EBA REPORT ON THE 2025 CREDIT RISK BENCHMARKING EXERCISE

RESULTS ON THE ANALYSIS OF THE VARIABILITY OF OWN FUNDS REQUIREMENTS BASED ON THE IRB APPROACH

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Abbreviations

AIRB	advanced internal ratings-based
avg_ead	variable indicating ead on average
CA	competent authority
CCF	credit conversion factor
CfA	call for advice
CGCB	central governments and central banks
COREP	common supervisory reporting
CORP	exposures to corporates other
COSP	Exposures to specialised lending
CRD	Capital Requirements Directive
CRM	credit risk mitigation
CRR	Capital Requirements Regulation
cr_proxy	variable indicating a proxy of cure rate
DR	default rate
DR 1Y	default rate of last year
DR 5Y	Average default rate over the last five years
EAD	exposure at default
EBA	European Banking Authority
EL	expected loss
EU	European Union
FinGar	variable indicating the presence of financial guarantee
FIRB	foundation internal ratings-based
GC	global charge
GL	Guidelines
GOVT	Exposures to central governments
HDP	high-default portfolio
INST	exposures to institutions
IRB	internal ratings-based
ITS	implementing technical standards
LCOR	exposures to large corporates
LDP	low default portfolio

LEI	Legal Entity Identifier
LGD	loss given default
LR	loss rate
LR 1Y	loss rate observed on the defaults of last year
LR 5Y	Average loss rate observed on the defaults over the last five year
MoC	margin of conservatism
MORT	exposures to residential mortgages
OthGar	variable indicating the presence of other guarantee
PD	probability of default
PPU	permanent partial use
QoQ	quarter on quarter
QRE	exposure class qualifying revolving
RealGar	variable indicating the presence of real estate collateral
RGLA/ PSE	regional governments and local authorities/public sector exposures
RETO	exposures to other retail non-SME
RSMS	exposures to retail mortgages SME
RQRR	exposures to retail qualifying revolving
RW	risk weight
RWA	risk-weighted assets
SA	standardised approach
SLSC	specialised lending slotting criteria
SMEC	exposures to corporate small and medium-sized enterprises
SMER	exposures to retail small and medium-sized enterprises
SMEs	small and medium-sized enterprises
SMOT	Exposures to other retail SME
SVB	supervisory benchmarking
Time	variable indicating the time to recovery
UL	unexpected loss

Executive Summary

Legal Mandate

Article 78 of the CRD provides for the monitoring and assessment of risk-weighted exposure amounts (RWAs), which determine the own funds requirements for IRB banks. The annual benchmarking exercise, mandated in this article, aims to monitor the variability of the RWAs for institutions applying the IRB approaches in EU Member States. This report summarises the main results of the 2025 benchmarking exercise (based on data as of 31 December 2024 that has been collected between April 2025 and September 2025).

The EBA IRB roadmap implementation

The EBA IRB Roadmap is intended to reduce unwarranted variability in own funds requirements across institutions applying the IRB approach by promoting greater consistency in modelling practices and supervisory assessments. Results from the 2025 benchmarking exercise confirm continued progress in the implementation of the Roadmap, with an increasing share of material IRB models having reached full compliance with the Guidelines on PD and LGD across asset classes. At the same time, a non-negligible proportion of models remains subject to material model changes that are planned or ongoing, reflecting the sequential and resource-intensive nature of model remediation, validation and supervisory approval processes[1].

The PD variability has decreased in the last years, while the LGD does not present a clear trend. Margin of conservatism and collateralisation explain parts of the variability in credit risk parameters.

The report shows the evolution of the variability of the risk parameters over the 2015-2024 period. A decreasing trend of variability can be observed in some of the asset classes for the PD, whereas for the LGD, the variability does not show a clear trend, or it is only slightly decreasing for most asset classes. The report explores to what extent the underlying portfolio risk, represented by the long run default rate, can explain part of the variability of the PD parameter. For the LGD, it is analysed the role of the level of collateralisation as specific driver (represented by the loan to value) in explaining the variability of the LGD.

[1] The information refers to the data provided by the JSTs and reflects the situation in September 2025

1. Introduction

1. Institutions, which apply the IRB approach, calculate their own funds requirements based on a set of parameters which they partially (under the FIRB approach) or completely (under the AIRB approach) estimate themselves. Article 78 of the CRD provides for the monitoring and assessment of risk-weighted exposure amounts (RWAs) that result from the application of the institutions' estimates.

2. The annual benchmarking exercise, mandated in this article, aims to monitor the variability of the RWAs for institutions applying the IRB approaches in EU Member States. Excessive unwarranted variability of RWAs among EU institutions, and thus non-comparable resulting own funds requirements, have been a concern since the IRB approach was implemented as an EU regulation in 2013[2].

3. Since then, the EBA has put forward a regulatory review of the IRB approach by setting out and completing several guidelines and technical standards, which are aimed at limiting unjustified variability by harmonizing practices. This package is referred to as EBA's IRB roadmap set out in 2016, and institutions are in the process of reviewing their approaches to achieve compliance with the harmonized practices. In addition, since then, the ECB has carried out a large-scale review of the IRB approaches, which are supervised by the Single Supervisory Mechanism (SSM), referred to as the Targeted Review of Internal Models (TRIM).

4. This report summarises the main results of the 2025 benchmarking exercise (based on data as of 31 December 2024 that has been collected between April 2025 and September 2025).

[2] EBA's report on comparability and procyclicality of own funds requirements under the IRB approach published in December 2013

2. General statistics on the materiality of the IRB approach

2.1 IRB Coverage Ratio

5. This section provides the evolution of the relative amount of exposure that is subject to the IRB method. To this end, the relative share of the EAD, for which the AIRB method or the FIRB method is used, is represented. The analysis benefits from the data that the EBA regularly receives thanks to the EUCLID project[3]. In turn, this makes it possible to take into consideration also small and local institutions and to extend the analysis to institutions applying the Standardized Approach.

6. Available data for the study starts at the end of 2020. The level of consolidation considered is the highest at the EU level (subsidiaries of EU institutions are not considered). The period considered is 31/Dec/2020 – 30/Jun/2025 on a quarterly basis. Starting from 2025, the definition of the Asset Classes has been modified. To build a historical series covering the pre- and post-2025 period, it is necessary to map the new and old asset classes. In this case, we decided to map the new asset classes to the old ones. The reconciliation scheme used can be found in the annex.

7. The following table shows that in June 2025, under EUCLID, the EBA collected prudential information from about 2,8 thousand institutions, of which about 1,9 thousand reported the data for the entire period (19 quarters). These institutions represented about 93% of total assets[4] in June 2025.

Table 1: Nr of institutions reporting to the EBA

	Nr of Institutions	Share of Tot. Assets - June 25
Other	823	7.0%
Stable Sample	1,926	93.0%
Total	2,749	100.0%

Source: Corep templates C.02, C.47

8. Referring to all the reporting institutions, it was considered the exposure value (Col 0110 of C.08.02) of the IRB asset classes and the exposure value (Col 0200 of C.07.00.a) of the SA asset classes[5]. For the SA, the provisions (Col 0030 of C.07.00.a) were added to the exposure value to align the definition of the exposure with the IRB one. For both IRB and SA, only performing

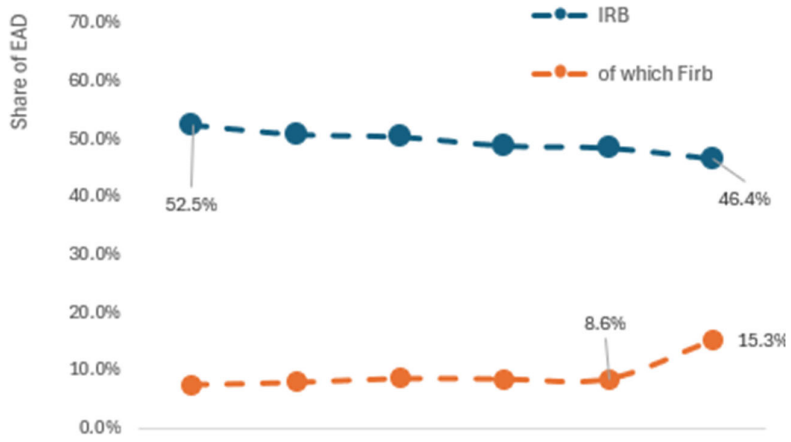
[3] EUCLID stands for European Centralised Infrastructure for Supervisory Data. It is the platform and data infrastructure developed and used by the EBA to gather and analyse regulatory data from a wide range of financial institutions. It covers supervisory, resolution, remuneration and payments data.

[4] The Total Assets is defined as the denominator of the Leverage Ratio, row 0290 of the Template C.47.00

[5] Also SA exposures reported by IRB banks are considered

exposures were considered. The Figure 1 below shows that the share of the IRB over the total (performing) EAD followed a decreasing trend and is now below 50% but it is definitively higher for some asset classes like Corporates. The share of exposure under the IRB approach is higher among the largest institutions[6] (57.6%) in comparison with smaller banks (13.3%). It is possible to observe the impact of the transition to the new Basel 3 standards: the amount of exposures under the FIRB approach increased materially starting from 2025.

