



# *Just in Time*



**EBA - Report on the 2024 Credit  
Benchmark Exercise**  
*Results on the Analysis of the Variability of Own  
Funds Requirements*

**May 2025**



# Executive Summary

The **EBA's 2024 Credit Risk Benchmarking Exercise** evaluates **differences in risk-weighted assets (RWAs) among banks using the Internal Ratings-Based (IRB) approach.**

The **assessment reviews progress in implementing the IRB roadmap** and its impact on **enhancing consistency across institutions.** The results show notable progress, including a rise in approvals of significant model changes across various asset classes. **However, full alignment remains a work in progress,** as many institutions are still awaiting final model validations or are in the process of implementation. **This limits the ability to observe consistent trends in RWA variability.**

**Probability of Default (PD) variability has decreased significantly across most asset classes,** largely due to regulatory efforts and model standardization. Despite this, **residual differences persist, driven by factors such as divergent calibration approaches, margins of conservatism (MoCs), and supervisory add-ons.** While for **Loss Given Default (LGD), especially within the Other Retail asset class, the report highlights the role of collateralization and structural country-specific factors.** Through regression analyses it has been shown **real estate collateral, recovery time, and cure rates significantly affect LGD outcomes.**



# At a Glance

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**Keywords:** RWA, IRB Model, Variability



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# Introduction

Main Objective of the Exercise

IRB Coverage Ratio – EAD Evolution

IRB Coverage Ratio – Risk Parameters



# Introduction 1/3

## Main Objective of the Exercise

**Institutions**, which apply the **AIRB or FIRB approach**, calculate their own **risk-weighted exposure amounts (RWAs)** on a set of parameters which they **estimate themselves**. So annually, EBA conducts a **benchmark exercise to monitor the variability of the RWAs** for those institutions.

The **2024 benchmark**, based on data as of 31 December 2023 that has been collected between April 2024 and September 2024 from European institution which have a reporting obligation following Art. 78 of the CRD, **covers the following topics:**



### IRB Coverage Ratio

It provides the **evolution of EAD subjected to the IRB approach** and the **trend of EAD weighted average parameters**

### IRB RoadMap

A **series of milestones** have been set out **to harmonize IRB models**



### Variability Analysis on PD

**Verify if** given homogenous asset classes **the average PD variability can be explained by underlying risk level**

### Variability Analysis on LGD

The **possible factors** that can explain the **LGD variability** have been investigated **focusing on the impact of collaterals**



# Introduction 2/3

## IRB Coverage Ratio – EAD Evolution

EBA has investigated the **evolution of the relative amount of exposures** in order to **evaluate the materiality of the IRB approach**. The analysis has considered both performing IRB and SA asset classes.

 Share of EAD under IRB Approach

Asset class	Q4 2020	Q4 2021	Q4 2022	Q4 2023	Q2 2024
<b>Sovereigns</b>	28.4%	27.6%	26.6%	23.9%	24.1%
<b>Institutions</b>	45.7%	44.7%	42.2%	44.2%	44.2%
<b>Corporates</b>	74.1%	73.8%	72.8%	71.9%	71.7%
<b>Imm. Prop.</b>	72.6%	73.2%	71.6%	70.5%	70.0%
<b>Retail</b>	48.9%	49.1%	47.0%	46.0%	45.6%

 Results



The share of the **IRB over the total EAD** is:

- **Higher than 50% for Corporates** and Loan Secured by **Immovable Properties** Asset Classes
- **About 50% for Retail and Institutions** Asset Classes
- Definitively **lower than 50% for Sovereigns** Asset Class

For **each** of the considered asset class, it's possible to notice a **slightly decrease**

# Introduction 3/3

## IRB Coverage Ratio – Risk Parameters

EBA has conducted **graphical analysis** to evaluate the **trend of EAD weighted PD, LGD and CCF** over the last 4 benchmark exercise.

