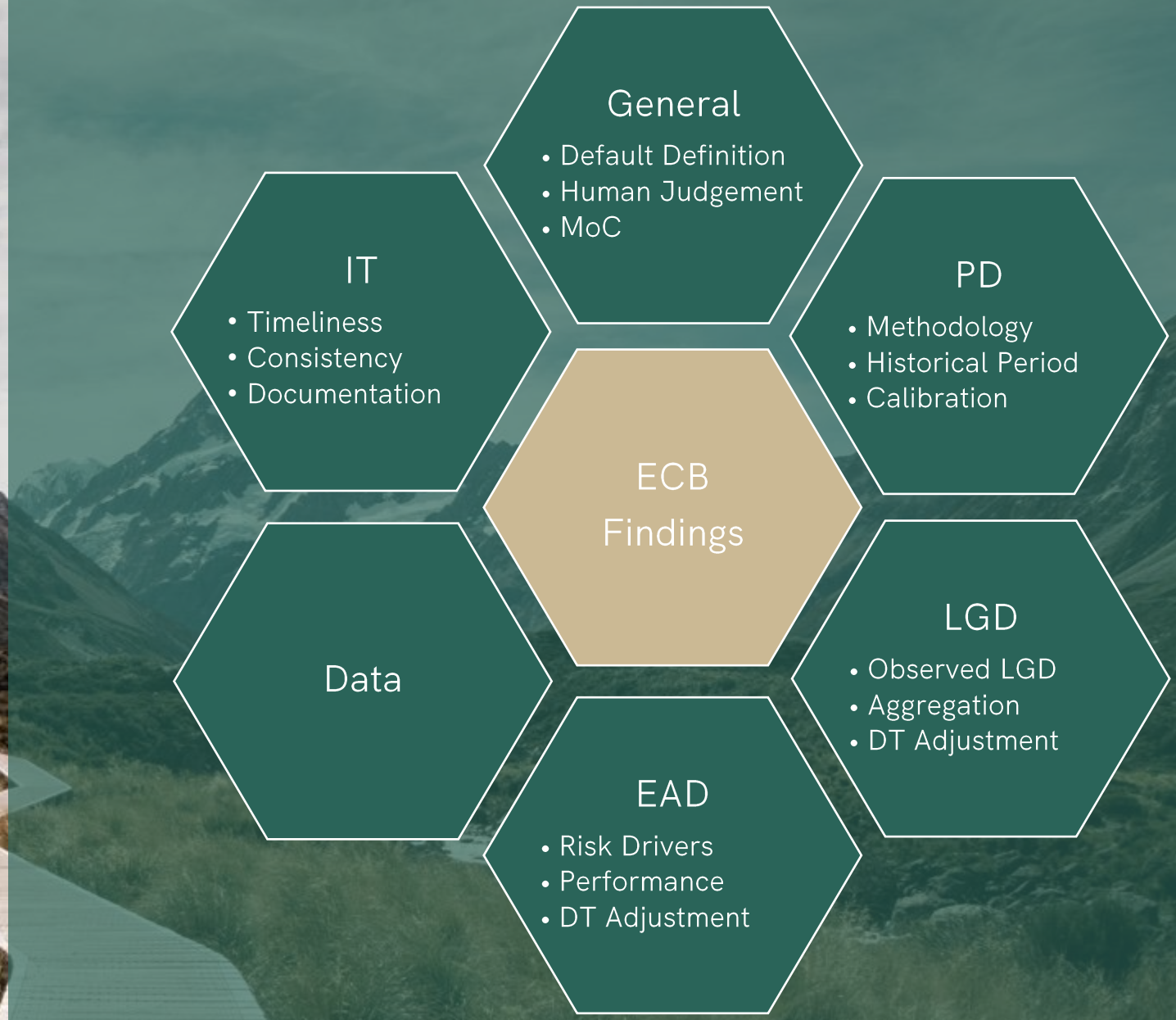
Supervisory Approach to Model Reviews

GCD Nordic Forum 15/11/2023

ADVISENSE

Supervisory Approach to Model Review

Insights from practitioner's experience working with western European institutions



Overarching points of attention from supervisory on-site experience

Data & Data Quality

- Data definitions
- Data availability during on-sites
- Data quality controls
- Data quality dimensions & norms (KPIs)
- Documentation of data quality checks
- Data lineage

Documentation & Evidencing

- Technical model documentation
- Documentation of expert input
- Documentation of model validation
- Reproducibility
- Evidence back to formal documentst
- Special attention: defaulted exposures

Consistency

- Policy adherence
- Uniform processes, work instructions
- Consistent decisions by different staff
- Uniformity across jurisdictions, systems
- Reconciliation between systems
- Bank-wide definitions

Data and other requirements for models are specified by regulators and the supervisor

Guidance on Data in the ECB Guide to Internal Models*

Credit Risk | 2 Data Maintenance for the IRB Approach (page 59)

Table 9

	Date of issue	Article	Paragraph/Point
Legal background			
CRR	26/06/2013	142	(1)(1)
		144	
		174	(b)
		175	(1)
		176	
		189	(1), (2)(c)
		190	(4)
Commission Delegated Regulation (EU) No 2022/439[2]	20/10/2021	31, 32, 72, 73, 74, 75	
Other references			
Basel Committee on Banking Supervision (BCBS) 239[3]	09/01/2013	Principles 1-11	

Credit Risk | 3 Use of Data (page 69)

Table 10

	Date of issue	Article	Paragraph/Point
Legal background			
CRR	26/06/2013	144	(1)(d)
		171	(1)(a), (b)
		172	(3)
		174	(b), (c), (e)
		176	
		178	(4)
		179	(1)(a), (c), (d), (2)(a), (b)
Commission Delegated Regulation (EU) No 2022/439	20/10/2021	42, 45, 47, 53	
EBA Guidelines on PD and LGD	20/11/2017		15-35

*) Source: ECB guide to internal models, June 2023.

Thorough preparation is a key success factor for effective historical data remediation

From preparation to testing; the data remediation approach in five steps ...

1

Preparation & Scoping

Define the portfolio in scope considering regulation, modelling requirements, and business requirements

- Timeframe (# of years)
- # of files total
- #/ names of defaults
- Expert validation
- Sign-off by stakeholders

2

Define data requirements

List the data attributes for borrowers, loans, collaterals, guarantors and cash flows in scope of the remediation

- # of attributes
- Attribute definitions
- Keys, risk drivers
- Mapping to GCD model
- Sign-off by stakeholders

3

Chart paper files and source systems

Create an overview of files and systems, both decommisioned and existing, along the entire remediation timeframe

- Source file/system list
- System documentation
- System migrations
- Attribute-source matrix
- Access / availability

4

Design remediation approach

Define the approach for both system-based data remediation and paper-file data remediation

- Tooling and approach
- Remediation order
- Identify paper-files
- Evidence recording
- Commitment / resources

5

Test remediation on sample files

Select a varied sample of 10-30 defaulted files to test the remediation approach, and adapt and refine where needed

- Time measurement
- Progress monitoring
- Quality assurance
- Validation / sign-off
- Evaluation / refinement

... with continuous attention for:

Regulatory Compliance

Decisions on approach, data used, modelling need to be checked for compliance with applicable regulations

Documentation & Evidencing

Rationale, meetings, decisions, approvals, data sourcing and processing, and coded algorithms, need to be well-documented

Stakeholder involvement

Stakeholders from Business, Credit Risk, Restructuring and Recovery unit and Modelling need to be informed and involved

The 9th DQ dimension: representativeness; important for external data

3.2 Use of external data*

38. Proving representativeness in cases where an institution uses external data is generally more difficult, as internal data are scarce. If an institution cannot provide sufficient proof that the external data are representative, in the ECB's view it may still use external data if it shows (by quantitative analysis and/or qualitative argumentation) that the information gained from the use of the external data outweighs any drawbacks stemming from the deficiencies identified and an appropriate margin of conservatism (MoC) is applied. In particular, institutions should provide evidence that the model's performance does not deteriorate when including information derived from the external data, and that the parameter estimates are not biased. To assess these issues, the institution should conduct quantitative and qualitative analyses specifically designed for this purpose.

*) Source: ECB guide to internal models, June 2023.

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representativeness
Combine the qualitative argumentation with the quantitative analysis, both supported by comments from experts with knowledge and experience with the asset class in scope.
Visualisation by plotting the data will provide valuable insights; both internal and external/ combined data should be plotted to 'see' the fit or deviation.
Various statistical tests can be applied to perform the quantitative analysis.

qualitative argumentation
Specialised Lending asset classes are generally offered by selected banks, typically GCD member banks. Loans are often syndicated, meaning the banks that are member of the data pool are participating in the same deals. Consequently, there is a lot of similarity in deals structures, collateral, and legal documentation. The qualitative argumentation should elaborate on this and provide more detail on similarity in types of clients and deal characteristics (typical maturity, loan to value, industry sector, type of assets, other structure characteristics)

model's performance assessment
Execute model performance tests on the model that has been developed using external data both on:
- the internal data only, and
- on all data available.

Compare both performance results and explain and document the differences.

quantitative analysis
A first measure is the number of pooled observations in scope compared to the number of observations from internal data. Both total observations and observations after applying the logic to derive the RDS are relevant.
Statistical tests that are used to assess representativeness, or similarity, between distributions, are:
- PSI: Population Stability Index
- KS: Two-sample Kolmogorov-Smirnov test

*) Source: ECB guide to internal models, June 2023. Additional analysis based on Advisense experience

Feedback from Nordic supervisors on IRB Applications

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Nordic FRAs status on IRB application processes

Considerable delays

Application status

Sweden

- Assessing PD and LGD/CCF separately
- PD models assessed
- LGD and CCF models mostly pending

Finland

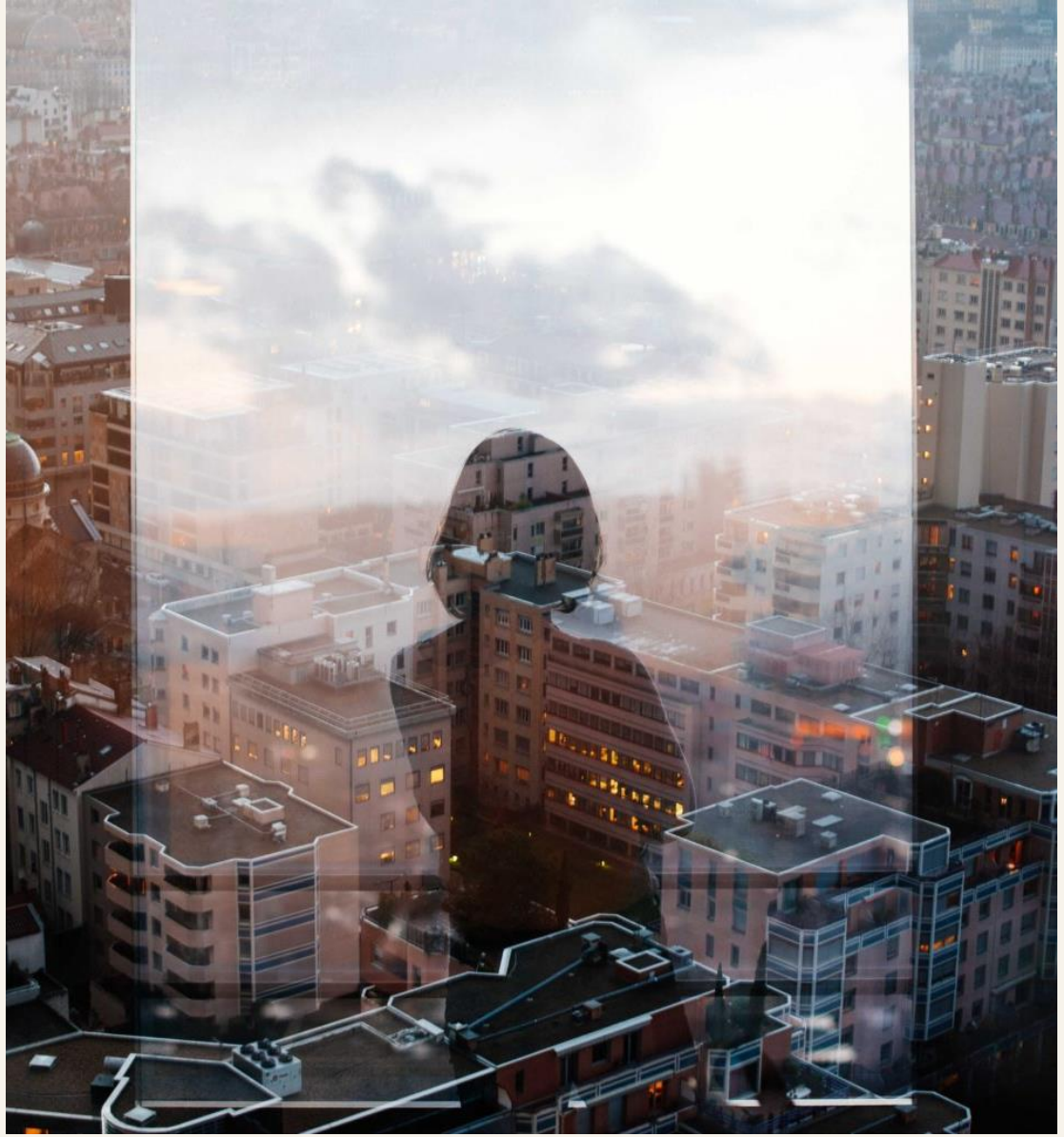
- Delays in banks' applications
- Deficiencies "accepted" with capital add-ons

Norway

- Scarce dialogue with banks during assessment
- Models approved with undefined MoCs

Denmark

- Some approved models
- Many pending processes
- Many findings expected



FSA feedback on new IRB models

The Nordic FSAs main issues with new applications

MoCs

Particular focus on all deficiencies being covered by MoCs and that these are quantified in a consistent way. Length and variation of time series included in MoC C

Downturn adjustments

Extrapolation of downturn effects to the 90s is thoroughly scrutinized. Correlations between macro variables and internal data should exist for extrapolation

Objectivity in instructions

Not much room for subjectivity in instructions for validation, setting defaults, overrides etc.

PD and LGD risk scales

Banks should provide tests for heterogeneity between, and homogeneity within, grades. Different FSA views on continuous scales

Rating philosophy

Banks should analyze their PiT-ness of their rating systems. This is important knowledge for appropriate calibration of PD

Ineligible collateral

One FSA claims that cash-flow from ineligible collaterals cannot be used when calibrating LGD. Banks should set up processes so that collateral meet eligibility criteria

Homogeneity in portfolios

Definition of portfolios, especially borderline between corporate and retail exposures. Analyze relevant calibration segments

CCF

The momentum method is no longer acceptable. CCF should be calculated on the unused credit facility