Figure 1: Share of performing EAD under the IRB approach (*)



		2020-4	2021-4	2022-4	2023-4	2024-4	2025-2
Total	IRB	52.5%	50.8%	50.4%	48.8%	48.4%	46.4%
	of which Firb	7.6%	7.9%	8.6%	8.5%	8.6%	15.3%
GSII/OSII	IRB	63.1%	63.7%	63.2%	60.8%	60.0%	57.6%
Others	IRB	12.9%	12.1%	12.8%	12.8%	12.8%	13.3%
Sovereign	IRB	30.1%	26.6%	25.8%	24.3%	20.6%	19.6%
	of which Firb	8.7%	10.0%	10.4%	10.2%	8.5%	7.4%
Instit.	IRB	45.2%	38.5%	37.5%	39.4%	38.5%	30.9%
	of which Firb	12.9%	12.1%	14.4%	15.7%	17.2%	30.9%
Corps	IRB	74.8%	72.8%	72.3%	71.4%	71.1%	66.1%
	of which Firb	15.2%	15.0%	16.4%	16.4%	17.3%	39.2%
Retail/Secured	IRB	69.0%	64.3%	65.1%	65.2%	65.1%	64.9%

Source: Corep templates C.08.02, C.07.00
(*) The Figure corresponds to the first rows of the Table i.e. "Total"

[6] The definition of Largest Institution is provided in EBA/DC/2020/334 Article (2)(3)

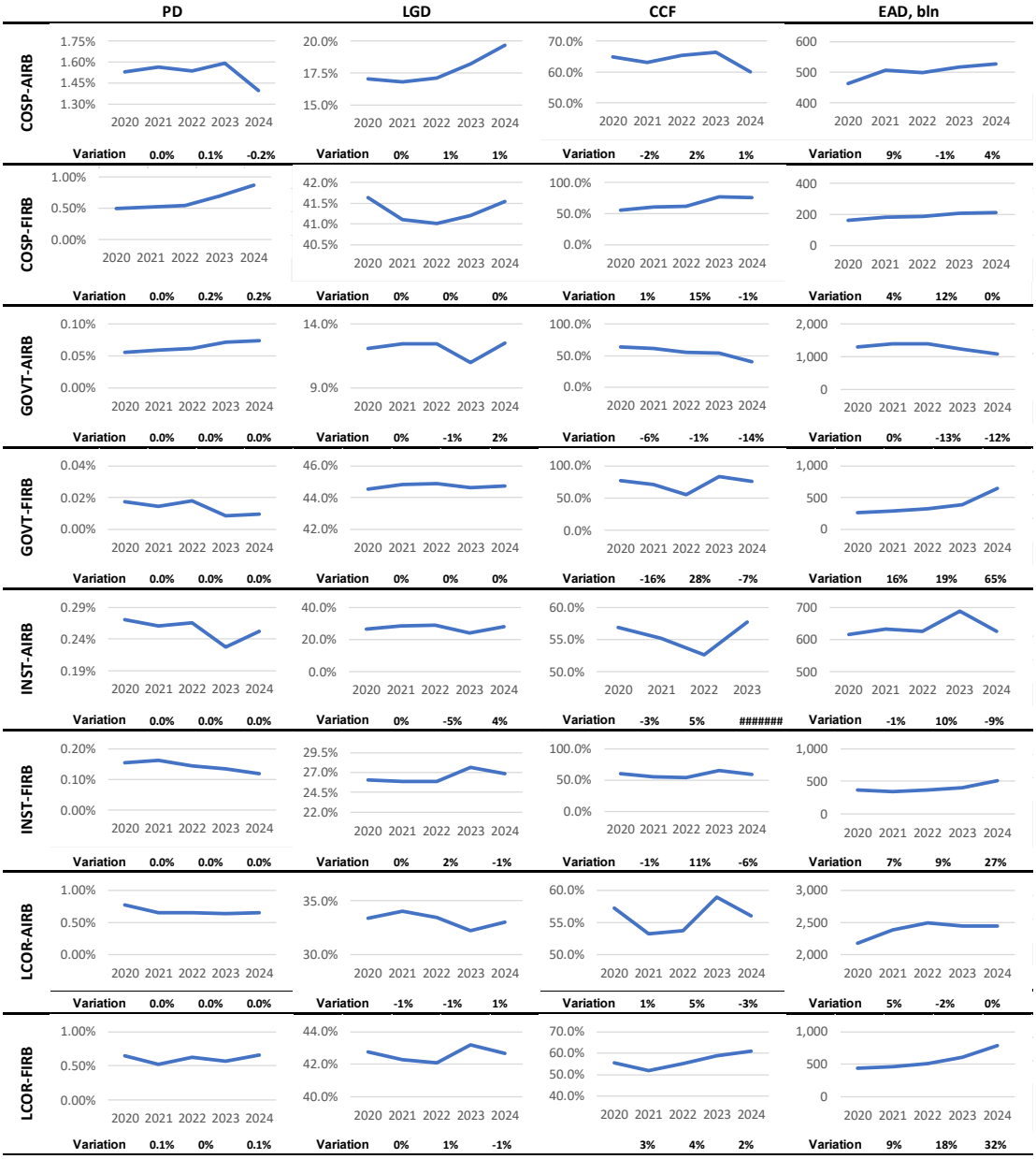
2.2 Risk parameters per asset classes

9. The following graphs show the trend of average EAD weighted Probability of Default (PD), Loss Given Default (LGD) and Credit Conversion Factor (CCF) over the last 4 benchmarking exercises. We see some slight increases of the EAD weighted average PD for some asset classes (Corporates, Other Retail, Credit Cards).

10. For High Defaults Portfolios (Figure 3) it is also shown the comparison between the PDs and the Default Rates. To be noticed that the PDs and Default Rates (DRs) are referred to the same year. Indeed, the aim of the figure is not doing a backtesting exercise i.e. checking the ex-ante measure with the ex-post ones but to compare the trends of the DRs with that of the PDs. An increase of the DRs should have an impact on the PDs because the PDs should be a long run average of the DRs. However, due to retards in the updating of the calibration or because the number of years considered for computing the long run average is quite long, in practice, some delay in the updating of the PDs can be expected so that for example the DRs start to increase but the PDs remain fixed and only after a while they start to change.

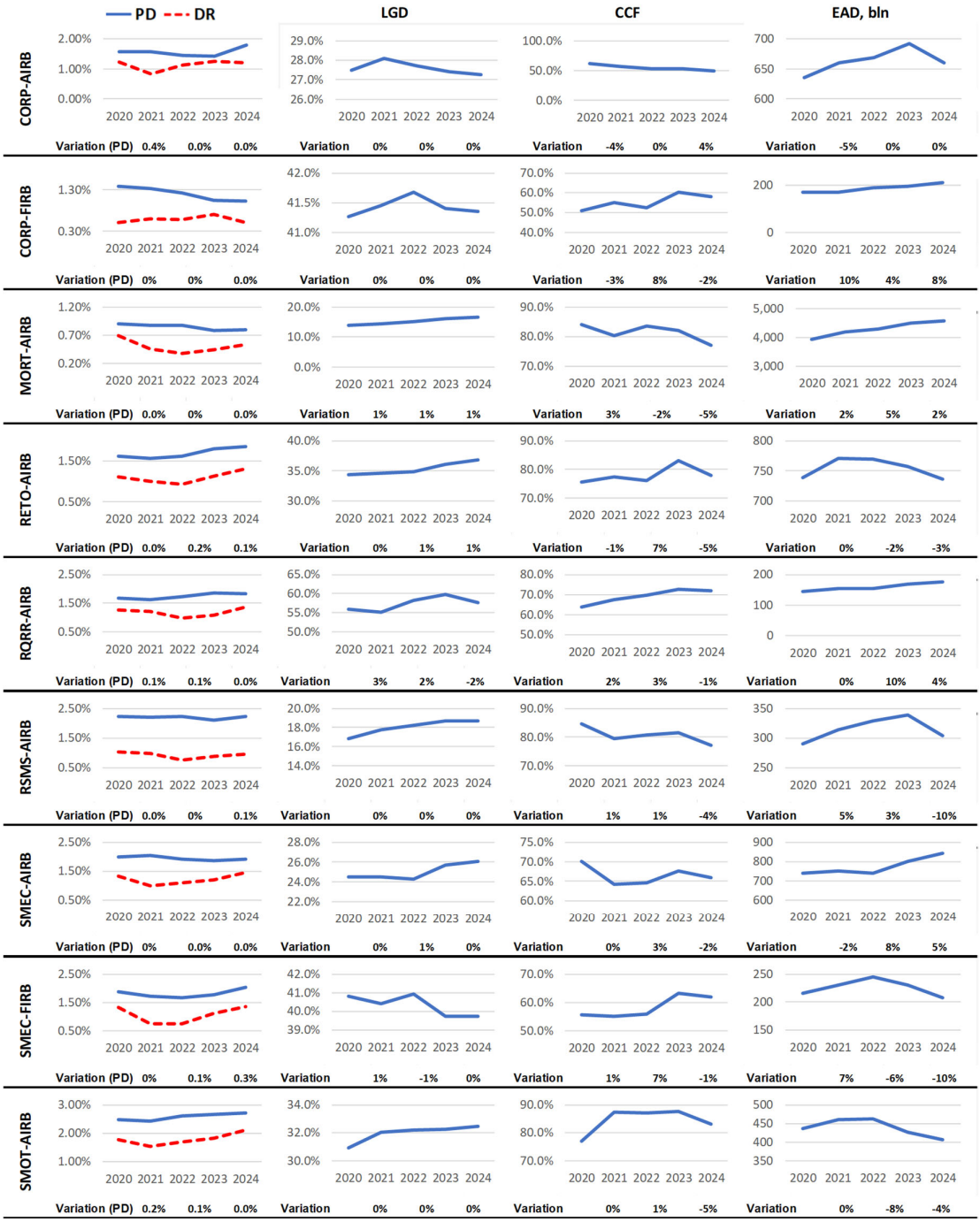
11. We note that the DRs continue to increase since 2022 for most retail exposures. In some cases, the EAD weighted average PD increased less than observed default rate, signalling possible decrease in the PD conservativism, especially for some retail portfolios supposed to be more sensitive to the economic conditions. Therefore, supervisors should still ensure that the long-run average default rates used for (re-)calibration of PD estimates reflect the likely range of variability of default rates relevant to a considered type of exposure as required in Article 46(3) of the RTS on IRB assessment methodology. For some wholesale asset classes (Non Large-Corporates) the PD decreases less (for FIRB) and increased more (for AIRB) than the respective default rates, possibly reflecting the more through-the-cycle nature of the models for this asset class. The LGD is quite stable for all asset classes over the last 4-year horizon. However, we note a very slight increase of LGD for some asset classes.

Figure 2: Change in EAD and in EAD weighted average parameters by regulatory approach, non-defaulted exposures



Source: Benchmarking DB

Figure 3: Change in EAD and in EAD weighted average parameters by regulatory approach, non-defaulted exposures



Source: Benchmarking DB

2.3 IRB vs IFRS 9 risk parameters

12. Starting in 2024, with the entry into force of the revised Directive (EU) 2024/1619 (Capital Requirement Directive VI, CRD VI), Article 78 has been amended to extend data collection to risk parameters estimated for accounting purposes (IFRS 9). This Section presents a comparison between the PDs and LGDs estimated by the banks for the same asset classes but under different frameworks: the prudential one (IRB) and the accounting one (IFRS 9). The Annex 2 provides details about the distributions of the estimated risk parameters under both frameworks.

13. The following Figure 4 shows the ratio between the EAD weighted average 12-month PD estimated for the Stage 1 and Stage 2 for accounting purposes and the EAD weighted average IRB PD for non-defaulted exposures. For Stage 2, the 12-month PD was considered. This ratio shows a wide dispersion in each asset class and is most of the cases lower than 1 indicating that the accounting EAD weighted PD is lower than the average IRB PD. This could be due to several factors, including the margin of conservativism and floors in regulatory PDs. However, in some cases (about 25% for all the asset classes) the accounting EAD weighted average PD is higher than the EAD weighted average IRB PD. This could depend on several drivers, among which the higher sensitivity of the accounting PDs to economic conditions in respect of the IRB PDs that are expected to be stable through the cycles.

Figure 4: ratio between the EAD weighted average Accounting 12-month PD for Stage 1 & 2 and the IRB PD, Dec 2024

	Nr	P10	Q1	Me	Q3	P90
CORP-AIRB	42	37.5%	55.7%	81.2%	112.0%	174.6%
CORP-FIRB	35	26.3%	48.3%	80.1%	119.8%	188.6%
MORT-AIRB	63	21.8%	44.2%	62.9%	90.9%	129.0%
RETO-AIRB	52	31.7%	53.9%	78.6%	107.2%	130.0%
RQRR-AIRB	29	29.4%	50.9%	90.4%	111.3%	143.4%
RSMS-AIRB	49	23.3%	42.2%	59.6%	78.8%	132.3%
SMEC-AIRB	41	29.8%	55.0%	79.0%	112.1%	166.2%
SMEC-FIRB	33	8.6%	39.0%	65.1%	108.5%	221.0%
SMOT-AIRB	50	27.1%	46.8%	65.7%	107.1%	131.5%

Source: Benchmarking DB

14. Also, for the EAD weighted average LGD the comparison between accounting and prudential estimates for performing exposures provides the impression that accounting measures are lower.

15. The difference is relatively larger in comparison with the PD, especially for FIRB and mortgages, possibly due to the regulatory LGD and the 10% floor respectively, but with a less dispersed distribution (between the first and third quartiles). For all asset classes the accounting LGD does not include the downturn adjustment which may decrease the ratio with

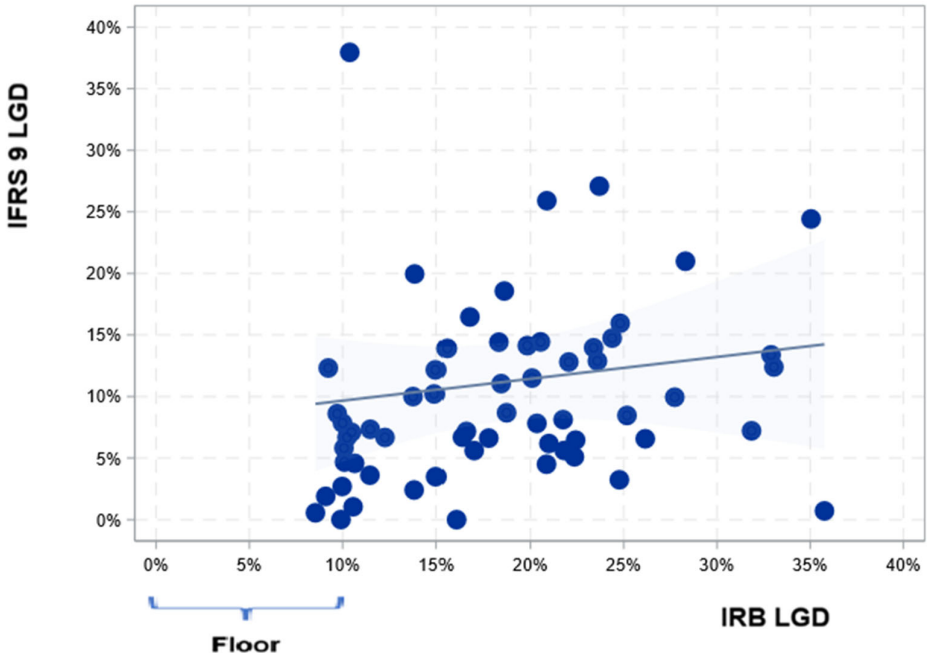
accounting LGD. Figure 6 shows the details by bank of the comparison between EAD weighted average accounting and IRB LGD for performing exposures of the asset class Secured by real estate, non-SME. Thanks to this Figure, it is possible to appreciate the impact of the 10% LGD floor for this asset class[7]. In absence of such floor, the LGD is seen to be lower than 10% for many banks.

Figure 5: ratio between the EAD weighted average Accounting LGD and the IRB LGD, Dec 2024

	Nr	P10	Q1	Me	Q3	P90
CORP-AIRB	42	40.5%	59.0%	80.8%	96.0%	133.4%
CORP-FIRB	35	18.8%	41.3%	63.1%	78.1%	91.5%
MORT-AIRB	63	17.4%	28.8%	50.4%	71.3%	99.9%
RETO-AIRB	52	38.6%	54.7%	78.9%	98.8%	136.9%
RQRR-AIRB	29	60.4%	70.8%	86.2%	101.1%	111.7%
RSMS-AIRB	49	14.7%	32.7%	57.0%	88.7%	121.0%
SMEC-AIRB	41	37.7%	54.6%	70.1%	85.7%	117.9%
SMEC-FIRB	33	24.8%	36.9%	55.5%	69.1%	87.0%
SMOT-AIRB	50	32.8%	56.2%	66.0%	92.8%	115.2%

Source: Benchmarking DB

Figure 6: Accounting LGD vs IRB LGD, Secured by Real estate non-SME, Dec 2024



[7] The floor is going to be reduced to 5% under the new regulation (the so called CRR3) entering into force from 2025.

16. Table 1 provides a comparison in terms of variability of the risk metrics under the two frameworks. The proposed measure of variability (the Coefficient of Variation) is normalized by the average of the given parameter. This allows a better comparison of the level of variability. It is clear from the table that the EAD weighted average accounting PDs are usually more variable than the IRB ones. The same situation is observed for the LGD. Many drivers could explain the differences.

17. The accounting values are expected to be more variable due to several factors including the additional sensibility to the economic conditions, the absence of input floors and regulatory conservativism (e.g. minimum discount rate, margin of conservativism, downturn effects)) but also the wide range of practices to estimate the significant increase in credit risk (SICR) and the life time PD for exposures migrated to the Stage 2.

Table 1: IFRS 9 vs IRB PDs and LGDs: Coefficient of Variation

		PD		LGD	
ptf	Nr	IRB	IFRS 9	IRB	IFRS 9
CORP-AIRB	42	40	**74**	32	**49**
CORP-FIRB	35	94	**127**	14	**52**
MORT-AIRB	63	63	**73**	38	**112**
RETO-AIRB	52	57	**79**	44	**54**
RQRR-AIRB	29	90	**112**	**47**	46
RSMS-AIRB	49	**115**	88	34	**105**
SMEC-AIRB	41	44	**69**	36	**54**
SMEC-FIRB	33	173	**256**	19	**56**
SMOT-AIRB	50	38	**62**	31	**46**

Source: Benchmarking DB

3. The IRB Roadmap impact on IRB Risk Parameters

18. In February 2016, the EBA set out an IRB roadmap, which outlines the regulatory journey and strategic direction for implementing and enhancing IRB approaches in the banking sector. This roadmap encompasses a series of milestones and initiatives aimed at strengthening the risk sensitivity and comparability of IRB models across EU institutions. The IRB roadmap also emphasizes the importance of fostering consistency in supervisory practices and approaches, thereby promoting a level playing field among European financial institutions. The IRB roadmap has envisaged the development and publication of a series of regulatory products to achieve the predefined objectives. Below is the list with their respective implementation dates:

Table 2: Regulatory products of the EBAs IRB roadmap

Phase	Regulatory products (amendments)	Implementation date for institutions
Phase 1: IRB assessment methodology	Final draft RTS under Articles 144(2), 173(3) and 180(3b) on the assessment methodology	Finalised (opinion) 12/2020 To be applied since Q2/2022[8]
Phase 2: definition of default	Final draft RTS under Article 178(6) on the materiality threshold for past due credit obligations	Finalised 12/2016 To be applied since 01/2021[9]
	GL under Article 178(7) on the application of the definition of default	
Phase 3: risk parameter estimation and treatment of defaulted assets	Guidelines on PD estimation, LGD estimation and the treatment of defaulted exposures (GL on PD and LGD estimation)	Finalised Q4 2017 To be applied since 01/2022[10]
	Regulatory technical standards specifying the nature, severity and duration of an economic downturn referred to in Article 181(1), point (b), and Article 182(1), point (b), of that Regulation	Finalised Q4 2018 To be applied since Q2/2021
		To be applied since 01/2022

[8] EUR-Lex - 32022R0439 - EN - EUR-Lex (europa.eu)

[9] EBA publishes report on progress made on its roadmap to repair IRB models | European Banking Authority (europa.eu)

[10] For most IRB models. Details published here EBA publishes report on progress made on its roadmap to repair IRB models | European Banking Authority (europa.eu)

Phase	Regulatory products (amendments)	Implementation date for institutions
	GL on downturn LGD estimation (an addendum to the GL on PD and LGD estimation)	
Phase 4: credit risk mitigation	Guidelines on credit risk mitigation for institutions applying the IRB approach with own estimates of LGDs	To be applied since 01/2022

19. Against this backdrop, the EBA is committed to monitoring the implementation status of the IRB roadmap by financial institutions, providing an annual status update in this report.

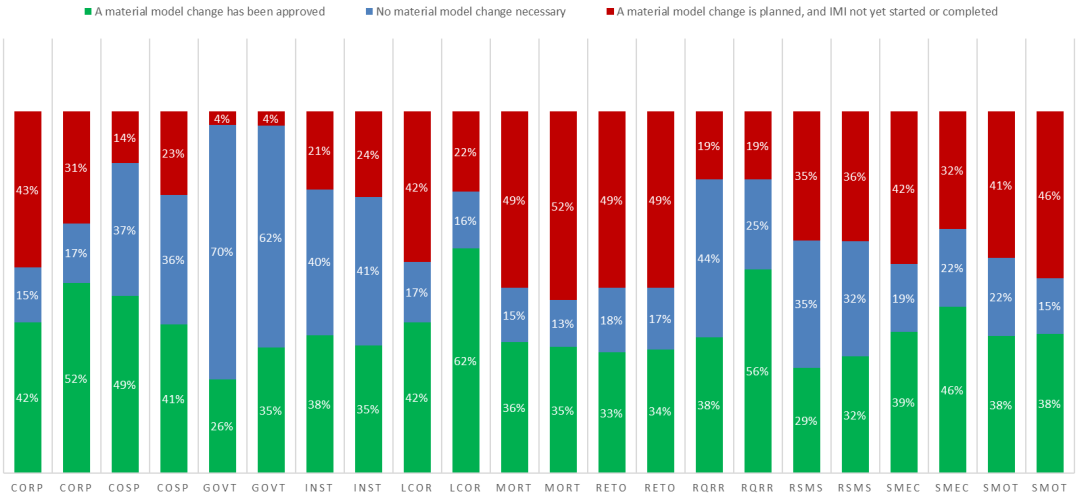
3.1 Status Implementation of IRB Roadmap

20. Article 78(4) of the CRD requires competent authorities (CAs) to assess situations in which institutions diverge significantly from most of their peers, or where there is limited commonality in modelling approaches, resulting in a wide dispersion of outcomes. In such cases, CAs are required to investigate the underlying drivers of these divergences and to take corrective actions where an institution's approach leads to an underestimation of own funds requirements that cannot be explained by differences in underlying risk profiles. Within this framework, the supervisory benchmarking exercise represents a key tool to support supervisory assessments of model outcomes and their consistency across institutions.