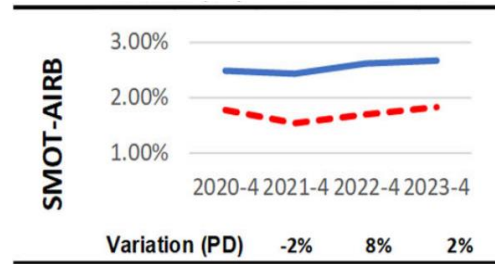
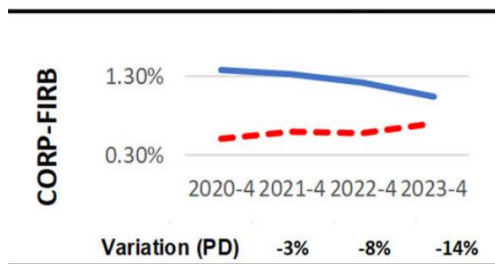


### Probability of Default

For the **EAD weighted PD** the trend depends on the underlying asset. For example:

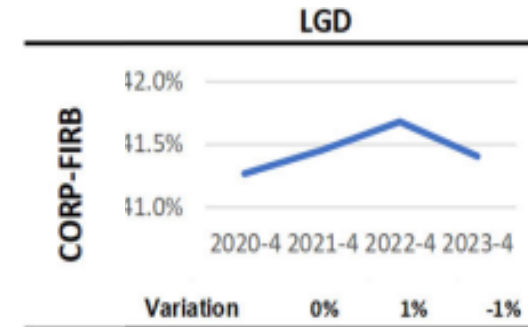
- For **Other Retail and SME** exposures there's a **slight increase**, but lower than observed default rate increase.
- For the **remaining asset classes** it's possible to see a **decreasing pattern**.

— PD — DR



### Loss Given Default

The **LGD is stable** over the observation period for all asset classes



### Credit Conversion Factor

Regarding **CCF no trends** have been identified.

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## IRB RoadMap

Overview and Implementation Status



# IRB RoadMap

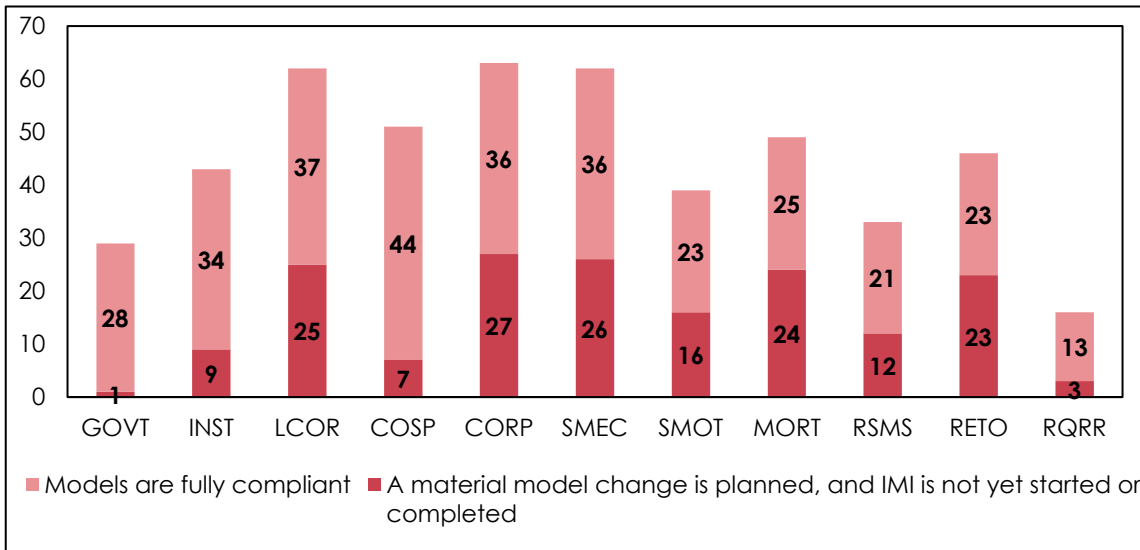
## Overview and Implementation Status

In February 2016, the **EBA introduced an IRB roadmap** which sets out **several milestones designed to improve the risk sensitivity and comparability of IRB models across EU institutions.**

The achievement of these milestones is connected to the **publication of a series of regulatory products.** The predicted phases are summarized below:



In **order to ensure proper compliance** with the Guidelines on PD and LGD, the **EBA issued a questionnaire to the CAs**, to be completed for each institution participating in the SVB (supervisory benchmarking) exercise. Below are reported the results as of 31 December 2023:



### Results

Models categorized as **"fully compliant"** are significant. However, the presence of a **share of models that are not yet compliant may limit the ability to observe trends in the variability of own funds requirements.**

Even if the **full compliance was expected by January 2022**, in some cases **it will be reached only in 2025.**

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## PD

PD Variability Over Time

Comparability of PD vs Default Rates

Regulatory PD vs PD without Conservatism Measures

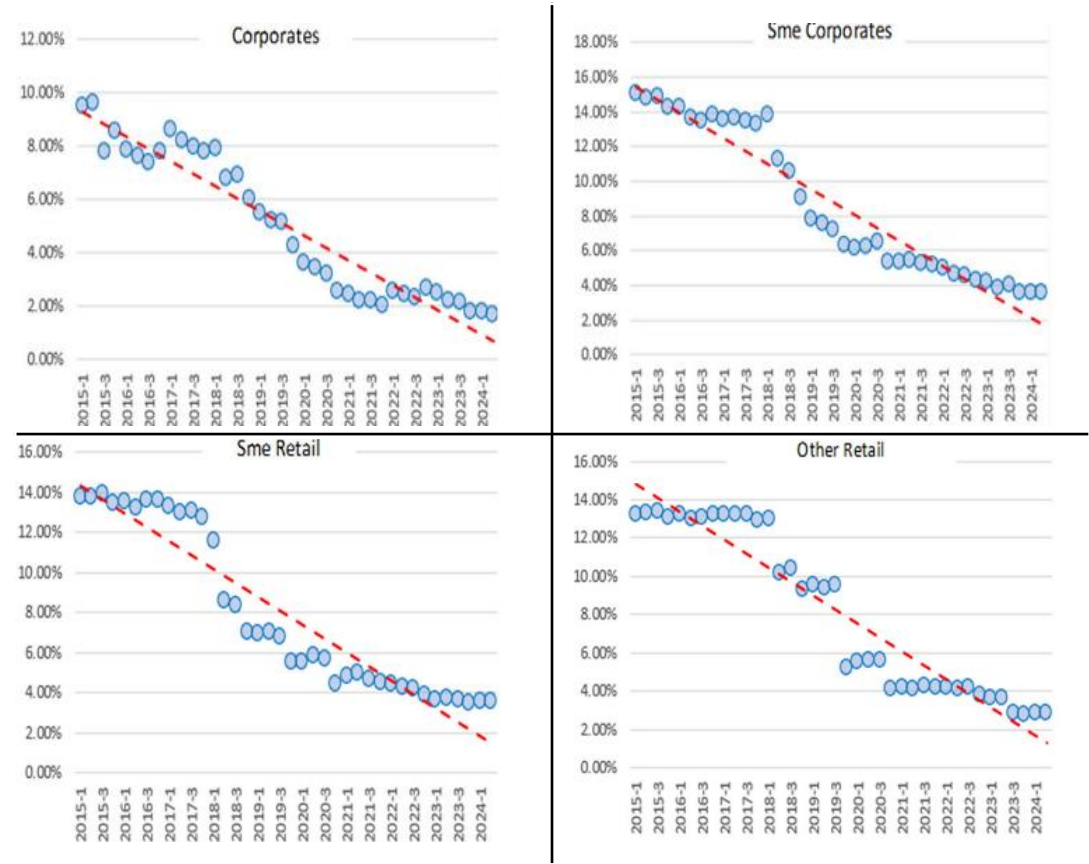


# PD 1/4

## PD Variability Over Time

In order to verify the **possible presence of a trend in the variability**, the **time series of the standard deviation of PD estimations** has been observed.

