INTERNAL AUDIT REPORT

ICAAP CREDIT RISK MODEL — 2024 REVIEW

European Fictive Bank (EFB)
Internal Audit – Risk Models Division
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1. Introduction

Internal Audit has carried out a follow-up review of the ICAAP Credit Risk Economic Capital Model, one year after the initial 2023 implementation. The objective of this review was to assess the degree of remediation implemented by the Credit Risk Modelling team following last year's critical audit, and to evaluate whether the 2024 version brings the model closer to ICAAP expectations and EBA standards.

The 2024 model shows meaningful progress compared with 2023. The documentation is more structured, the simulation framework is partially clarified, and basic validation elements have been introduced. Internal Audit acknowledges a genuine effort by the modelling team to strengthen the model in a limited timeframe.

However, despite these improvements, several structural limitations remain. A number of essential aspects of ICAAP model governance, data lineage, methodological transparency, and validation remain only partially remediated. The model continues to rely heavily on manual processes, the rationale for key assumptions is still weak, and the level of reproducibility remains insufficient for a model producing capital figures of this importance.

This review concludes that the model is moving in the right direction, but is **not yet fully compliant** with internal standards and requires further enhancement during 2025.

2. Progress Compared With 2023

The 2024 documentation marks a divergence from the very incomplete 2023 version. Internal Audit recognises the following improvements :

Documentation quality.
The structure is clearer, with explicit sections on data sources, assumptions, methodology, and governance. The annexes, although still incomplete, now contain real content rather than placeholders or descriptive commentary.

Simulation framework.
The number of Monte Carlo simulations has been doubled, and the modelling steps are at least broadly described. The introduction of a parameter table in Annex B, although minimal, helps readers understand the lognormal setup.

Data treatment.
Some consistency checks on PD and LGD have been performed, and the exposure table appears more stable than the version reviewed in 2023.

Governance.
Roles and responsibilities are stated, and the document now contains a sign-off sheet, which did not exist last year.

These changes demonstrate that the first-line team has taken the initial audit seriously and has started to lay the foundations of a proper ICAAP modelling framework.

Nevertheless, the progress made remains **partial**, and several essential aspects are still missing.

3. Key Remaining Issues

3.1 Documentation and Methodology Transparency

Although the 2024 documentation is more complete than that of 2023, it does not yet reach the level of clarity required for ICAAP. Mathematical formulation of the simulation remains absent, calibration steps are not described, and the choice of lognormal parameters is presented without justification. The description of the correlation structure is limited to a single paragraph and does not explain why a uniform parameter is appropriate for all portfolios.

Similarly, there is still no explanation of how missing PD or LGD values are treated. Internal Audit had to ask for raw datasets to verify how overrides were applied and how missing rates were handled. These procedures should be transparently documented for 2025.

3.2 Data Lineage and Quality

The modelling team has drafted a simplified lineage diagram, but it remains high-level and still omits key transformations. Manual manipulations in Excel remain extensive and undocumented. The team was able to explain these steps verbally, but no reproducible workflow exists.

Data quality issues also persist. Internal Audit detected inconsistencies in segment mapping, residual missing PD values, and variations in LGD values between Recoveries files and the final Exposure_2024.xlsx table. While less severe than in 2023, these issues underline the need for rigorous controls and automated checks.

3.3 Simulation Implementation

The Python scripts reviewed this year are clearer and include basic logging, but the implementation remains fragile. Hardcoded elements have been reduced but not fully eliminated. There is still no version control system, and script changes are tracked manually.
The absence of a reproducibility protocol remains an issue : running the model twice does not guarantee identical results, especially because the random seed is not systematically fixed and because intermediate Excel files remain manually editable.

3.4 Validation

The modelling team has made noticeable progress by introducing partial backtesting and a minimal sensitivity note. However, validation remains insufficient to support ICAAP use.

Backtesting was only performed for Corporate and SME portfolios and does not include Retail. Sensitivity analysis exists but is not integrated into the documentation, nor is it interpreted. No benchmark or challenger model is provided, and no analysis is performed to ensure that the model behaves consistently under stressed conditions. These elements are expected for ICAAP models and must be developed in 2025.

3.5 Governance and ICAAP Integration

Governance has improved compared with 2023, but remains incomplete. The sign-off sheet includes signatures but no commentary or validation statement. The change log remains informal, and no evidence of independent 2nd-line review is included in the documentation package.

Finally, the integration of the model into the ICAAP remains limited. The documentation does not explain how the economic capital outputs are interpreted, how they reconcile with risk appetite, or how they relate to other ICAAP components such as stress tests.

4. Overall Conclusion

Internal Audit considers that the 2024 model has progressed substantially but does not yet fully satisfy ICAAP model governance standards.
Many weaknesses identified in 2023 have been partially addressed, but the model remains heavily dependent on manual processes, insufficiently documented, and only partially validated.
It is suitable for ICAAP reporting with caution, provided that management understands its limitations and commits to a full remediation plan in 2025.

5. Recommendations for 2025

Internal Audit recommends that the modelling team undertake the following actions during 2025 :

1. **Produce a complete and formalised model documentation** including methodology, mathematical definitions, data lineage, calibration steps, and validation results.

2. **Automate and document the data extraction and transformation process**, reducing manual Excel operations.

3. **Introduce a proper version control framework**, preferably using Git, with documented change management.

4. **Strengthen the validation framework**, including full backtesting for all portfolios, sensitivity analysis, challenger model development, and stress scenario consistency checks.

5. **Enhance ICAAP integration**, including reconciliation of capital outputs, risk appetite alignment, and narrative justification.

6. **Develop an end-to-end reproducibility protocol** to ensure that model outputs can be regenerated consistently from a clean data extract.

7. **Improve governance evidence**, including a complete review checklist and formal written opinions from the 2nd line.

These actions will move the 2025 model to a level consistent with ICAAP expectations and significantly reduce model risk.