21. To facilitate the transmission of supervisory assessments to the EBA, CAs were requested to complete a dedicated questionnaire for each institution participating in the supervisory benchmarking (SVB) exercise. For the 2025 exercise, the EBA received completed questionnaires covering 87 institutions[11]. In this context, supervisors were asked to provide information on the implementation status of model changes required to achieve compliance with the Guidelines on PD and LGD estimation, which constitute one of the core regulatory deliverables of the IRB Roadmap. The information collected reflects the situation as of 30 September 2025 and is summarised in the figure below:

[11] The previous year, the number of interested institutions was higher (97) so the information between the two years showed in the Figure 7 is not always comparable.

Figure 7: State of compliance with the GL on PD and LGD for material models, by September 2025. Two years are represented for each portfolio: 2024 (first column) and 2025 (second column)

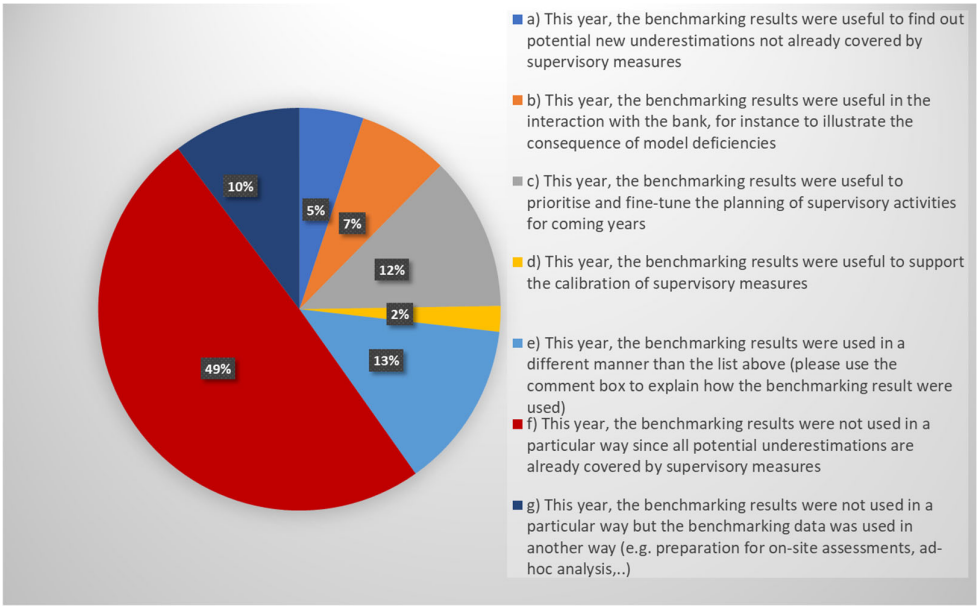


22. The results indicate that a significant share of material IRB models has reached a status of broad compliance with the Guidelines on PD and LGD. At the same time, a non-negligible proportion of models remains classified under the category “material model change planned or ongoing”. This category captures a heterogeneous set of situations, including cases where model redevelopment or recalibration activities are still underway, as well as cases where on-site inspections or model reviews have been completed but the institution has not yet received final supervisory authorisation to use the validated models for the calculation of own funds requirements. As such, this classification does not necessarily reflect a lack of progress but rather highlights the long and sequential nature of the supervisory approval process.

23. Evidence from the 2025 benchmarking exercise confirms that, at the reference date for data collection, a number of institutions were still operating with partially non-compliant models. Differences in the pace of implementation across institutions and asset classes reflect, among other factors, variations in portfolio complexity, data availability, and supervisory prioritisation. This heterogeneity in implementation timelines may limit, at least in the short term, the ability to draw clear conclusions on trends in the variability of own funds requirements and risk parameters across institutions.

24. Supervisory feedback further indicates that the IRB repair program is still ongoing in several jurisdictions, with final compliance for some portfolios expected only in the course of 2026. While the regulatory framework envisaged the completion of most IRB roadmap-related changes by 1 January 2022, both institutions and supervisors have required additional time to address complex modelling issues, implement structural changes, and complete validation and approval processes.

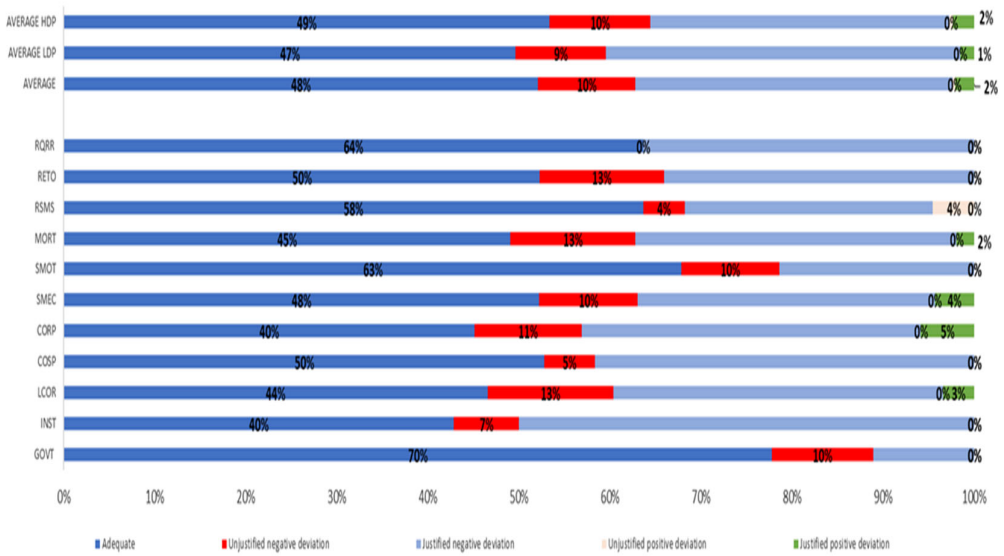
Figure 8: How the benchmarking data have been used this year?



25. Further, the pie chart above shows that the largest share of responses indicates that benchmarking results were “not used” to identify new potential underestimations (option f; 49%). This reflects the fact that, in many cases, such underestimations are already being addressed through existing supervisory measures and within the ongoing implementation of the IRB Roadmap. At the same time, the presence of diverse ancillary uses of benchmarking data (options e and g; 13% and 10%) confirms that benchmarking results continue to serve as a valuable complementary input to supervisory processes, even where they do not lead to immediate supervisory actions.

26. Complementing the analysis of how benchmarking results are used, the figure below presents the competent authorities’ overall assessment of deviations from benchmarking outcomes across asset classes. On average, almost 50% of the estimates assessed are considered adequate. Unjustified negative deviations typically affect around 10–13% of estimates across several portfolios, while unjustified positive deviations are limited and rarely exceed 5%. Overall, these results point to continued progress in model alignment and supervisory convergence, while also indicating that pockets of unwarranted variability persist, mainly driven by the underestimation of risk parameters in specific portfolios. This evidence reinforces the importance of completing the remaining IRB Roadmap-related remediation actions to further reduce unwarranted variability in own funds requirements.

Figure 9: What is the CA's overall assessment of the deviations from the benchmark(s) for the SVB exposure classes?



4. Variability over time

27. This section presents the time series of a measure of the variability of the banks' EAD weighted average estimated risk parameters by asset class. The aim is to verify the possible presence of trends in the variability. The period considered is 31/Dec/2015 – 30/Jun/2025 on a quarterly basis[12]. The level of consolidation considered is the highest at the EU level (subsidiaries of EU banks are excluded). AIRB and FIRB institutions are considered for the analysis of the PD.

28. A consistent sample of reporting institutions for each asset class was considered to avoid variations depending on the possible entry or exit of some banks from the analysed sample. Indeed, only the institutions that have been reporting for all reference dates in the period were taken into consideration (see Table 1, Stable sample). Banks reporting anomalous quarter-on-quarter (QoQ) variations of the average parameter at the asset class level were excluded. Moreover, to reduce the effect of mergers & acquisitions operations, banks associated with anomalous QoQ variation of their Total assets were also excluded.

29. The following table shows the size of the sample for each asset class, as well as the share of EAD covered by the sample with reference to the June 2025.

Table 3: Composition of the sample used for the analysis of the risk parameters' variability over time

Asset Class	Sample Size	% Total Assets June 2025	% Ead June 2025
Corporates	40	65%	87%
Institutions	29	56%	90%
Retail Other	34	61%	83%
Retail Secured	37	63%	86%
Sme Retail	32	61%	89%

Source: COREP templates C.08.02

30. The measures of the variability represented are quantiles ranges: the difference between the 75th and 25th percentiles, the difference between the 90th and the 10th percentiles and the difference between the 95th and 5th percentiles. The reference to the percentiles enables to reduce the impact of outliers.

31. In the following charts, the measures of variability of the EAD weighted average PDs and LGDs are grouped by asset class. A clear decreasing trend can be noticed for the PDs Corporates (including Corporates Others, SME Corporates and Specialized Lending), Institutions and Retail exposures secured by immovable property. For Corporates, for example it is interesting to

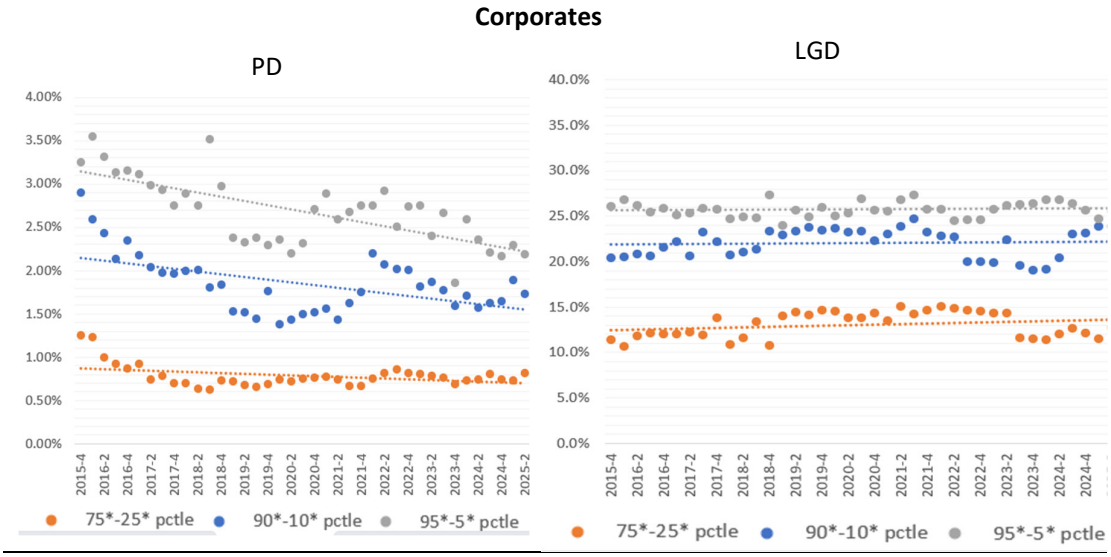
[12] In comparison with the Section 2, it is possible to extend to 2015 the analysis because only data stemming from IRB institutions is needed.

notice that while the range between the 75th and 25th percentiles remained quite stable, the other two ranges decreased. This means that about 50% of the banks remained in the same range along the period but banks reporting values outside the Q3 and Q1 quartiles reduced the difference from the average: in 2015, 95% of the banks where included in an interval around the average of length 3.5 percentage points, while in 2025 the length of the interval was reduced to 2.5 percentage points. The ranges for the LGD for Corporates remained quite stable.