<b>DATA</b>	<p>For this analysis <b>AIRB and FIRB institutions</b> have been considered. In particular:</p> <ul style="list-style-type: none"> <li>• Only <b>institutions</b> that have been <b>reporting for all reference dates in the period have been taken into consideration</b>;</li> <li>• <b>Banks reporting anomalous quarter-on-quarter variations of the average parameter</b> at asset class level have been <b>excluded</b>;</li> <li>• <b>Banks reporting anomalous quarter-on-quarter variations of their Total Assets</b> have been <b>excluded</b>, in order to reduce the effect of mergers &amp; acquisitions operations.</li> </ul>
<b>RESULTS</b>	<p>It can be easily observed a <b>clear decreasing trend for all the considered asset class</b>.</p> <p>The <b>decrease</b> in the variability of the PD estimation results to be <b>particularly significant for Corporates, SME Corporates, SME Retail and Other Retail</b>: as it can be seen from the graphs on the right, the standard error starts from values near or higher than 10% and goes down to values lower than 5%.</p>
<b>CONCLUSIONS AND NEXT STEPS</b>	<p>The obtained results may be due to the <b>activity of regulators and supervisors carried out in recent years</b> aimed at increasing the <b>homogeneity of the estimation process</b>.</p> <p>The variability of the PD estimations could also be explained by the <b>underlying risk level</b>, so in the following slides <b>this aspect will be further explored</b>.</p>



# PD 2/4

## Comparability of PD vs Default Rates 1/2

Given asset homogeneous asset classes in terms of facility types and borrowers, **the observed variability of the average PDs** reported by the IRB banks **should be explained by the underlying risk level**. This hypothesis should be verified by using the **average of the yearly default rates observed over five years**.



### Description of the analysis

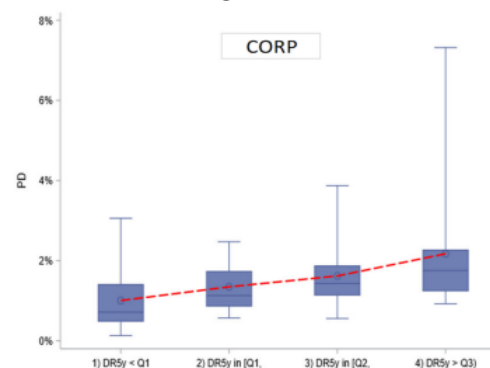
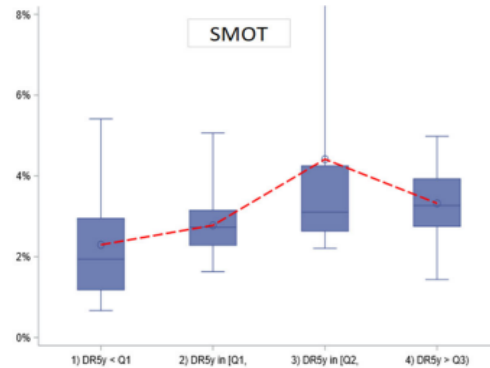
An analysis has been carried out **grouping institutions by quartiles of their five-year average default rate within each asset class**. This analysis has revealed:

- A **common increasing trend in reported PD**, showing that **the PDs are higher than the average default rates**
- The **differentiation across groups is at times limited** or **not fully aligned with the observed default rates**.



### Results

The following chart shows (as an example) the **distribution of the PDs divided on the ground of the quartiles of the five-year average default rate** for the SME Other Retail and Corporate segment.



As expected, the **PD increases with increasing default rates**, but the **dispersion around the average is wide**. Moreover, the distributions tend to overlap indicating the **absence of a clear separation between the groups**. In some cases, as for SMOT segment, the **monotonicity is not guaranteed**.

# PD 3/4

## Comparability of PD vs Default Rates 2/2

In order to evaluate the variance in each PD cluster that cannot be explained by the average default rate, the total variance have been decomposed into two components as follows.

**Variance Between**  
 It reflects the **distance between the clusters in terms of PD** and it **depends on the contribution of the average default rate**.

**Variance Within**  
 It is the **variance observed in each PD cluster**, and it is **not explained by the average default rate**.



**Most of the variance remains between the clusters**, so there are **factors other than the average default rate which explain the variability of PDs**.

This is fully confirmed by the low level of  $R^2$  of a linear regression between PDs and the average default rate.

