoveries** on these exposures (and the related MoC);

      iii. impact of any **adjustment for massive disposals** to ensure no estimation bias on other exposures not subject to such massive disposals.

4. The **choices underlying the calibration** to the **long-run average DR** (for PD) and to the **long-run-average LGD** (for LGD). In particular, the choice of calibration segments and type and the length of the calibration sample within each calibration segment should be evaluated by the Validation function. Specifically for the calibration to the long-run average DR, the associated hypothesis to arrive at the final estimates considering the **rating philosophy** should also be assessed (in this regard, institutions should take in consideration the analyses already performed to assess the stability of estimates, as described in section Risk Differentiation).

5. The **existence** and **accuracy of any appropriate adjustment**, which should result in a better estimate of the risk parameter. In particular, the Validation function is expected to review the impact of any correction based on the input data. For the representativeness assessment, different specificities should be considered in case the focus is on PD or LGD:

   (a) **PD focus**: the representativeness of the historical observation period and the related impact of any adjustments performed in case of non-representativeness of the **likely range of variability of DRs** used to derive PD estimates should be assessed;

   (b) **LGD focus**: when assessing the representativeness of the historical observation period, the Validation function is expected to check that adjustments made on the basis of the changes expected in the foreseeable future do not lead to a decrease in the estimates of LGD parameter.

Specificities of the Assessment within the Validation Cycle

With respect to the **assessment of the methodological choices for PD and LGD best estimates** during the **first validation**, the Validation function should **perform all the analyses** described above, while in the **on-going validation**, it can **use its previous assessments**.

Assessment of the Methodological Choices for Conservatism and MoC

In order to challenge the methodological choices used to derive **conservative estimates** and to **quantify and aggregate the MoC**, the Validation function is expected to assess, during the **first validation, whether**:

1. The two **conservative requirements** mentioned by the CRR[10] in the Articles 180(1) and 181(1) are implemented in the risk estimates. Specifically, these refer to different areas in which institutions should ensure **sufficient prudence**:

    (a) for exposures to corporate, institution, central governments and central banks, to ensure that the PDs reflect the performance of the underlying assets in periods of stressed volatility (Article 180(1)(a));

    (b) in the case of LGD where there is a significant degree of dependence between the risk of the obligor and that of the credit protection or provider of credit protection (Article 180(1)(c)) as well as currency mismatches between the obligation and the credit protection (Article 181(1)(d)).

For these two cases, the regulation does not require an explicit methodology of implementation and the exact role of the Validation function may differ depending on the approach chosen by the CRCU. In any case, the Validation function is expected to **check that the conservative requirements are implemented** and assess their theoretical implementation, but, if the conservatism is implemented directly in the application of the model, the correct final implementation can be assessed by other internal control functions.

2. The **quantification of Category A** and **Category B MoC** is meaningful to cover for the uncertainty related to all identified deficiencies related to the estimation of risk parameters and **Category C MoC** covers the **general estimation error**. For the first two categories, especially the deficiencies identified on the input data and the adjustments on PD and LGD estimates (mentioned in the previous paragraph) should be considered. In addition, for CF estimates, larger MoC should be incorporated where a stronger positive correlation can reasonably be expected between the default frequency and the magnitude of CF.

3. The **aggregation of MoC** within each category is **meaningful**, the aggregation between categories is **additive**, the **MoC is applied on the best estimate of the risk parameter**, and each category d**oes not lead to a decrease of the risk parameter estimates**.

Specificities of the Assessment within the Validation Cycle

With respect to the **assessment of the methodological choices for conservatism and MoC** during the **first validation**, the Validation function should perform **all the analyses** described above, while in the **on-going validation**, it can **use its previous assessments**.

Assessment of the Methodological Choices for Downturn Risk Parameter Estimates

In order to **challenge the methodological choices** used to derive LGD and CF estimates appropriate to an **economic downturn**, the Validation function is expected to assess during the first validation all the elements described below:

1. **The methodology used to identify the nature of the economic downturn**, its **severity** and its **duration**, according to the Commission Delegated Regulation on downturn[7];

2. For the **downturn LGD estimates**, the **methodology chosen for the estimation**, the **comparison with long-run averages**, the **sensitivity** of downturn LGD estimates to changes in economic cycles, the aggregation of the impacts from intermediate parameters, the **calculation of the reference value** and the **estimation process for defaulted exposures**. In addition:

    (a) in the case the institution uses the downturn LGD estimation based on **observed impact**, the Validation function is expected to challenge the analysis requested by paragraph 27 of the EBA Guidelines on Downturn[4][1], its incorporation in the calibration of the downturn and the MoC applied in case where no impact of a downturn period is observed in the institution's relevant loss data;

    (b) in the case the institution uses the downturn LGD estimation based on **estimated impact**, the Validation function is expected to challenge the choice of the methodology used by the institution, the use of intermediate parameter in the calibration of the downturn and the MoC applied in case of a lack of data.

---

[4]Paragraph 27 'In order to calibrate downturn LGD based on the observed impact of a considered downturn period, institutions should carry out an analysis of the impact of this downturn period on the loss data related to the considered calibration segment.'

Specificities of the Assessment within the Validation Cycle

With respect to the **assessment of the methodological choices for downturn risk parameter estimates** during the **first validation**, the Validation function should perform **all the analyses** described above, while in the **on-going validation**, it can **use its previous assessments**.

Validation Challengers

The Validation function is expected to **develop and use various statistical tools**, to ground its opinion on the model performance on empirical evidence. The analyses that are expected to be performed include:

1. The **back-testing of risk estimates**;

2. The assessment of the **accuracy of model prediction** and **best estimate calibration**;

3. **Benchmarking analyses**.

Back-testing of Risk Parameter Estimates

In order to form this opinion on the **appropriateness of the risk parameter estimates**, the Validation function should **compare the realised DR with the estimated PD** for each grade or pool and perform **analogous analysis for LGD and CF estimates**. In practice, this means that the Validation function should:

1. Make **use of historical data that cover a period as long as possible**, to use not only the full historical data in one test, but also to consider multiple sub-periods separately for this purpose;

2. **Analyse the deficiency for the back-testing of PD estimates**, where the realized one-year DR in a grade pool falls outside the expected range for that grade or pool, considering the deviation in light of:

   (a) whether it happened during an extreme year;

   (b) the rating philosophy;

   (c) the results for other sub-periods.

3. For the back-testing of LGD estimates:

   (a) compare the LGD estimates with the realized LGDs using only closed cases;

   (b) using all cases;

   (c) compare the estimation of future costs and recoveries on incomplete cases.

4. Conduct actions, considering a high severity in terms of deficiency, if the results of the analyses show an **inappropriate level of the regulatory parameter**.

Specificities of the Assessment within the Validation Cycle

With respect to the **back-testing of risk parameter estimates** in the **first validation**, the Validation function is expected to **assess all the elements described above**. If a sufficient amount of more recent data as used in the model development is available, the Validation function is expected to perform the quantitative tests taking also into account that data. With respect to the **back-testing of risk parameter estimates** in the **on-going validation**, the Validation function is expected to **assess all the elements described above**, in particular using also the **new available data**. The Validation function is expected to assess the **evolution of the different adjustments and MoCs** in relation to the evolution of the corresponding deficiencies and uncertainties. For the PD estimates, this includes an **assessment of the period of the likely range of variability of defaults rates and the mix of good and bad years**. For this evaluation, the Validation function **can leverage on the analysis from the CRCU**. In particular, the Validation function is expected to **review the CRCU assessment of whether the use of the most recent data in the risk quantification would lead to materially different risk estimates**.

Accuracy of Model Prediction and Best Estimate Calibration

In addition, the Validation function is expected to **assess the accuracy of the model prediction using other quantitative tools**, considering in particular the **rating philosophy** of the model:

1. The Validation function is expected to make **use of historical data that cover a period as long as possible**, to use not only the full historical data in one test but also multiple sub-periods separately for this purpose;

2. These other quantitative tools are expected to include a **back-testing of the PD best estimates**, to assess the accuracy of the model predictions, and of the **LGD and CF best estimates** for each grade or pool, as well as of the final long-run average estimates when back-testing of LGD and CF estimates was performed on the parameters appropriate for an economic downturn;

3. For this assessment, a good practice is to complement the tests based on the final rating grades assignment used for the own funds calculation by **other tests based on rating grades without additional conservatism**;

4. Where the results of these analyses show an inappropriate level of model predictions for the parameter in question, **appropriate actions** are expected that take into account the confidence level of the back-testing results.