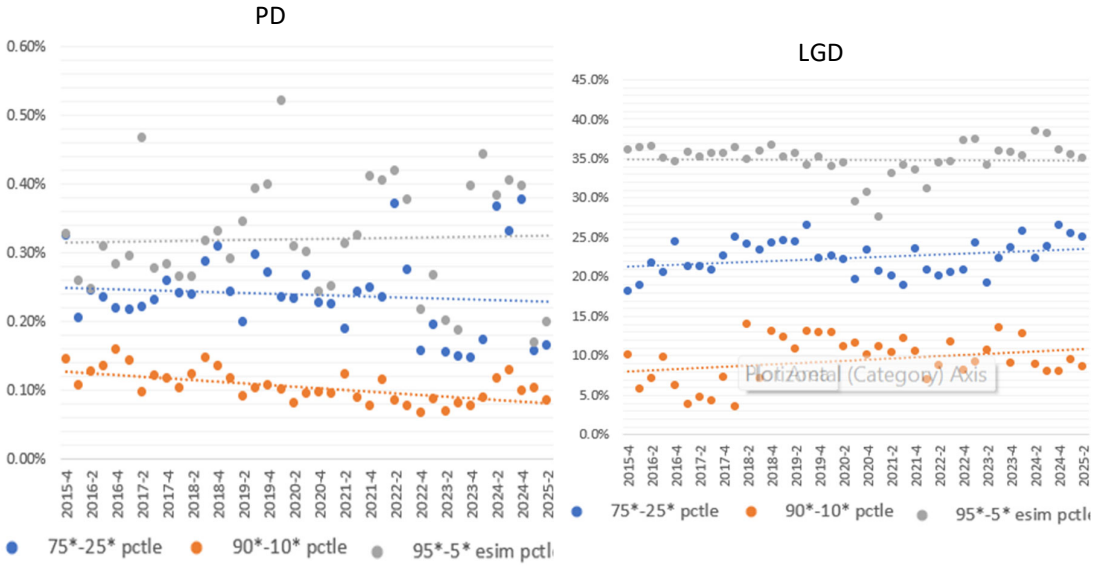
32. Starting from the same sample defined for the PD analysis, FIRB banks were excluded for producing the figures of the charts referring to the LGD. The standard deviation of the LGDs is constant or slightly decreasing for some asset classes.

33. The impression of a general reduction in the variability of the estimated PDs may be due to activities of regulators and supervisors carried out in recent years aimed at increasing the homogeneity of the estimation processes. As regards the LGDs, it should be kept in mind that this parameter can be greatly influenced by different credit policies (in terms of loan to value, collateral and guarantees for example) but also by structural differences between countries. For example, the EBA Report on benchmarking of national insolvency frameworks across the EU (EBA/Rep/2020/29) indicates that the existence of certain characteristics related to both the legal framework and the judicial capacity are important to improve the recovery outcomes.

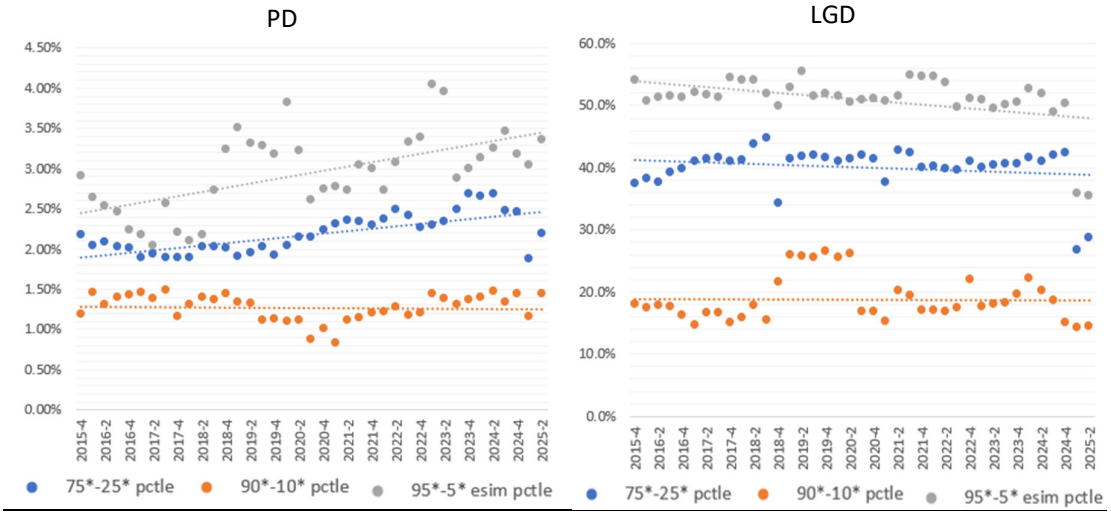
Figure 10: Interquartile ranges of the estimated PD and LGD



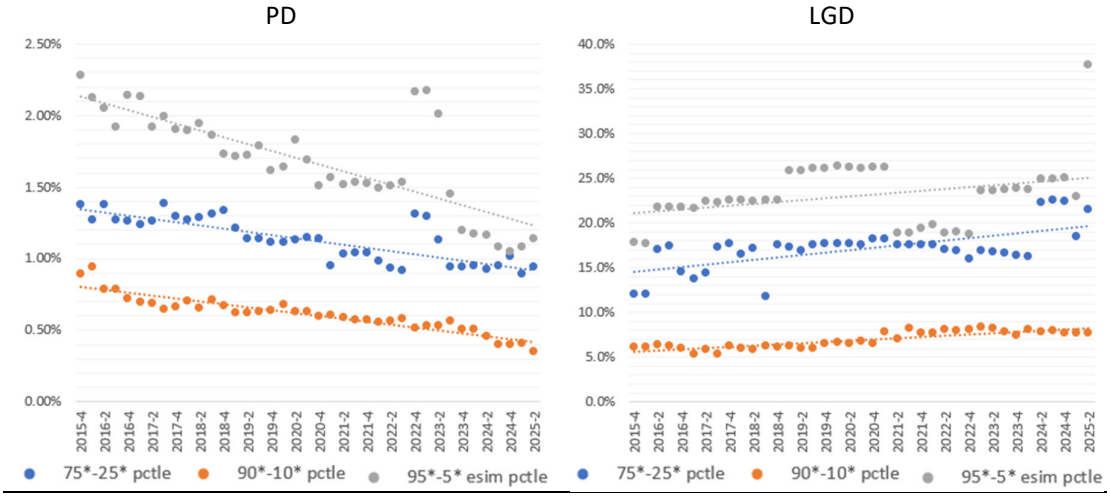
Institutions



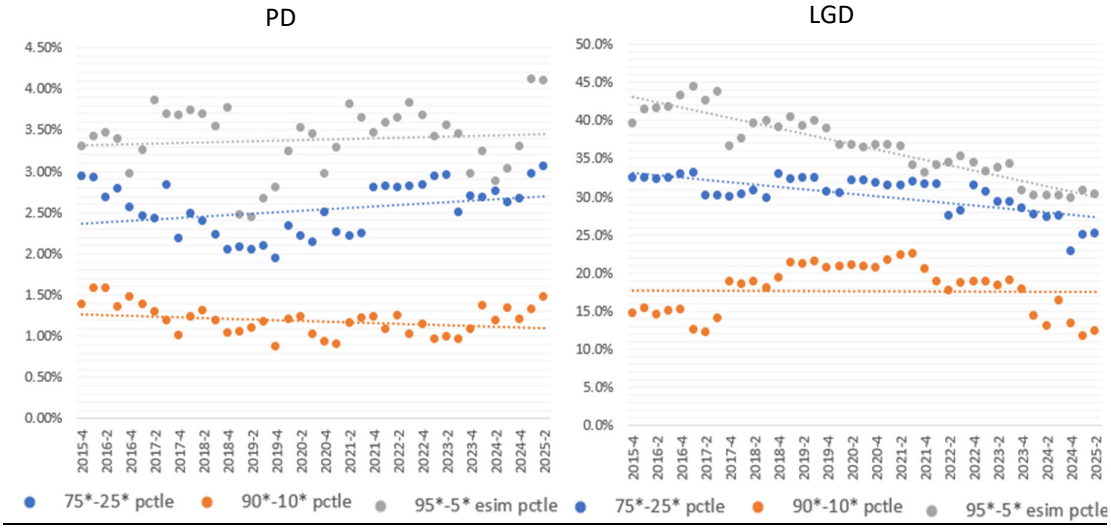
Other Retail



Secured by Real Estes: Non-SME



SME Retail



Source: Corep templates C.08.02

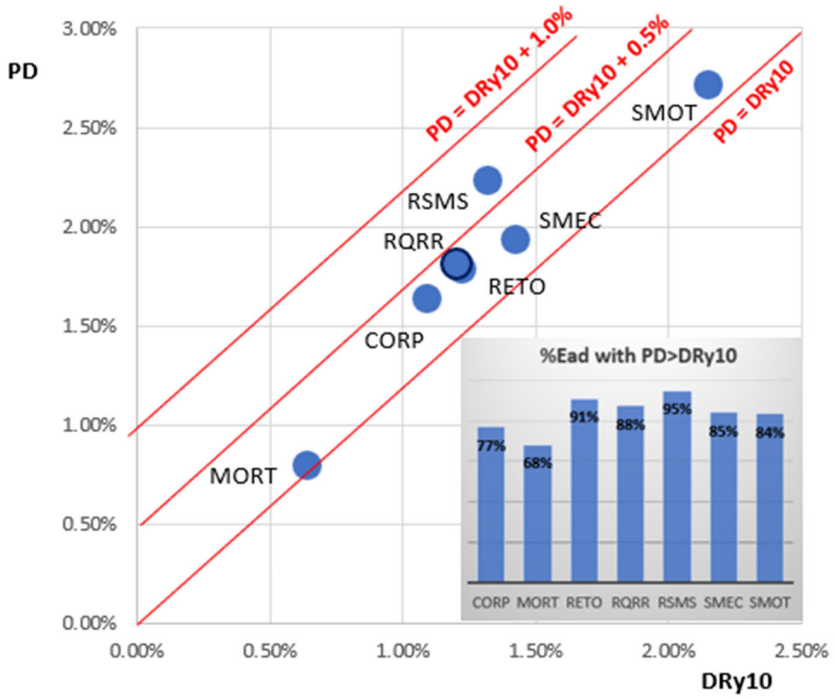
5. Drivers of variability

5.1 Comparability of PD vs Default Rates

35. Given asset classes that are homogeneous in terms of facility and borrower types, the observed variability of the average EAD weighted average PDs reported by the IRB banks should be mainly explained by the underlying risk level. To verify this hypothesis, we use the average yearly default rate observed in each period.

36. It must be kept in consideration that the IRB risk parameters are meant to provide long-run risk measures. For this reason, considering the default rate of a given year would not be appropriate. Instead, the PDs are compared with the average of the yearly default rates observed over ten years. It can be noticed from the figure below that, on average, the PDs are higher than the average default rates for all the asset classes. The histogram in the figure provides the relative amount of EAD for which the EAD weighted average PD (computed at portfolio level from portfolio-and-bank level) is higher than the average ten-year default rate.

Figure 11: EAD weighted Average PDs vs EAD weighted average Default rates – December 2024



Source: Benchmarking DB

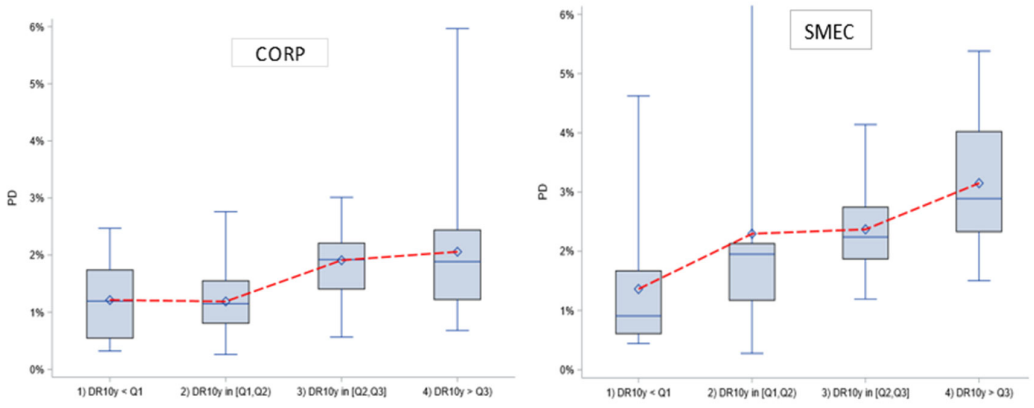
37. By grouping the institutions reporting the data for a given asset class on the ground of the quartiles of the ten-year average default rate, we would expect to observe a similar differentiation in terms of the reported PD. Indeed, from the Figure 11, a common increasing

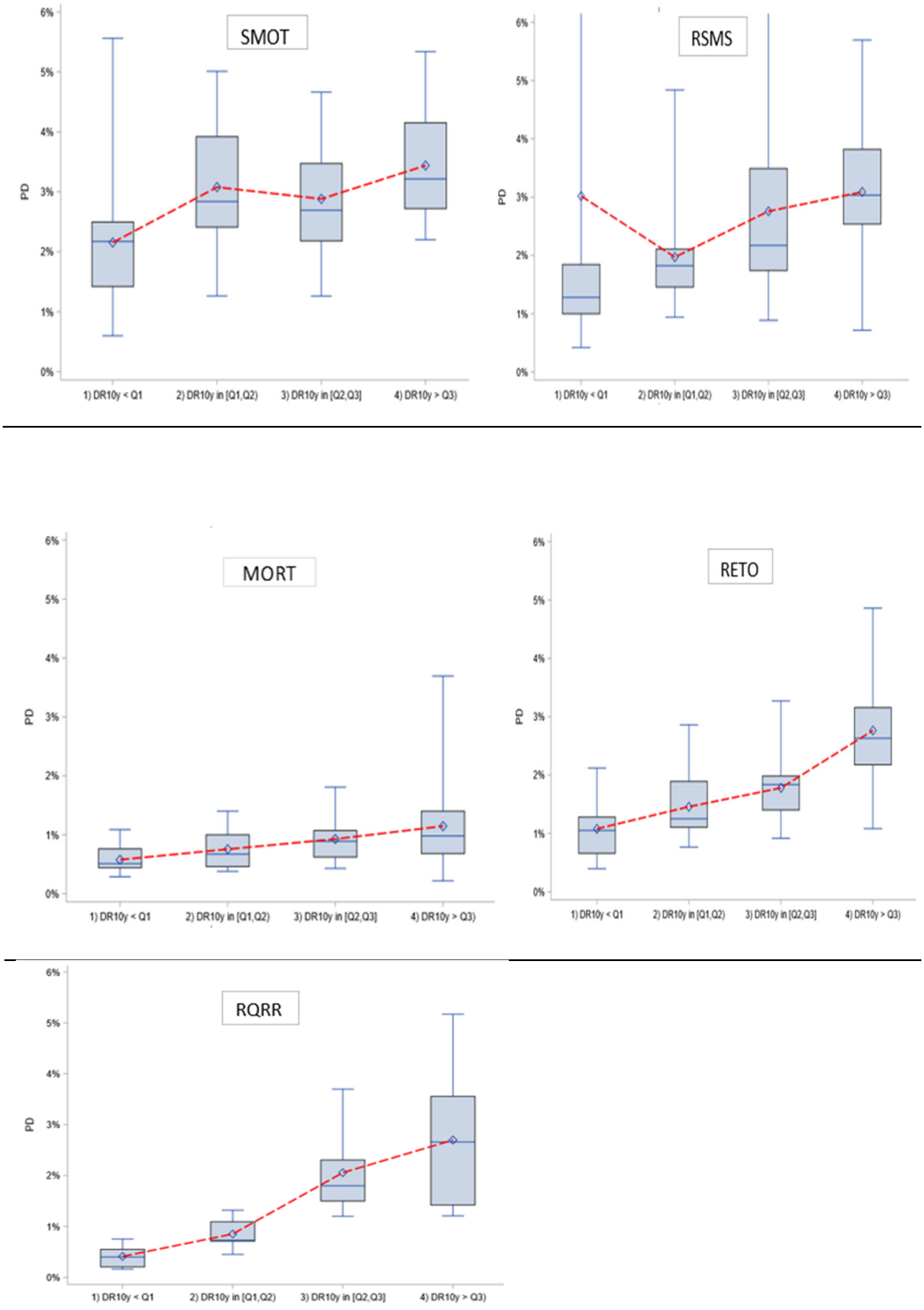
trend can be noticed for all the asset classes; however, it can also be noticed that the differentiation between the groups is sometimes limited, and, in some cases, it is not coherent with the default rates.

38. For example, the first two clusters for the Corporates asset classes are not well differentiated. A similar situation is observed for the second and third clusters of the asset classes SME retail. Also, in a case like Retail Others where the clusters are well differentiated, still it is possible to observe a large overlapping of the distributions of the clusters. The Revolving asset class appears to be the better differentiated one but still the distribution of the last cluster largely overlaps with the third cluster. In other words, as it can be expected, the average PD increases with increasing average default rates but the dispersion around the average is wide, and the distributions tend to largely overlap indicating the absence of a clear separation in terms of PDs between the groups: all the clusters show a wide dispersion that appears not to be justified only by the underlying risk represented by the average of the default rates.

39. Understanding what the possible sources of this variability are (different lengths of the time series used for the calibration, the presence of not harmonized margin of conservativism, different approaches for calibrating the models) is what we intend to do in the next few years.

Figure 12: Distribution of PD given the 10 years average default rates





Source: Benchmarking DB

5.2 The LGD and the level of collateralization

40. The relationship between Loss Given Default (LGD) and loan-to-value (LTV) ratios is a critical aspect in credit risk, particularly for asset classes where collateral plays a significant role. Generally, a lower LTV ratio indicates that the exposure is granted by a higher level of collateralisation, which tends to reduce the potential loss for the lender and thus results in a lower LGD. Conversely, higher LTV ratios suggest that the exposure is less well-secured, increasing the likelihood that the LGD will be higher. This relationship is especially relevant in portfolios where the degree and type of collateralisation can vary widely, leading to significant variability in LGD even among institutions with broadly similar estimation methodologies.

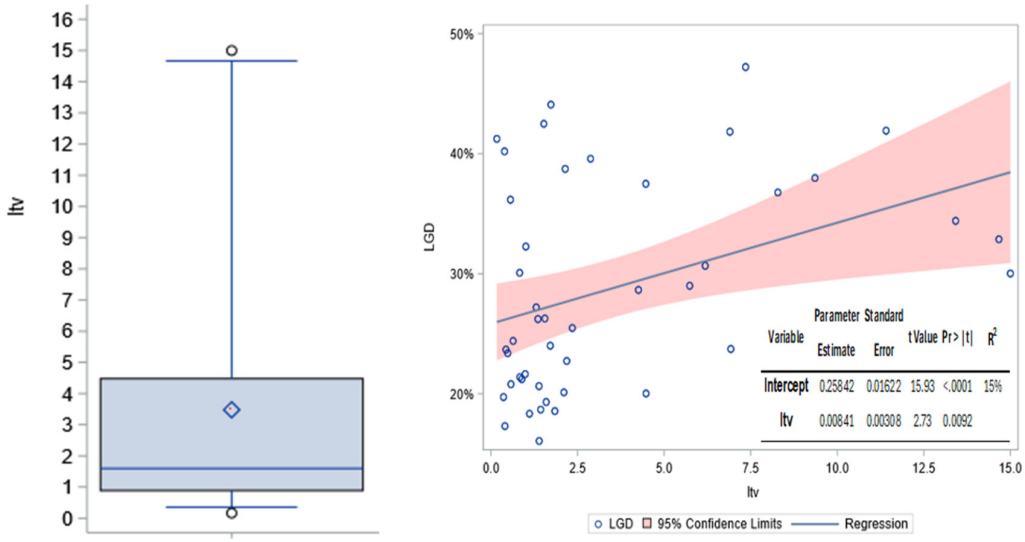
41. This section investigates the LTV as a possible factor that might explain the LGD variability across EU banks. The figures below show both the distribution of the LTV (that enables us to appreciate the objective diversification EU between banks in terms of the level of collateralization, an aspect that depends on credit policies and not on the approach to the models), and a regression between the estimated LGD and the LTV. A simple linear regression between the average LGD reported at bank level for a given asset class and the LTV of the portfolio (the ration between the total amount of exposures and the total amount of the collaterals) is estimated.

42. It appears from the data that banks are quite dispersed in terms of their average LTV by asset class. For Corporates, for example, most of the banks are associated with an average LTV below 4 but definitively higher values are observed. On the other hand, perhaps surprisingly, only 15% of the variance of the EAD weighted average LGD seems to be explained by the average LTV. If we focus on banks with average LTVs less than 2.5, we can see how uneven the LGDs are vary between 10% and 40%. Therefore, other factors must obviously be considered to explain such variability. To be noticed that for the asset class Corporates, results can be influenced by highly leveraged loans as the total debt and its structure often limit the effectiveness of collateral on recovery.

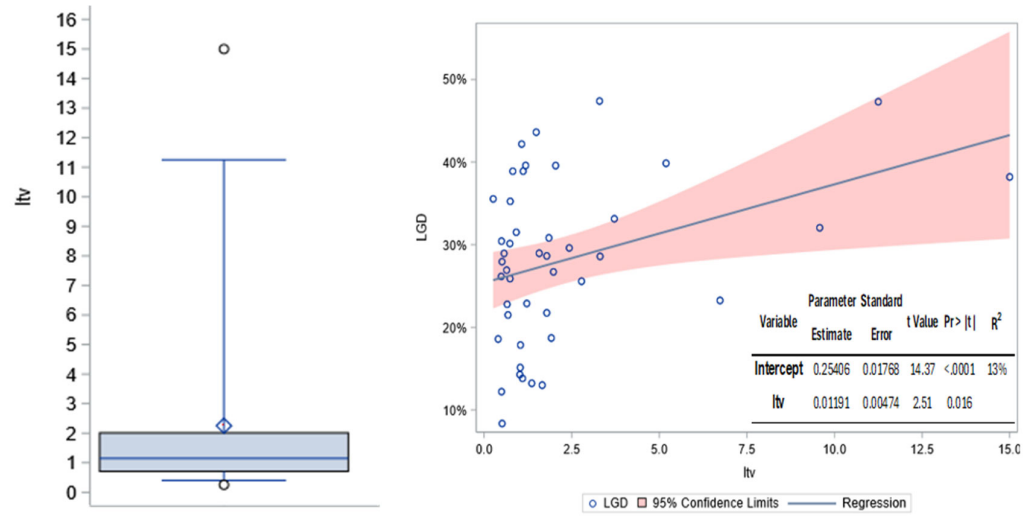
43. For the two portfolios of exposures secured by immovable properties, the LTV is more homogeneous across the banks however the relationship with the LGD appears even less evident. It is possible that such results depend on outliers, but also other risk drivers could play a role in explaining the variability of the estimated LGD.

Figure 13: LTV distribution and linear regression of the LGD against the LTV at bank level

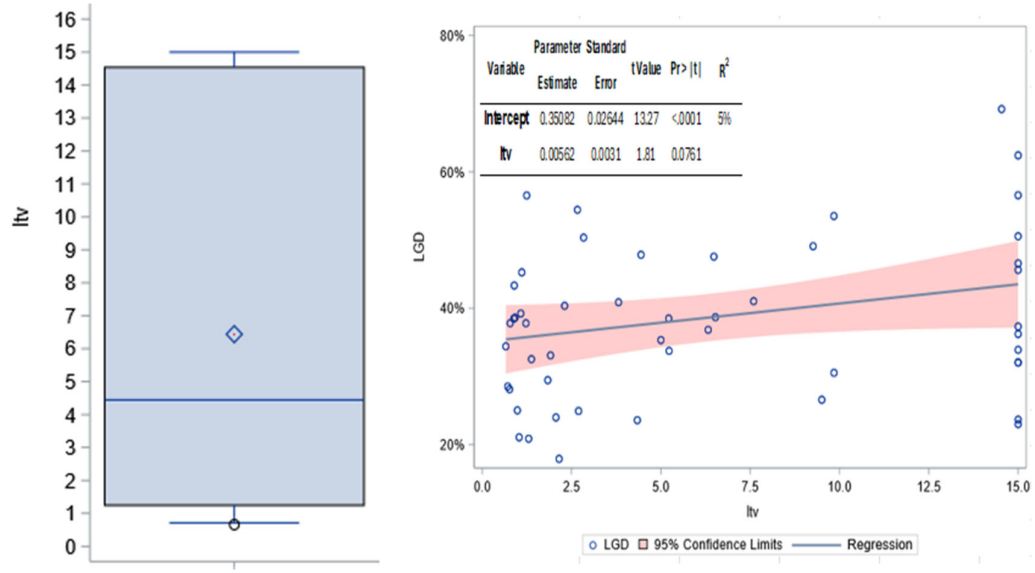
Corporates



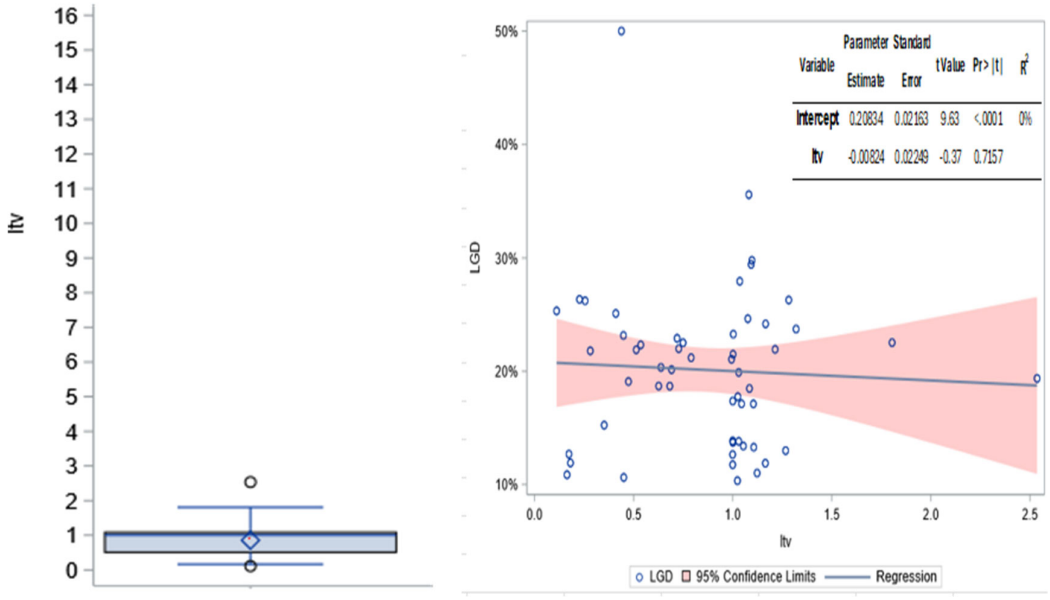
SME Corporates



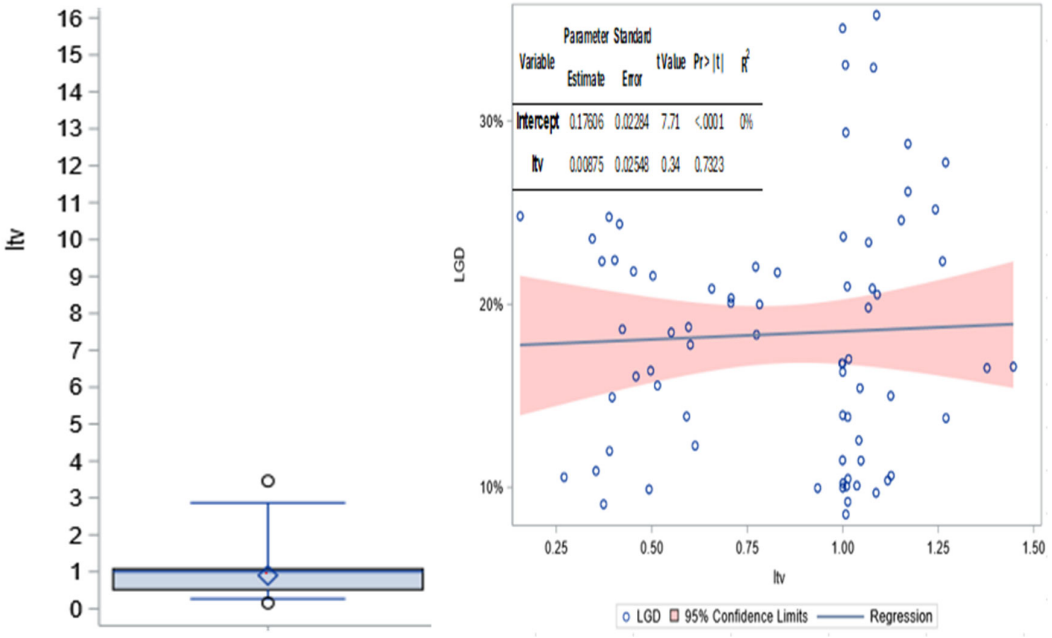
SME Retail



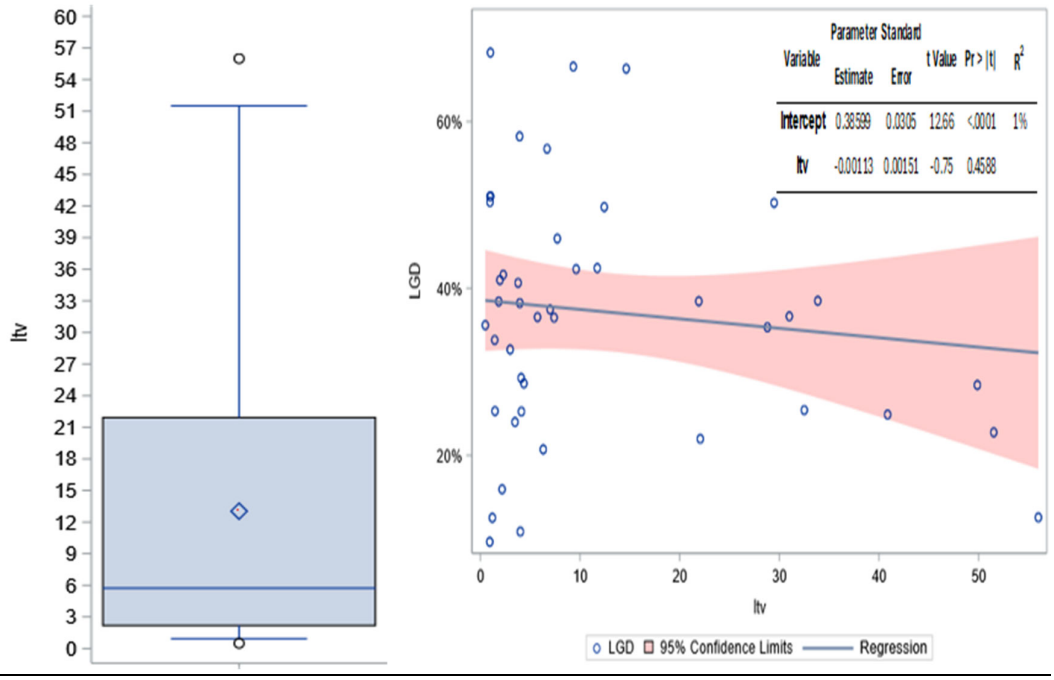
Secured by Imm Prop. SME



Secured by Imm Prop. Non SME



Other Retail



Source: Benchmarking DB

Annex I – Data sample

1. The subset (sample) of European institutions which are considered for the analysis provided in this report is obtained from the list of institutions[13] which have a reporting obligation following Article 78 of the CRD. These are the institutions which have had the approval to calculate their own-funds requirements for their credit risk exposures by application of the internal ratings-based (IRB) approach as of 31.12.2024 (the relevant reference date for this report).
2. Not each participating institution provides data for each portfolio. Therefore, the number of institutions which are taken into account for the charts referring to specific exposure classes or more granular benchmarking portfolios varies. As such, for each chart and table, the number of institutions considered that the analyses may be different (e.g. institutions not submitting a template due to specificities of their portfolio, like no LDP IRB models).
3. The table below shows the number of participating institutions and their distribution by asset class and approach (AIRB, FIRB, or SLSC).

[13] This list is published on the EBA website: EBA updates list of institutions involved in the 2023 supervisory benchmarking exercise | European Banking Authority (europa.eu)

Table 4: Use of different regulatory approaches by Exposure Class

		AIRB	FIRB	SLSC	Nr of institutions
LDP	LCOR	50	54		**79**
	COSP	27	21	3	**43**
	CGCB	11	20		**26**
	INST	19	39		**46**
HDP	CORP	50	50		**80**
	SMEC	48	46		**75**
	SMOT	60			**60**
	RETO	68			**68**
	RSMS	56			**56**
	MORT	77			**78**
	RQRR	32			**32**
		89	**61**	**3**	**99**

Source: Benchmarking DB

Annex II – Distribution of the parameters

1. The tables below provide the distribution of the IRB and IFRS 9 estimated parameters

Table 5: Distribution of the estimated IRB parameters

			PD					LGD					CCF				
			P10	Q1	ME	Q3	P90	P10	Q1	ME	Q3	P90	P10	Q1	ME	Q3	P90
LDP	Specialised lending	AIRB	0.63%	0.86%	1.40%	2.18%	2.91%	12.04%	14.54%	23.62%	29.26%	42.65%	33.69%	52.17%	75.34%	96.73%	100.00%
		FIRB	0.32%	0.48%	0.67%	1.36%	1.94%										
		Slotting Criteria	0.86%	0.86%	1.27%	1.50%	1.50%										
	Sovereign	AIRB	0.04%	0.04%	0.07%	0.16%	1.01%	2.58%	8.27%	22.21%	45.00%	64.52%	28.82%	35.41%	55.02%	97.11%	105.48%
		FIRB	0.00%	0.01%	0.02%	0.05%	0.27%										
	Institutions	AIRB	0.09%	0.13%	0.22%	0.54%	1.02%	9.78%	25.45%	31.03%	41.70%	44.89%	31.70%	42.52%	69.85%	94.68%	96.49%
		FIRB	0.05%	0.07%	0.13%	0.19%	0.28%										
	Large Corporates	AIRB	0.38%	0.59%	0.83%	1.23%	2.42%	21.16%	26.77%	33.41%	39.68%	44.55%	32.64%	40.35%	64.10%	85.51%	97.38%
		FIRB	0.27%	0.45%	0.77%	1.01%	1.54%										
HDP	Corporates - No SME	AIRB	0.94%	1.22%	1.73%	2.26%	2.65%	19.00%	21.39%	26.25%	37.49%	42.20%	20.00%	40.11%	63.31%	92.65%	96.05%
		FIRB	0.35%	0.55%	1.14%	1.73%	2.78%										
	Corporates - SME	AIRB	1.01%	1.59%	2.24%	2.72%	3.67%	13.83%	21.63%	28.27%	35.40%	42.19%	20.00%	46.18%	76.31%	95.80%	98.24%
		FIRB	0.49%	0.94%	1.73%	3.13%	4.94%										
	Mortgages SME	AIRB	0.90%	1.51%	2.00%	3.11%	4.24%	11.89%	13.83%	20.24%	23.50%	27.94%	31.00%	54.84%	97.63%	99.78%	100.00%
	Mortgages non SME	AIRB	0.37%	0.48%	0.76%	1.03%	1.40%	10.07%	12.56%	16.97%	22.35%	28.75%	28.19%	86.34%	99.11%	100.00%	100.00%
	Other retail SME	AIRB	1.41%	2.19%	2.67%	3.44%	4.49%	23.32%	29.13%	37.58%	47.08%	54.55%	21.83%	47.72%	82.42%	96.54%	100.00%
	Retail Other	AIRB	0.77%	1.11%	1.62%	2.26%	3.14%	20.70%	27.85%	38.48%	51.02%	66.58%	31.00%	68.74%	90.50%	99.84%	100.00%
	QRRE	AIRB	0.42%	0.72%	1.37%	2.27%	3.70%	32.60%	40.46%	55.77%	66.10%	78.91%	32.40%	48.21%	64.91%	96.45%	100.00%

Table 6: Distribution of the estimated IFRS 9 parameters

			PD STAGE 1					PD STAGE 2					LGD				
			P10	Q1	ME	Q3	P90	P10	Q1	ME	Q3	P90	P10	Q1	ME	Q3	P90
	Corporates - No SME	AIRB	0.22%	0.49%	0.78%	1.21%	1.70%	0.52%	2.17%	3.53%	6.33%	9.89%	8.59%	15.47%	21.79%	31.83%	35.29%
		FIRB	0.06%	0.28%	0.48%	1.21%	1.93%	0.88%	1.71%	2.92%	4.54%	8.53%	5.99%	17.99%	26.10%	31.57%	38.25%
	Corporates - SME	AIRB	0.08%	0.17%	0.24%	0.40%	0.59%	0.40%	2.81%	4.54%	6.33%	7.79%	2.41%	5.61%	7.99%	13.91%	19.96%
		FIRB	0.24%	0.39%	0.68%	1.21%	1.77%	1.31%	3.50%	5.69%	8.99%	13.42%	12.11%	18.35%	33.52%	43.02%	57.29%
	Mortgages SME	AIRB	0.11%	0.32%	0.57%	1.13%	1.85%	1.19%	4.26%	5.54%	10.25%	20.37%	17.33%	30.67%	42.79%	63.96%	77.86%
	Mortgages non SME	AIRB	0.22%	0.36%	0.75%	1.13%	2.04%	0.67%	3.97%	6.33%	8.42%	11.82%	3.21%	6.09%	10.69%	18.23%	33.24%
	Other retail SME	AIRB	0.31%	0.71%	1.22%	1.43%	2.46%	0.91%	2.98%	5.43%	7.09%	10.17%	7.38%	12.47%	19.34%	28.47%	32.70%
	Retail Other	AIRB	0.20%	0.37%	0.57%	1.24%	2.79%	0.69%	2.17%	3.78%	5.51%	8.42%	7.55%	14.05%	19.97%	27.24%	36.20%
	QRRE	AIRB	0.36%	0.71%	1.12%	1.67%	2.24%	0.73%	3.79%	6.99%	11.10%	13.77%	13.68%	17.14%	24.41%	33.75%	45.19%

Annex III – Asset classes mapping

2. The table below provides the mapping between the asset classes that were in use up to December 2025, the new asset classes and the portfolios showed in the Section 2

Table 7: Mapping of the new and old Asset Classes

Asset classes		Method	Porfolio
2013-2024	2025-onward		
Central governments and central banks with own estimates of LGD and/or conversion factors	Central governments and central banks with own estimates of LGD and/or conversion factors	A	Sovereigns
Central governments and central banks without own estimates of LGD or conversion factors	Central governments and central banks without own estimates of LGD or conversion factors	F	Sovereigns
	Public sector entities without own estimates of LGD or conversion factors	F	Sovereigns
	Public sector entities with own estimates of LGD or conversion factors	A	Sovereigns
	Regional governments or local authorities with own estimates of LGD or conversion factors	A	Sovereigns
	Regional governments or local authorities without own estimates of LGD or conversion factors	F	Sovereigns
Corporates - Other with own estimates of LGD or conversion factors	Corporates - Other with own estimates of LGD or conversion factors	A	Corporates
Corporates - Other without own estimates of LGD or conversion factors	Corporates - Other without own estimates of LGD or conversion factors	F	Corporates
Corporates - Specialised Lending with own estimates of LGD or conversion factors	Corporates - Specialised Lending with own estimates of LGD or conversion factors	A	Corporates
Corporates - Specialised Lending without own estimates of LGD or conversion factors	Corporates - Specialised Lending without own estimates of LGD or conversion factors	F	Corporates
Corporates - SME with own estimates of LGD or conversion factors		A	Corporates
Corporates - SME without own estimates of LGD or conversion factors		F	Corporates
	Corporates - Purchased receivables with own estimates of LGD or conversion factors	A	Corporates
	Corporates - Purchased receivables without own estimates of LGD or conversion factors	F	Corporates
Institutions with own estimates of LGD or conversion factors		A	Institutions
Institutions without own estimates of LGD or conversion factors	Institutions without own estimates of LGD or conversion factors	F	Institutions
	Collective Investment Undertakings (CIU)	F	Institutions
	Retail exposures - Other - with own estimates of LGD or conversion factors	A	Retail/Secured
Retail exposures - Other SME - with own estimates of LGD or conversion factors		A	Retail/Secured
Retail exposures - Other non SME - with own estimates of LGD or conversion factors		A	Retail/Secured
Retail - Qualifying revolving - with own estimates of LGD or conversion factors	Retail - Qualifying revolving - with own estimates of LGD or conversion factors	A	Retail/Secured
	Retail exposures - Secured by residential real estate - with own estimates of LGD or conversion factors	A	Retail/Secured
Retail exposures - Secured by immovable properties - with own estimates of LGD or conversion factors		A	Retail/Secured
Retail exposures - Secured by immovable properties - with own estimates of LGD or conversion factors		A	Retail/Secured
	Retail exposures - Purchased receivables - with own estimates of LGD or conversion factors	A	Retail/Secured

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