Asset class	Between var.	$R^2$
CORP	17,9%	22,3%
MORT	20,8%	19,4%
RETO	28,4%	35,1%
RQRR	41,8%	38,4%
RSMS	32,8%	34,5%
SMEC	31,9%	29,1%
SMOT	15,3%	16,8%

# PD 4/4

## Regulatory PD vs PD without conservatism measures

The **margin of conservatism** applied by banks **can contribute materially to determining an increase in variability**. In fact, the **limited homogeneity in the determination and quantification** of such corrections can contribute to increasing the variability.



### Description of the analysis

In order to measure the impact of the margin of conservatism applied by Banks, a **benchmarking exercises** has been carried out by **comparing the variability of the estimated parameter with and without MoCs and add-ons**.

However, it's necessary to underly that **the remotion of margin of conservatism and add-ons reflects in a reduction of the estimated risk parameters**, and this could **contribute to reducing the variability measured as standard deviation**.

This limit of the analysis has been addressed **considering the coefficient of variation**, which represents the standard deviation normalized by the mean.



### Results

Asset class	Reduction of the std		Reduction of the cv	
	Due to add-ons	Due to add-ons and MoCs	Due to add-ons	Due to add-ons and MoCs
CORP	-0,6%	-13,9%	0,0%	0,0%
MORT	0,0%	0,0%	0,0%	0,0%
RETO	-2,8%	-10,1%	0,0%	0,0%
RQRR	-2,6%	-5,9%	0,0%	0,0%
RSMS	<b>-7,8%</b>	<b>-24,7%</b>	<b>-3,2%</b>	<b>-9,9%</b>
SMEC	-2,2%	-4,9%	0,0%	0,0%
SMOT	0,0%	<b>-30,2%</b>	0,0%	<b>-16,5%</b>



- For most of the asset classes considered, there is a **significant decrease of variability, if measured as standard deviation**.
- However, if the variability measure considered is the **coefficient of variation**, which accounts for the above described limit, **the reduction of variability is confirmed only for the SME Other Retail and SME Retail Mortgages exposure**.