Specificities of the Assessment within the Validation Cycle

With respect to the **assessment of the accuracy of model prediction and best estimate calibration** in the **first validation**, the Validation function is expected to **assess all the elements described above**. In particular, where a sufficient amount of more recent data as used in the model development is available it is expected to perform the quantitative tests taking also into account that data. During the **on-going validation**, the Validation function is expected to **assess all the elements** described above, in particular using also the **new available data**. The Validation function is expected to assess the **evolution of the different adjustments and MoCs** in relation to the evolution of the corresponding deficiencies and uncertainties. For the PD estimates, this includes an **assessment of the period of the likely range of variability of defaults rates and the mix of good and bad years**. For this evaluation, the Validation function **can leverage on the analysis from the CRCU**. In particular, the Validation function is expected to **review the CRCU assessment of whether the use of the most recent data in the risk quantification would lead to materially different risk estimates**.

External Data Sources

The Validation function should perform an **analysis based on relevant external data sources**, where available. For this purpose, the default rate associated to **external rating grades** may be used as challenger for **low default portfolios**, as well as benchmarks provided by the EBA on the EBA benchmarking portfolios.

Specificities of First Validation and On-going Validation

The **analyses based on external data sources** as described above are expected to be performed both during the **first validation** and the **on-going validation** activities.

2.3.3   Other Specific Points

On top of more general risk differentiation and risk quantification aspects, covered in the previous sections, the EBA handbook outlines a list of **other specific points of the model performance** that the Validation Function should assess. In particular, **three aspects** of the rating system should be evaluated:

- The methodology used to derive **LGD in-default and expected loss best estimates (ELBE)** for defaulted exposures;

- **Credit Risk Mitigation (CRM)** techniques;

- Exposure-weighting using the **slotting approach**.

Validation of Defaulted Exposures' Risk Parameters

The validation of the LGD within a rating system encompasses a **specific review for defaulted exposures (LGD in-default and ELBE)**. In general, it is expected that all relevant validation activities are performed but **using appropriately defined reference dates** instead of the dates of default. These dates should be **consistent with observed recovery patterns**, and it should be checked that the **realised LGDs are appropriately calculated**. Moreover, concerning the RDS validation it is important to verify that all relevant information from and after the default have been taken into account.

- **ELBE specifics**: ELBE parameters should **not include any adjustments for conservatism nor MoC, and they should be reflective of economic conditions**. In addition, the Validation function is expected to check that any situations where the **specific credit risk adjustments exceed the ELBE amounts** are justified adequately;

- **LGD in-default specifics**: the Validation function is expected to **compare the average LGD estimates immediately before and after default** in order to check consistency between defaulted and non-defaulted estimates and it should verify that the **LGD in-default is always higher that the ELBE by a sufficient margin** to cover for the effects of the downturn, MoC and potential additional unexpected loss.

Specificities of the Assessment within the Validation Cycle

With respect to the **assessment of the risk parameters for defaulted exposures, all the analysis** described above are expected to be performed during the **first validation phase**. In the context of the **regular on-going validation**, regarding the general assessment of the risk parameters for defaulted exposures, the Validation function should perform an **assessment of whether new systematic deviations between realisations and estimates were observed on the most recent data**. On the other hand, with respect to **all other assessment mentioned, the Validation function may rely on its previous assessments**.

Validation of Credit Risk Mitigation

Exposures benefitting from a Credit Risk Mitigation (CRM) are subject to all the general requirements already discussed in the part dedicated to risk differentiation and quantification, and additionally to some **specific requirements to ensure a prudent and consistent recognition of the CRM effects**. In general, it is required that any validation activities on exposures with CRM are performed at least at the same level (e.g., obligor or facility level) than those on exposures without CRM and that it is checked that there is **no double counting in the recognition of any CRM in the estimates**. Moreover, some specific requirements are foreseen:

- **Validation of the RDS**: the Validation function is expected to check that the **source of the recovery cash flows is properly identified**, that the data contains the **information on the eligibility of the CRM** for each exposure and the overall **traceability of the recoveries**;

- **Recognition of Funded Credit Protection (FCP) effect**: the Validation function should check that **cases with adverse dependency** between the **risk of the obligor and that of the collateral** are dealt with an appropriate level of conservatism;

- **Recognition of Unfunded Funded Credit Protection (UFCP) effect**: the recognition of the effect of UFCP can be performed according to three **different methods** (modelling approach, substitution of risk parameters approach and override approach), which must be consistent (in case of multiple CRM) and satisfy all requirements outlined in the EBA Guidelines on Credit Risk Mitigation[2];

- **Multiple CRM**: the use of multiple CRM can bring **additional modelling challenges**, which are expected to be checked by the Validation function.

Specificities of the Assessment within the Validation Cycle

With respect to the **assessment of the CRM, all the analyses** described above are expected to be performed during the **first validation phase**. On the other hand, during the **on-going validation**, the Validation function may **rely on its previous assessments**.

Validation of the Slotting Approach

For specialised lending exposures for which the institution adopts the so-called 'slotting approach', the Validation is expected to assess the **consistency and replicability of the exposure assignment process to specialised lending exposure category** and subsequently the **assignment of such exposures into a specific slotting approach**. In the assessment of the input data, it is good practice to perform the **representativeness analyses on long and short-term exposures separately** (at a 2.5 years threshold).

When assessing the modelling choices three topics should be reviewed:

1. **The selection of relevant information** and rating criteria by challenging any deviation from the definition of the sub-factor components as defined in the Commission Delegated Regulation (CDR) on slotting approach[6];

2. **The aggregation of relevant information**, starting from the categorization methodology of sub-factor components up to reviewing the weights used to aggregate the relevant factors' category;

3. **The definition of obligor grades** by verifying that the number of grades is compliant with the minimum number foreseen by the CRR[5].

Finally, the **predictive power** is expected to be assessed, but as some of the dimensions described in the risk differentiation section might not be fully appropriate, these analyses may be conducted **via specific challenger analyses**.

Moreover, the Validation function should perform some **general challenger analyses**:

- Challenge the **use of overrides**;

- Use other **external data sources**;

- Assess **monotonicity** of the observed loss rates;

- Assess the **concentration of exposures per slotting category**.

Specificities of the Assessment within the Validation Cycle

With respect to the **assessment of the slotting approach, all the analyses** described above are expected to be performed during the **first validation**.

Regarding the **on-going validation** with **the most recent data available**, the Validation function is expected to focus on:

- The assessment of **representativeness of exposures** (in particular, if there is a change in the granting or renewal of loans when it comes to maturity and bullet payments);

- The **specific challenger analyses**;

- The **general challenger analyses**.

2.4 Assessment of the Modelling Environment: Data Quality and Maintenance and IT Implementation of the Rating System

To ensure a proper assessment of the data quality and maintenance, the institutions should have in place an appropriate **data quality framework which should define clearly the policies, roles and responsibilities in data processing and data quality management**. It should **cover all relevant data quality dimensions**, including completeness, accuracy, consistency, timeliness, uniqueness, validity, and traceability, and should **cover the full data life cycle**, from data entry to reporting, and should

---

[5]CRR, Article 170(2): 'These institutions shall have for these exposures at least 4 grades for non-defaulted obligors and at least one grade for defaulted obligors.'

encompass both historical data and current application databases.

The Validation function is expected to **form an opinion on the above-mentioned data quality dimensions for data used for IRB modelling**. It should check the quality of both the data used for its own validation activities as well as the data used by the CRCU for the estimation of risk parameters. In case **any error is detected** in the data, it should **assess its impact in the estimation** of risk parameters.

To form such opinion, the Validation function should **check that any data used in model development and risk quantification is encompassed by the institution's data quality framework**. To perform this check, the Validation function is **expected to have access to the relevant data quality management reports** submitted to the institution's senior management.

Regarding the IT implementation, the Validation function is expected to **verify the adequacy of the implementation of internal ratings and risk parameters in IT systems**. For this purpose, it expected to **analyse the relevant functional documentation and check the consistency with the rating system documentation**. Moreover, it should ensure that the implementation of the rating system in the relevant IT systems is compliant with and reproduces exactly the documented rating system under review.

Specificities of the Assessment within the Validation Cycle

With regard to the **first model validation**, the Validation function is expected to conduct its **data quality analysis along two dimensions: on the RDS for the modelling development, and for the application of the model**. Regarding the **IT implementation, all analyses are to be performed** to ensure that the model in production reproduces the business and functional requirements defined by the new or changed model.

With respect to the **on-going validation**, the Validation function is expected to **assess the data quality management reports submitted to the institution's senior management** directly such that it is aware of any new deficiency. In addition, it is expected to **check how the previously identified deficiencies have been treated and addressed by the CRCU**. With respect to the **assessment of the adequacy of the IT implementation**, the Validation function can **rely on its previous assessment**.

3.   Specific Validation Challenges

3.1   Validation in the Context of the Use of External data

In the specific situation where a rating system is developed on **a broader range of exposures** than it is afterwards applied, i.e., with **external data on additional obligor or facilities** added to the RDS vis-à-vis the application and historical portfolios, the validation of the rating system is not expected to materially differ from the validation of other rating systems but **entails some specificities**. There are **two cases** which fall under this framework:

- The development of the rating system is **based on both internal and purchased external data stored in the internal systems**, i.e., to which **the institution has access to**;

- The development of the rating system is **based on internal data**, as well as on **external data to which the institution does not have access to**. In practice, this can be the case when the rating system is developed:

    - at **group level** while **used at stand-alone level** of multiple subsidiaries;

    - **externally based on pooled data** of several institutions not belonging to the same group.

The validation of a rating system built on external data has to follow **five principles**, in order to guarantee that there is not any material difference in the validation process and in order to manage its specificities:

1. **Appropriateness of the use of external data (representativeness)**: the **representativeness** for risk differentiation and risk quantification is expected to be **carefully assessed** vis-à-vis the individual entity's application portfolio. The CRR provides further requirements when a

mapping to the rating grades of an external credit assessment institution or a similar organisation[6] or when pooled data[7] is used. Furthermore, the Validation function has to challenge the appropriateness of the external data used, and to carefully review the quantification of the (Category A) MoC.

2. **Access to data**: the Validation function is expected to be in a position to **challenge the methodological choices** related to the development of the rating system and to perform addition quantitative analyses. In the cases where the institution does not have access to external data used, this implies that it has the **possibility to request any further analyses from the data provider**.

3. **Methodological choices assessment**: the Validation function is expected to **assess whether any bias has been introduced due to the duplication of observations** on the same obligors or facilities used in the risk quantification.

4. **Performance assessment**: even if the rating system has been developed using external data, the **quantitative evaluation of its performance is expected to be performed first on the internal data**. In addition, in the case where external data is used to circumvent **data scarcity issues**, the previous assessment can be complemented by an assessment of the performance using all data available.

5. **Data quality**: the external data is **not expected to be treated differently than internal data in terms of data quality assessment** from the moment where it is stored in the internal system of the institution. In addition, the Validation function is expected to form an **opinion on the data quality framework of the data provider**.

3.2   Validation in the Context of Outsourcing of Validation Tasks

Where an institution takes the decision to start the process of **outsourcing certain operational tasks of the Validation function**, it is expected to **perform a comprehensive analysis** of its **compliance with all the regulatory requirements on outsourcing**, according to the EBA Guidelines on outsourcing arrangements[3]. In particular, any **changes to the validation methodology and/or validation processes** of existing IRB models have to be assessed and subsequently **notified to the CA**. In this regard, EBA provides a set of **nine principles** to be followed in the context of outsourcing of validation operational tasks, which are listed below:

1. **Non-transferability of responsibility**: only 'operational tasks of internal control functions' can be outsourced to anyone outside of the **Validation function**, which should in any case **retain the responsibility of the opinion and of the final assessment on the rating system**, of its validation policy and of the correct implementation of the validation methodology.

2. **Involvement of the senior management and management body**: the **management of the Validation function** should **remain responsible for the validation activities**. All changes to validation methodologies and/or validation processes and validation reports should be understood and **approved by the senior management and the members of the management body**.

---

[6]CRR, Article 180(1)(f): 'To the extent that an institution associates or maps its internal grades to the scale used by an ECAI or similar organisations and then attributes the default rate observed for the external organisation's grades to the institution's grades, mappings shall be based on a comparison of internal rating criteria to the criteria used by the external organisation and on a comparison of the internal and external ratings of any common obligors. Biases or inconsistencies in the mapping approach or underlying data shall be avoided. The criteria of the external organisation underlying the data used for quantification shall be oriented to default risk only and not reflect transaction characteristics. The analysis undertaken by the institution shall include a comparison of the default definitions used, subject to the requirements in Article 178. The institution shall document the basis for the mapping.'

[7]CRR, Article 179(2): 'Where an institution uses data that is pooled across institutions it shall meet the following requirements: (a) the rating systems and criteria of other institutions in the pool are similar with its own; (b) the pool is representative of the portfolio for which the pooled data is used; c) the pooled data is used consistently over time by the institution for its estimates; (d) the institution shall remain responsible for the integrity of its rating systems; (e) the institution shall maintain sufficient in-house understanding of its rating systems, including the ability to effectively monitor and audit the rating process.

3. **Assessment of the outsourcing providers**: the **outsourcing policy** of the institution should **take into account the nature of the outsourcing providers**, including:

   - whether they are authorised by a CA;
   - whether they are within the same group (intragroup outsourcing arrangements), outside of the group but from an entity being part of the same institutional protection scheme or completely unrelated;
   - whether they are located within a Member State or a third country;
   - whether the service provider performs some sub-outsourcing;
   - whether they are currently performing model development or CRCU tasks. A good practice observed in institutions is, when the service provider to which operational validation tasks have been outsourced also performs CRCU activities, to have these tasks and activities performed by an independent unit.

4. **Communication with the CA**: all planned outsourcing tasks has to be **communicated to the CA in a timely manner**, if possible as part of the pre-outsourcing analysis, especially in cases where the service provider is:

   - not authorised by a CA of a Member State;
   - outside the group; or
   - located in third countries.

5. **Transparency of outsourcing**: outsourcing requires to **retain a clear and transparent organizational framework and structure**. To this end, any outsourcing of operational tasks of the Validation function should be properly documented, the validation reports should carry the logo and name of the institution as well as of the third party provider and, in addition, the tasks that have been performed by the provider should be clearly identifiable (e.g., via service level agreements).

6. **Access and inspection in the context of outsourcing**: the institution and the CA must have **full access to the service provider** and **unrestricted rights of inspection and auditing** related to the outsourced operational tasks.

7. **Quality of outsourced operational tasks**: institutions should **monitor the performance of the provider on an on-going basis**. To this end, the service provider should meet appropriate performance and quality standards.

8. **Business continuity in the context of outsourcing**: when outsourcing operational tasks of the Validation function, **business continuity is required**. Therefore, the institution must be able to either transfer the function to alternative service providers or reintegrate the function within an appropriate time frame.

9. **Intragroup outsourcing**: also in the case of outsourcing within a banking group, the possibility of outsourcing is restricted only to operational tasks of the Validation function.

3.3 Validation in the Context of Data Scarcity

Data scarcity refers to the **lack of a sufficient number of observations on the empirical realization of 'risk metrics'**, i.e., defaults, realized LGDs and realized CFs. In this context, the validation policy is expected to provide:

- **Specific metrics** or **defined tolerances**: in this context the Validation function is expected to pay special attention to the interpretation of the results of statistical tests, and in any case the statistical uncertainty stemming from lack of sufficient data is expected to be treated conservatively when drawing conclusions;

- A **description of complementary analyses** foreseen to supplement quantitative measures (e.g., graphical analyses);

- An **adjustment to the validation policy** when the rating system is based on the use of external data, to account for the provisions already described in section "Validation in the Context of the Use of External Data".

In addition, the validation activity in the context of data scarcity must account for some specificities, depending on the area subject to assessment, as described below:

- **Risk differentiation**: in this regard, the Validation function is expected to verify:

  - whether the **main risk drivers of the observed defaults and losses are appropriately reflected in the model** by analyzing observed individual defaults;

  - the **adequacy of the number of rating grades and pools in relation to the available data**, to allow for a quantification and validation of the default and loss characteristics at grade or pool level.

- **Risk quantification**: in this context, in case a second-best approach is used for either retail or purchased corporate based on an estimate of total losses, the **back-testing** is expected to be **performed on the estimated parameters** as well as on the **'intermediate parameters'** (i.e., total losses).

The validation handbook further provides some **examples of alternative validation approaches** which can be applied when dealing with issues of data scarcity, as described below:

- **Risk differentiation**: comparison of the ranking provided by the model with internal credit expert ranking;

- **OOS and OOT validation samples**: to find the appropriate balance between the lack of sufficient data (which makes more challenging to dismiss a portion of data from the model development) and the need to validate the model against out-of-sample data, several alternative approaches are suggested by the handbook:

  - complement the tests performed by the CRCU with in-sample tests and quantitative analyses;

  - conduct the validation solely based on either an OOT or an OOS sample;

  - leverage on the analyses performed by the CRCU, when it has assessed the performance on OOS and OOT sample only in intermediate steps of the model development, but it has used the whole sample of available data to train the final model;

  - other approaches based on simulation or bootstrapping techniques.

- **Risk differentiation and risk quantification**:

  - aggregation of data from different observation periods or consideration of analyses based on multi-year periods;

  - data enhancements (e.g., extension of the default horizon);

  - testing with external benchmarks (e.g., external ratings or market driven metrics such as bond spreads).

4. Conclusions

The publication of the **EBA Supervisory Handbook for the validation of IRB models** represents an **important milestone of the EBA's work** for reducing the unjustified RWA variability of internal models, as for the IRB roadmap.

With the handbook, the EBA provides **clear expectation**s to institutions on the **areas the internal Validation function is expected to assess** and to form an opinion on, with specific details on the **assessment of the core model performance and of the modelling environment**. In addition, the handbook defines some **core principles** and highlights some alternative validation approaches to be followed when dealing with specific **validation challenges**, such as the validation

of models developed with the usage of external data, the outsourcing of validation activities, and the performing of the validation activities in the context of data scarcity.

At the same time, the handbook provides Competent Authorities with **good and best practices** which should **promote convergence** and allow **harmonised supervisory practices** in the performing of supervision activities related to IRB models. ●

References

[1] **European Banking Authority.** *Guidelines for the Estimation of LGD Appropriate for an Economic Downturn (EBA/GL/2019/03),* March 2019.

[2] **European Banking Authority.** *Guidelines on Credit Risk Mitigation for Institutions Applying the IRB Approach with Own Estimates of LGDs (EBA/GL/2020/05),* May 2020.

[3] **European Banking Authority.** *Guidelines on Outsourcing Arrangements (EBA/GL/2019/02),* February 2019.

[4] **European Banking Authority.** *Guidelines on PD Estimation, LGD Estimation and the Treatment of Defaulted Exposures (EBA/GL/2017/16),* November 2017.

[5] **European Banking Authority.** *Supervisory Handbook on the Validation of Rating Systems under the Internal Ratings Based Approach (EBA/REP/2023/29),* August 2023.

[6] **European Commission.** *Commission Delegated Regulation (EU) No. 2021/598 with Regard to Regulatory Technical Standards for Assigning Risk Weights to Specialised Lending Exposures,* December 2020.

[7] **European Commission.** *Commission Delegated Regulation (EU) No. 2021/930 Specifying the Nature, Severity and Duration of an Economic Downturn,* March 2021.

[8] **European Commission.** *Commission Delegated Regulation (EU) 2022/439 on Assessment Methodology for IRB Models,* March 2022.

[9] **European Parliament and European Council.** *Regulation (EU) No. 1093/2010 Establishing a European Supervisory Authority (European Banking Authority),* November 2010.

[10] **European Parliament and European Council.** *Regulation (EU) No. 575/2013 on Prudential Requirements for Credit Institutions and Investment Firms,* June 2013.

Iason is an international firm that consults Financial Institutions on Risk Management. Iason is a leader in quantitative analysis and advanced risk methodology, offering a unique mix of know-how and expertise on the pricing of complex financial products and the management of financial, credit and liquidity risks. In addition Iason provides a suite of essential solutions to meet the fundamental needs of Financial Institutions.

iason ESSENTIAL SERVICES FOR FINANCIAL INSTITUTIONS