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## LGD

LGD Variability Over Time

Main reasons of LGD Variability

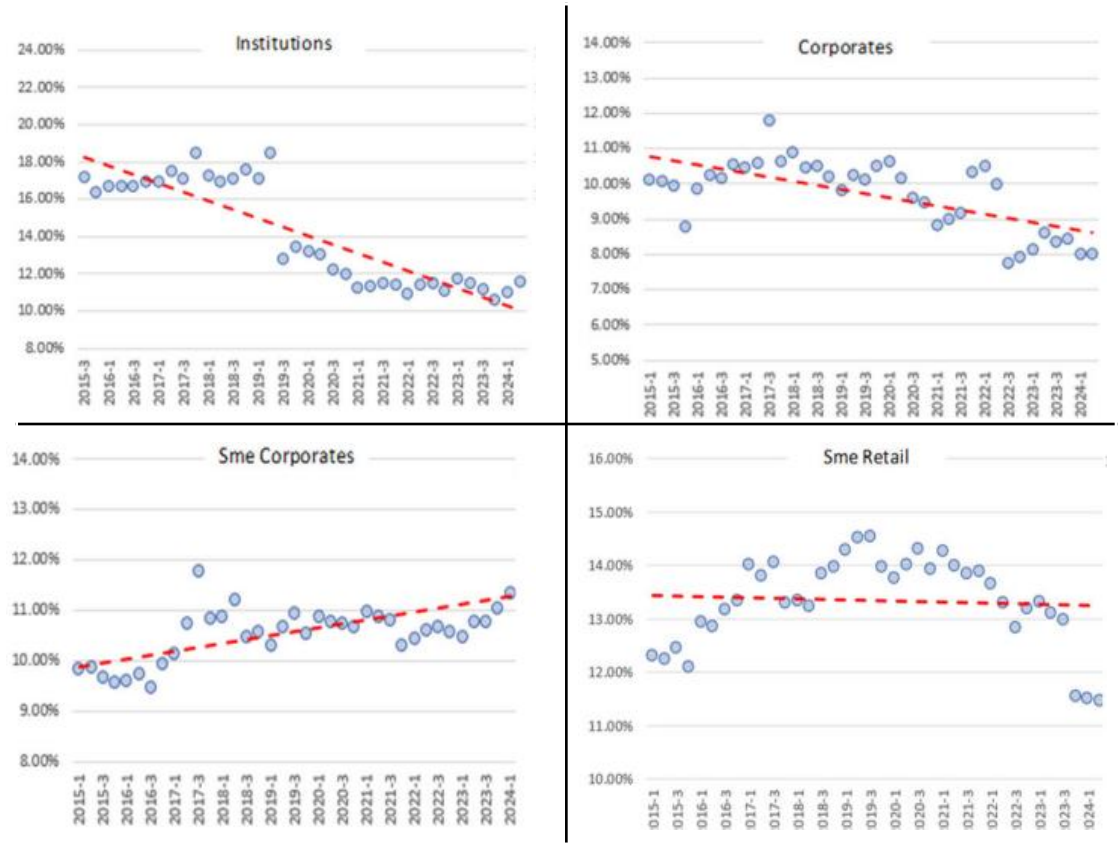


# LGD 1/2

## LGD Variability Over Time

The **LGD variability** has been analysed through the **standard deviation** on an observation period between December 2005 and June 2024 on a quarterly basis grouped by classes.

<b>DATA</b>	<p>For this analysis <b>AIRB and FIRB institutions</b> have been considered. In particular:</p> <ul style="list-style-type: none"> <li>• Only <b>institutions</b> that have been <b>reporting for all reference dates in the period</b> have been taken into consideration;</li> <li>• <b>Banks reporting anomalous quarter-on-quarter variations of the average parameter</b> at asset class level have been <b>excluded</b>;</li> <li>• <b>Banks reporting anomalous quarter-on-quarter variations of their Total Assets</b> have been <b>excluded</b>, in order to reduce the effect of mergers &amp; acquisitions operations.</li> </ul>
<b>RESULTS</b>	<p>As shown in the tables on the right the <b>LGD variability seems to be constant over time or slightly decreasing for some asset classes</b>, in particular Corporate and Institution segment.</p>
<b>CONCLUSIONS AND NEXT STEPS</b>	<p>Those results should be read considering that the <b>LGD parameter could be heavily influenced by institution's credit policy</b> (e.g. LTV, collateral and guarantees) <b>and by structural differences across countries</b>. More in detail, EBA has focused his analysis on the Other Retail asset class, since it is characterized by a wide variety of technical forms of consumer credit.</p>



# LGD 2/2

## Main Reasons of LGD Variability

Even if the LGD estimation methodologies were harmonized across institutions, for the Other Retail segment a variability in the LGD estimation could persist, because this asset class includes technical forms of consumer credit different from each other. So, EBA has focused its analysis on this type of asset class.



### Target Variable

Estimated LGD

### Explanatory Variables

- Presence, type and amount of collateral or guarantees
- Cure Rate and time to recovery
  - Exposure value

### Functional Form

Parameters have been estimated through the Ordinary Least Square Method (OLS) minimizing the mean square error between the observed and predicted LGD.



### Results

Variable	Estimate	P-Value
Cost.	0.85309	<0001
Real. Gar.	-0.24493	0.0550
Fin. Gar.	-0.13638	0.3445
Oth. Gar.	-0.25338	0.2082
Recovery Time	0.01758	0.3408
Cure Rate	-0.69913	0.0421
Avg. EAD	-0.03473	0.0472

R Square 54.68%



### Conclusions

The results on the left shows that:

- As expected, all estimated parameters are negative excepting the Recovery time
- Only Real Guarantees, Cure rate and Average Exposure are significantly different from zero
- The model catches the 50% of LGD variability

According to this model for Other Retail asset class the LGD variance could be partially explained by the type of collateralization and structural country-specific factors.

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## Conclusions

Final Summary



# Conclusions

## Final Summary

The **main conclusions** that have been **emerged from the 2024 Credit Risk Benchmark Exercise** could be summarized as follow:

