EBA REPORT

RESULTS FROM THE 2021 CREDIT RISK BENCHMARKING EXERCISE

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Executive summary

The variability of risk-weighted exposure amounts (RWA) for institutions applying the internal ratings-based (IRB) approaches has remained rather unchanged despite the COVID-19 pandemic and despite the model changes which institutions implemented for achieving compliance with the IRB roadmap.

Given the COVID-19 pandemic and the different pace at which banks implement (or have implemented) changes to their IRB approaches for achieving compliance with the IRB roadmap[1] and for implementing model changes triggered by the TRIM[2] exercise, a more significant increase in variability of RWA could have been expected.

The usual top-down approach, which assesses the variability of RWA on increasingly homogeneous portfolios, indicates however that the general variability has decreased, while the share of unexplained variability has remained rather stable (a slight increase has been observed).

Impact of the COVID-19 pandemic on the average probabilities of default (PDs) is more likely to be observed for high default portfolios (HDP) than for low default portfolios (LDP) as of December 2020.

The impact of the COVID-19 pandemic on the IRB parameters is heterogeneous, depending not only on the extent to which the underlying loans (obligors) are affected by the pandemic but as well on the institutions' relevant processes and share of investment in low default portfolios and high default portfolios.

For LDP portfolios, the review of the rating assignments is usually done once a year. As an obligor's rating assignment often relies on input from annual balance sheet information, the resulting IRB parameters as of December 2020 will, for many LDP obligors, refer to balance sheet information as of end 2019. Therefore, the impact of the COVID-19 pandemic is less likely to be visible in the IRB parameters – for many LDP obligors – as of December 2020. However, more automatised account scorings, which are used in retail for the rating grade assignment and which are applied more frequently, may have already picked up on the impact of the pandemic.

For example, a slight rating migration towards better grades is visible in qualified revolving retail exposures (RQRR), which may be caused by decreased expenses of private individuals under confinement

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[1] [EBA Report on the regulatory review of the IRB Approach.pdf (europa.eu)](europa.eu)

[2] The Targeted Review of Internal Models ("TRIM"): [Internal models (europa.eu)](europa.eu)

The observed decrease of average RW and PDs for HDP portfolios is probably due to (a) re-estimation of PDs conducted in 2020 and (b) migrations of retail obligors/exposures towards better rating grades.

The reasons for the observed decrease in average PDs in HDP benchmarking portfolios may be different for different sub-exposure classes. The report provides some evidence that neither the institution's location in a Member State nor an increased use of public guarantee schemes (PGS) were drivers of the observed trend of decreasing average PDs in HDP.

Therefore, it is considered likely that re-calibrations that banks conducted in 2020, among others for achieving compliance with the IRB roadmap, and which were based on pre-pandemic default and loss-rate time series may have driven the observed trend.

For small and medium-sized enterprises (SME) in retail portfolios, the observed decrease in average default rates as well as the observed decrease in average PDs may indicate potential overcompensation of the expected impact of the economic crisis by public measures and moratoria.

For the retail SME exposures, the average PDs and default rates observed in 2020 are significantly lower than those observed in 2019. This trend seems to have been supported by the application of the public measures and moratoria measures as regards the default rates in particular.

However, this evidence also raises some concerns about whether an increase in the level of defaults might be expected in the following years for retail SMEs, once all the public support measures are discontinued, especially if these measures are discontinued while the macroeconomic context is still fragile.

1. Introduction

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

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 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[3].

Since then, 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 harmonising practices. This package is referred to as EBA's IRB roadmap, and institutions are in the process of reviewing their IRB approaches to achieve compliance with the harmonised 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").

This report summarises the results of the 2021 benchmarking exercise (based on data as of 31 December 2020 and collected between April 2021 and August 2021[4]). It provides, as usual, an overview of the participating banks and their scope of application of the IRB approach, as well as an in-depth analysis of the variability of risk weights (RWs), PDs and LGDs.

A focus of this year's horizontal analysis is the development of RWs, PDs and default rates (DRs) in time. In this context it is analysed to which extent

> (a) the COVID-19 pandemic and

> (b) the implementation of the IRB roadmap

might have impacted the IRB risk parameters.

Although data on defaulted exposures, CCF and maturity is also collected and provided to the supervisors together with the relevant benchmarks for the individual assessment of institutions'

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

[4] The initial submissions in April are subject to a data quality process, which eventually leads to resubmissions, which are accepted until August.

IRB approaches, these parameters are not in scope of the horizontal analysis presented in this focus report. In short, the assessment of the impact of COVID-19 and of the IRB roadmap on the IRB parameters is focused mainly on the impact on RWs, PDs, LGDs and DRs.

1.1 The impact of COVID-19 on the IRB parameters

As specified in the CRR, the obligors of an institution's IRB portfolio are assigned to obligor rating grades on an internal rating scale, where for each grade a PD estimate needs to be provided. The LGD that is used for the purpose of the capital requirements calculation results either from the application of the relevant regulatory values specified in Article 161 of the CRR, if the institution applies the FIRB approach, or, where the institution applies the AIRB approach, from an assignment of a considered facility to a facility grade, where for each facility grade (or pool) the institution provides an own LGD estimate.

Thus, the COVID-19 crisis can impact the average IRB parameters (i.e., RWs, PDs, LGDs, CCFs) in two dimensions. It may trigger re-assignment of obligors (facilities) to different PD- rating grades (LGD- or CCF-grades) and it may trigger a re-estimation of PDs and LGDs (or CCF) for the corresponding grades and pools, taking into account the realisations of those risk parameters, which may be impacted by the pandemic.

The impact on the assignment of obligors (facilities) to grades depends on

(a) the institution's process and schedule for the (at least annually required) review of the assignment to grades (CRR Article 173) (re-rating), and

(b) the extent to which the input parameters for the rating model which is used to assign obligors or exposures to grades and pools are impacted by the pandemic.

Regarding (a): The process and schedule for the re-rating differs for LDP and HDP and depends on the availability of up-to-date or new information on the relevant input parameters.

For LDP, the re-rating is often scheduled depending on the reporting dates of the annual balance sheets (if these provide for input parameters for the rating model). As most companies publish their annual balance sheets with respect to the end of a calendar year, **the rating assignment as of December 2020 will, for those companies, refer to balance sheet information as of December 2019[5].**

In addition to the annual re-rating, ad-hoc re-ratings occur in the case that new relevant information is available (e.g. in the case of a downgrade by an external credit assessment institution (ECAI)).

Lastly, it should be noted that the extent to which the assigned ratings also depend on qualitative input parameters (soft facts, human judgement), which are more easily updatable is also a relevant

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[5] Where annual balance sheet information is taken into account in the relevant rating system

aspect. However, information on the use of human judgement (e.g. via overwrites) to reflect the impact of the COVID-19 pandemic was not in the scope of this analysis.

The re-rating process for HDP portfolios is typically much more automatised. Figure 11 from EBA's survey on the IRB modelling practices from 2017, recalled below, took stock of the different types of PDs models.

Figure 11: Types of PD models — retail, corporate, institutions, and central governments and central banks
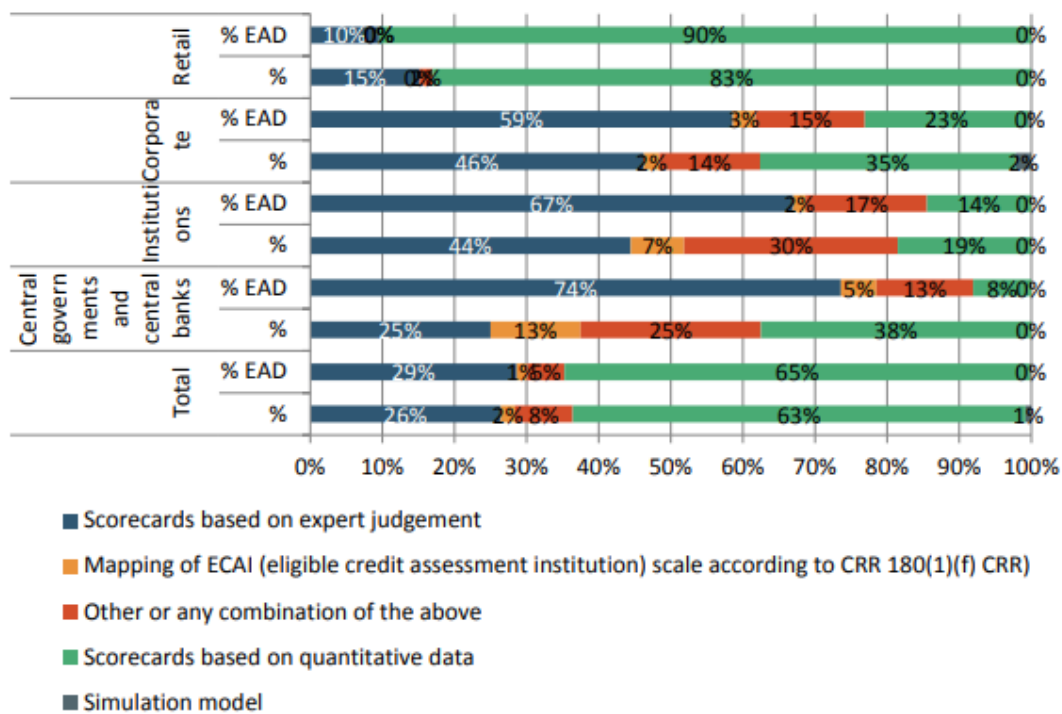
Figure 1 Types of PD models used in the IRB approach

Institutions often run their rating engines for complete IRB retail portfolios (where no expert judgement is required) on a more frequent schedule, for example quarterly or monthly. Therefore, **if input parameters of rating models for HDP were impacted by COVID-19, this is more likely to be reflected in the rating grade assignment relevant for the PD estimates as of December 2020 for HDP portfolios than for LDP portfolios**.

Regarding (b) the guidelines (GL) on PDs and LGD[6] require institutions to assess potential risk drivers (to be considered in the rating grade assignment) in, at least, the following four dimensions:

      i.   obligor characteristics, including sector and geographical location for corporates;

      ii.   financial information, including financial statements or income statements;

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[6] Paragraph 57 of the GL on PD and LGD

iii.   trend information, including growing or shrinking sales or profit margin; and

iv.   behavioural information, including delinquency and the use of credit facilities.

While the observed values of those risk drivers that are related to obligor characteristics might not have changed due to the pandemic, the observed values of risk drivers that are related to financial information, trend information and behavioural information might have changed significantly.

It should be noted that impact on input parameters can only happen where an institution receives updated information on these parameters and where this information can be processed in a timely manner. For example, an institution treating current accounts for retail obligors under the IRB may observe increased available income due to reduced spending under lockdown via a monthly account scoring. However, an IRB institution which is specialised in retail mortgages will not be able to update its obligor's financial information (which has probably been collected in the loan origination process) accordingly, due to the lack of current accounts and account scoring. Figure 3 and Figure 4 in section 2.2.2 of this report show which portfolios are treated under the IRB by each institution participating in the exercise, and this reveals that **heterogeneity of the impact of the pandemic on IRB parameters should already be expected due to the differences in the business models**.

The COVID-19 pandemic and in particular the measures implemented by Member States and by the EU to counter the health crisis and the related economic crisis impact the data relevant for the obligors' rating grade assignment via two channels:

(a) **Directly,** in the case of the use of moratoria and public guarantee schemes (PGS) and other regulations that lead to changes in the contracts with the obligors.

(b) **Indirectly,** via COVID-19 support measures that do not change the banks' contracts with the obligors but which impact, among other things, the obligor's financials or behaviour.

The impact of COVID-19 on the estimation of PDs and LGDs for a given obligor or facility rating grade depends on the extent to which a potential impact is reflected in the long-run average of one-year default rates or long-run loss rate underlying the PD or LGD estimations. Annual default rates can only completely reflect the COVID-19 impact as of March 2021 (for Europe, where the first cases and measures were observed in March 2020). In addition, even if a recalibration took place in 2020, this will most probably be based on data from 2019 and earlier, due to the time needed for the data preparation, the recalibration itself, and internal and external (supervisory) approval processes. **Thus, no impact from COVID-19 on the estimation of PDs and LGDs for a given obligor or facility rating grade is to be expected as of 31 December 2020**, which is the relevant reference date for the 2021 benchmarking exercise and this report. Moreover, single institutions may have revised their margin of conservatism, which is added to the estimates to account for the increased uncertainty implied by the pandemic.

In short, Figure 2 below illustrates how the COVID-19 pandemic can impact the IRB parameters.
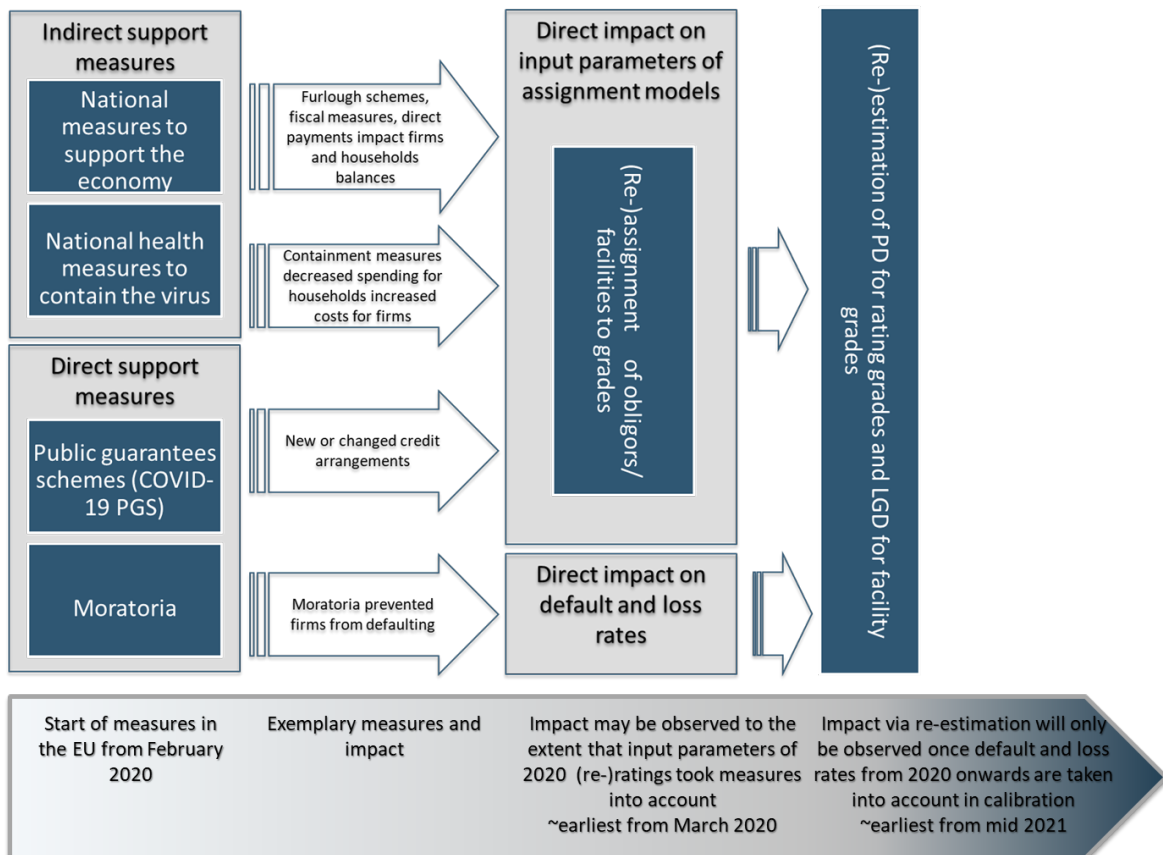
Figure 2 Illustration of how the COVID-19 pandemic can impact IRB parameters

1.2   The impact of the implementation of the IRB roadmap

As a result of excessive variability in some areas, observed in the EBA's report on the comparability and procyclicality of own funds requirements under the IRB approach published in December 2013, the EBA developed a set of policies in its regulatory review of the IRB approach (IRB roadmap). This review contained a number of regulatory technical standards (RTS) and guidelines (GL) aimed at harmonising the implementation of the IRB approach. Where the reform of the Basel III standard tackles the observed variability of risk weights by limiting the scope of application of the IRB approach, the EBA's regulatory review aims to enhance the robustness and the comparability of the internal risk estimates and own funds requirements of IRB institutions in the EU, thus ultimately restoring trust in the IRB approach. A core component of the EBA's review of the IRB approach is the GL on default definition (DoD) and the RTS on materiality threshold in the ongoing default identification, where the deadline for implementation was the end of 2020 (i.e. application date from 1 January 2021)[7]. In addition, the GL on PD and LGD will apply starting from 1 January 2022 (for most portfolios). For stand-alone rating systems for exposures to institutions and financial

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[7] This deadline refers to the new implementation of the DoD for the default detection process only (and not to the review of the models).

institutions treated as corporates or large corporates as defined under the final Basel III framework, the implementation date is set as 1 January 2024 to provide enough time for institutions to withdraw IRB approval for those types of exposures for which this is implied by the final Basel III framework.

Therefore, the current supervisory benchmarking (SVB) analysis in relation to default rates and in particular the outturn analysis (where estimated parameters are compared with realisations) should be considered with care, as some institutions may have implemented a revised definition of default but may not have implemented revised PD and LGD estimates (aligned to the new DoD) yet. In order to monitor the impact of implementation of the IRB roadmap on the benchmarking metrics, the EBA included some questions on the status of the implementation in the qualitative questionnaire to supervisors, which is issued to CAs for the purpose of guiding the individual assessments based on the SVB data collection from the banks. The result of this is illustrated in Section 6. This analysis makes it possible to some extent to disentangle the effects of the COVID-19 pandemic and the IRB roadmap implementation.

1.3 Structure of the report

This report on the credit risk benchmarking exercise 2021 provides an overview of the participating IRB institutions and summarises the resulting benchmarks as well as the assessment that was done by the competent authorities on the observed outliers (i.e. significant deviations from the benchmarks).

However, this year the data has been used to analyse more in detail the potential impact of the COVID-19 pandemic on the IRB parameters. As the mission of the benchmarking exercise is, among other things, the assessment of potential undue variability, this report sheds light on potential differences in the impact in general and in national measures to counter the pandemic on IRB parameters more in detail.

Given the explanation in section 1.1. more emphasis is put on the assessment of the potential impact of national measures and in particular on the potential impact of the newly created public guarantee schemes (PGS or COVID-19 PGS) on the average PDs of benchmarking portfolios. Moratoria are more likely to have impacted the default rates, which is why the potential impact of the moratoria is analysed with respect to the observed average default rates in section 4. The impact analysis is mainly based on comparing the average IRB parameters observed on relevant IRB exposure as of December 2020 to December 2019, which can be considered a pre-COVID snapshot.

In short, section 2 sets out the description of the exercise and the characteristics of the 2021 sample of the IRB institutions which were in the scope of the exercise.

Section 3 provides for analyses of the changes observed in the average IRB parameters of benchmarking portfolios before and after the outbreak of COVID-19. Thus, the data collected with reference date 31 December 2020 for the 2021 benchmarking exercise has been compared to the data collected as of 31 December 2019 for a common sample of institutions. In addition to the

developments observed for average risk parameters, the usual top-down analysis illustrates the breakdown into explained and unexplained variability for both reference dates.

The evolution of empirical risk is assessed in section 4 of the report.

Section 5 provides an analysis of the impact of COVID-19 on RW, PDs and DRs for CORP and SMEC by industry sector. The sectors are identified by seven NACE codes chosen as the most relevant ones and specified in the ITS.

In addition to the actual benchmarking analysis, section 6 summarises the results from the CA assessments. The analysis is based on a qualitative questionnaire that the EBA issues to the CAs partly to gather feedback on the individual banks' assessments based on the data submitted for the benchmarking exercise and other CA sources.

Although analysis of the temporal evolution of average risk parameters has been part of previous benchmarking analyses, this has not been a focus before. Equally, the differences in exposure before and after CRM have not been analysed in depth in earlier reports. Therefore, and given the limitations and assumptions of the different analyses, the conclusions should be considered with care. Lastly, data quality issues remain to some extent.

2. The sample of IRB banks of the EU

2.1 Description of the exercise

The annual benchmarking exercise for credit risk portfolios provides an analysis of the variability of RWAs and of its drivers for pre-defined benchmarking portfolios. These benchmarking portfolios specify a breakdown of the institutions' IRB portfolios via a set of relevant characteristics[8] (e.g. the exposure class, default status, collateralisation, sector of counterparty, size of exposure, loan-to-value ratio, etc.), resulting in three levels of benchmarking portfolios, which are increasingly homogeneous and detailed. Institutions submit (by 11 April) the average RWAs and other risk drivers (e.g. averages of PD, LGD, realised default and loss rates) as well as some other metrics, which are specified in the ITS 2021[9] for their exposures in these benchmarking portfolios.

The EBA then computes the benchmarks (i.e. median of the values submitted) and other statistical measures for those benchmarking portfolios where a minimum number of institutions submitted data.

The use of these benchmarking values and portfolios makes it possible to disentangle (to some extent) the business-related variability of the RWA (e.g. different risk appetite, different collection processes, investments in different sectors and geographical areas) from any unexplained variability of the RWA.

The benchmarking of portfolios and thus the benchmarking analysis is mostly performed separately for

- **Low-default portfolios (LDP)** covering central governments and central banks (CGCB), institutions (INST), large corporates – where the annual turnover of the obligors is above EUR 200 million (LCOR) and corporates in specialised lending (COSP) and

- **High-default portfolios (HDP)** covering corporates which are not SMEs and not in LCOR (CORP), corporates which are SMEs (SMEC), retail SME exposures secured by real estate (RSMS), other retail SME exposures (SMOT), retail mortgages which are not SMEs (MORT), retail other (RETO) and retail qualified revolving (RQRR).

For the 2021 benchmarking exercise, institutions provided IRB parameters and, where relevant, related realisations for up to 1,592 LDP portfolios and 39,788 HDP portfolios.

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[8] The exact portfolios are specified in the ITS on benchmarking (Annex 1)

[9] Commission implementing regulation amending Implementing Regulation (EU) 2016/2070 as regards benchmark portfolios, reporting templates and reporting instructions to be applied in the Union for the reporting referred to in Article 78(2) of Directive 2013/36/EU of the European Parliament and of the Council

In addition to the above-mentioned LDP and HDP portfolios, institutions provide the RWA and related IRB parameters for some specific large corporates, institutions and sovereigns (from a pre-defined list of 13,790 companies) to which they have exposures.

In addition to the overall analysis of the variability of RWA, the SVB aims to provide tools to supervisors to assess the quality of the approved IRB approaches. To this end, EBA provides to supervisors, based on the data submitted by banks, visualisation tools and Excel tables to identify benchmarking portfolios where a supervised bank shows significant deviations from the benchmarks (i.e. significantly higher or lower parameter values) and a CA questionnaire, which allows supervisors to report feedback on such findings to the EBA. A summary of the findings of the supervisory assessment made in 2021 is provided in section 6 of this report.

Lastly, this benchmarking report may provide evidence to policymakers for future activities relating to the IRB approach, depending on the findings.

2.2   Description of the sample

2.2.1   Sample description – number of banks

Table 1 describes the composition of the 2021 SVB sample across different dimensions (i.e. the use of regulatory approaches across SVB exposure classes).

Table 1 Use of different regulatory approaches by SVB exposure class

	Exposure Class	AIRB	FIRB	SLSC	Number of participating institutions
LDP	LCOR	53	47	0	83
	COSP	27	17	35	63
	CGCB	17	27	0	37
	INST	23	38	0	51
HDP	CORP	53	45	0	82
	SMEC	53	45	0	81
	SMOT	67	0	0	67
	RETO	73	0	0	73
	RSMS	66	0	0	66
	MORT	82	0	0	82
	RQRR	35	0	0	35
ALL	**ALL**	**94**	**55**	**35**	**100**

2.2.2   Sample description IRB EAD

The figures below give key descriptions of the portfolio composition of the sample of banks, as well as insights into the representativeness of the exposures under the scope of the SVB exercise for single banks. The portfolio compositions (in term of exposure classes) vary greatly between institutions.
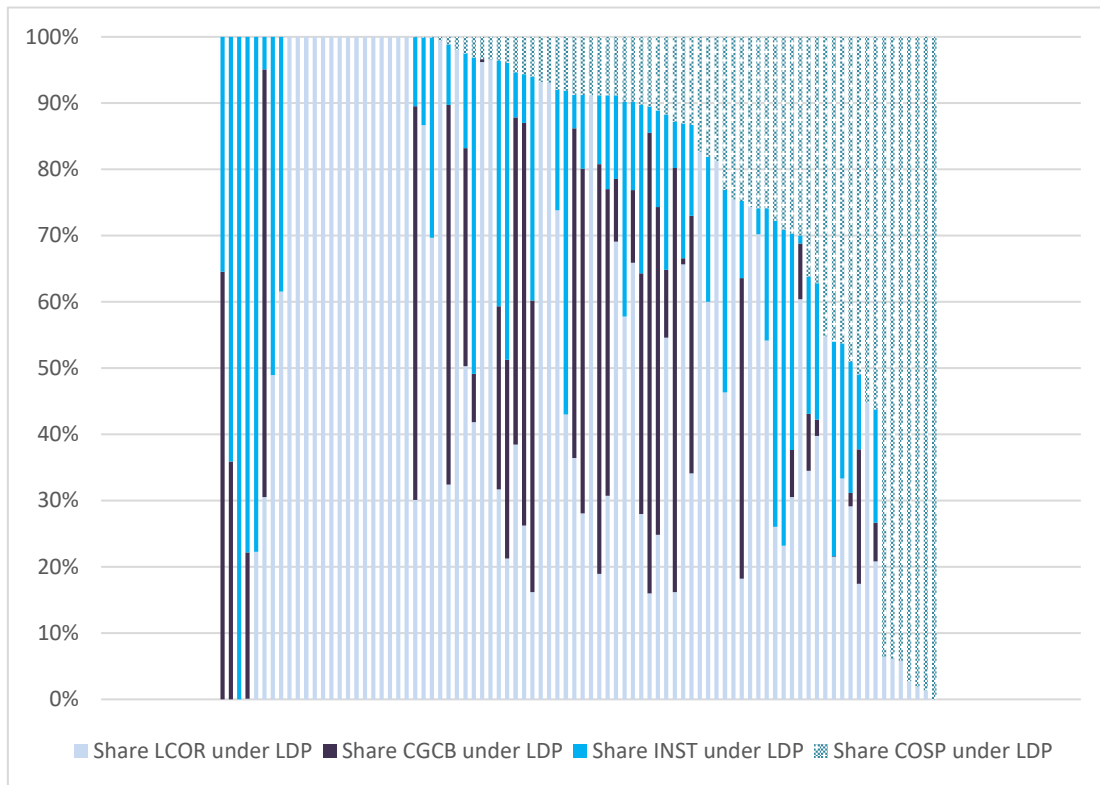

Figure 3 Portfolio composition of LDPs: proportion of large corporates, institutions and sovereigns in LDPs (sorted by proportion of specialised lending exposures in LDPs from smallest to largest)
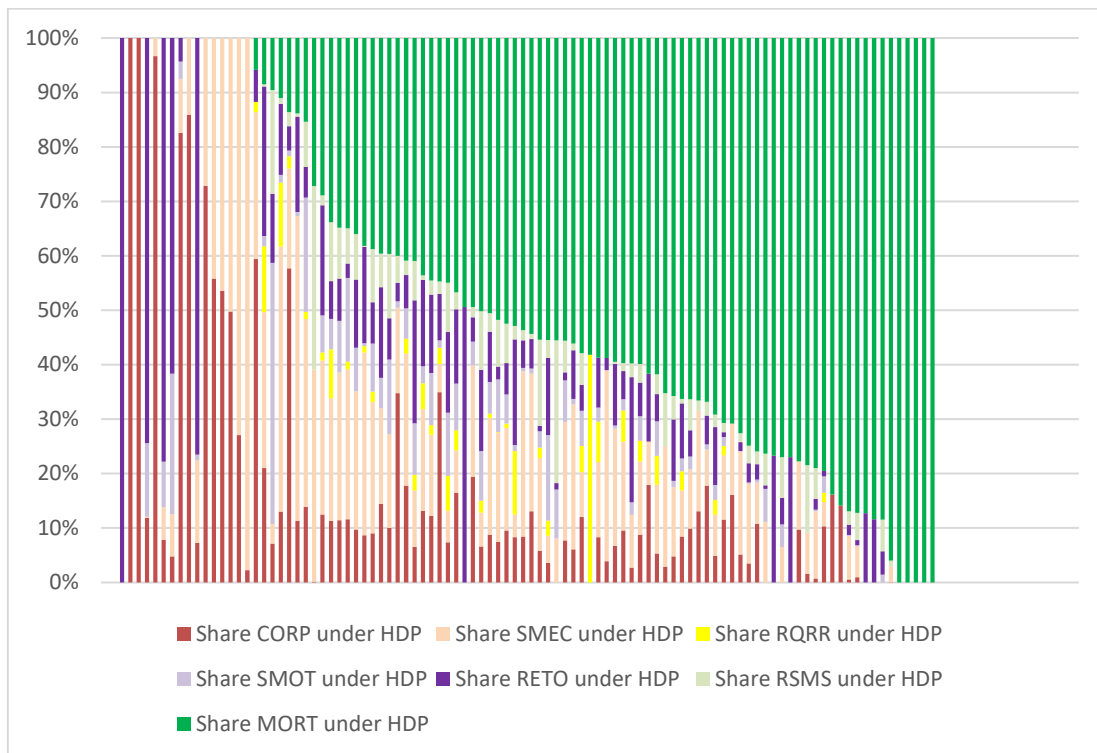
Figure 4 Portfolio composition of HDPs: proportion of residential mortgages, SME retail, SME corporate and corporate – other exposures in HDPs (sorted by proportion of mortgages in HDPs from smallest to largest)

3. IRB risk parameters end-2020

3.1 Description of average RW, PD, LGD observed as of 31.12.20

Figure 5 and Figure 6 below illustrate the development of the average risk weights (RWs) (for LDPs and HDPs respectively) in the non-defaulted SVB exposure classes for a sample of banks which provided the relevant data for December 2020 and December 2019. The most significant observation is the decrease of average RWs between December 2019 and December 2020 in nearly all exposure classes. This observation seems counter-intuitive in the context of the current economic environment and will thus be analysed in more depth.

For LDP portfolios, the average RW has decreased for CGCB and INST. On the other hand, the average RW has increased for LCOR (from 46.9% to 51.2% for FIRB and from 41.7% to 44.6% for AIRB) and is thus potentially mirroring the economic crisis observed in 2020. Where for COSP AIRB portfolios the average RW remains stable, it decreases from 49% to 45.8% for COSP FIRB and even more significantly for COSP SLSC.
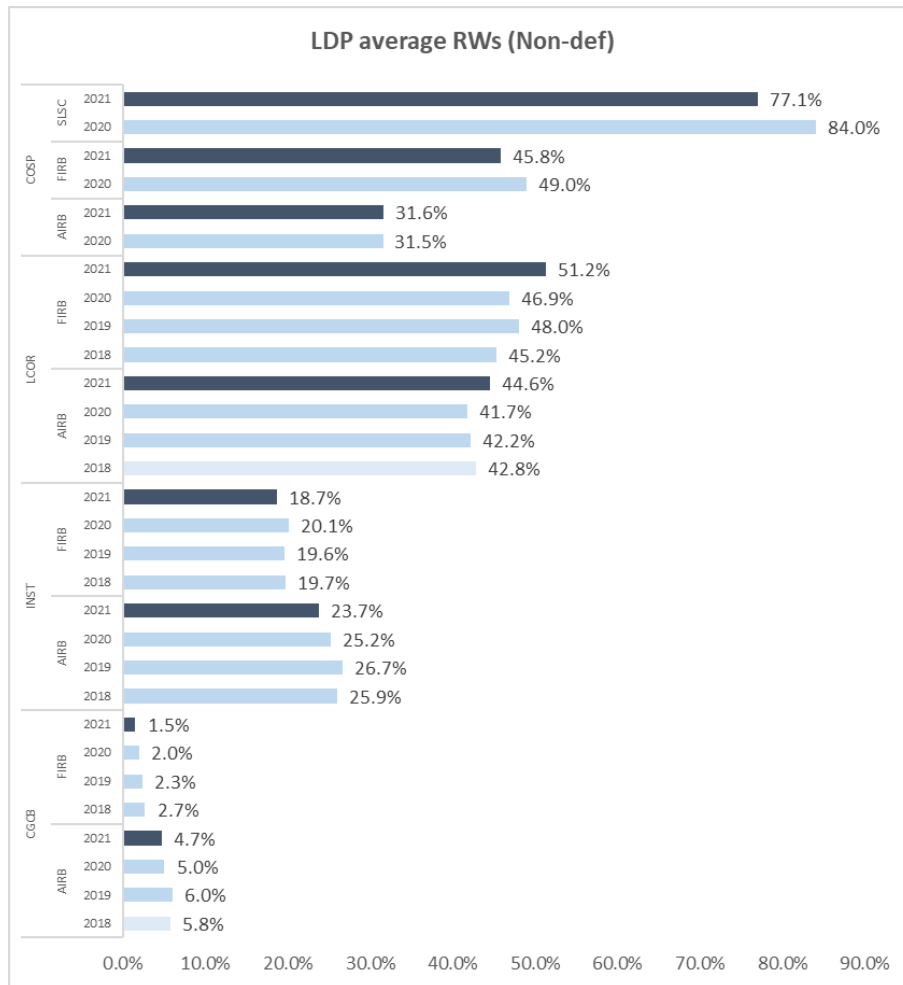
LDP average RWs (Non-def)

COSP
- SLSC 2021: 77.1%
- SLSC 2020: 84.0%
- FIRB 2021: 45.8%
- FIRB 2020: 49.0%
- AIRB 2021: 31.6%
- AIRB 2020: 31.5%

LCOR
- FIRB 2021: 51.2%
- FIRB 2020: 46.9%
- FIRB 2019: 48.0%
- FIRB 2018: 45.2%
- AIRB 2021: 44.6%
- AIRB 2020: 41.7%
- AIRB 2019: 42.2%
- AIRB 2018: 42.8%

INST
- FIRB 2021: 18.7%
- FIRB 2020: 20.1%
- FIRB 2019: 19.6%
- FIRB 2018: 19.7%
- AIRB 2021: 23.7%
- AIRB 2020: 25.2%
- AIRB 2019: 26.7%
- AIRB 2018: 25.9%

CGCB
- FIRB 2021: 1.5%
- FIRB 2020: 2.0%
- FIRB 2019: 2.3%
- FIRB 2018: 2.7%
- AIRB 2021: 4.7%
- AIRB 2020: 5.0%
- AIRB 2019: 6.0%
- AIRB 2018: 5.8%

Figure 5 Change in RW by regulatory approach and LDP exposure class for non-defaulted exposures

For HDP portfolios, the decrease in average RWs for non-defaulted exposure is even more pronounced than for LDP portfolios, with RW decreases ranging from small decreases of 0.2 and 0.4 percentage points for RETO and MORT, respectively, to more pronounced decreases of 4 percentage points and 6.8 percentage points for SMEC AIRB and FIRB, respectively. However, for both CORP AIRB and FIRB, an increase in RW can be observed.
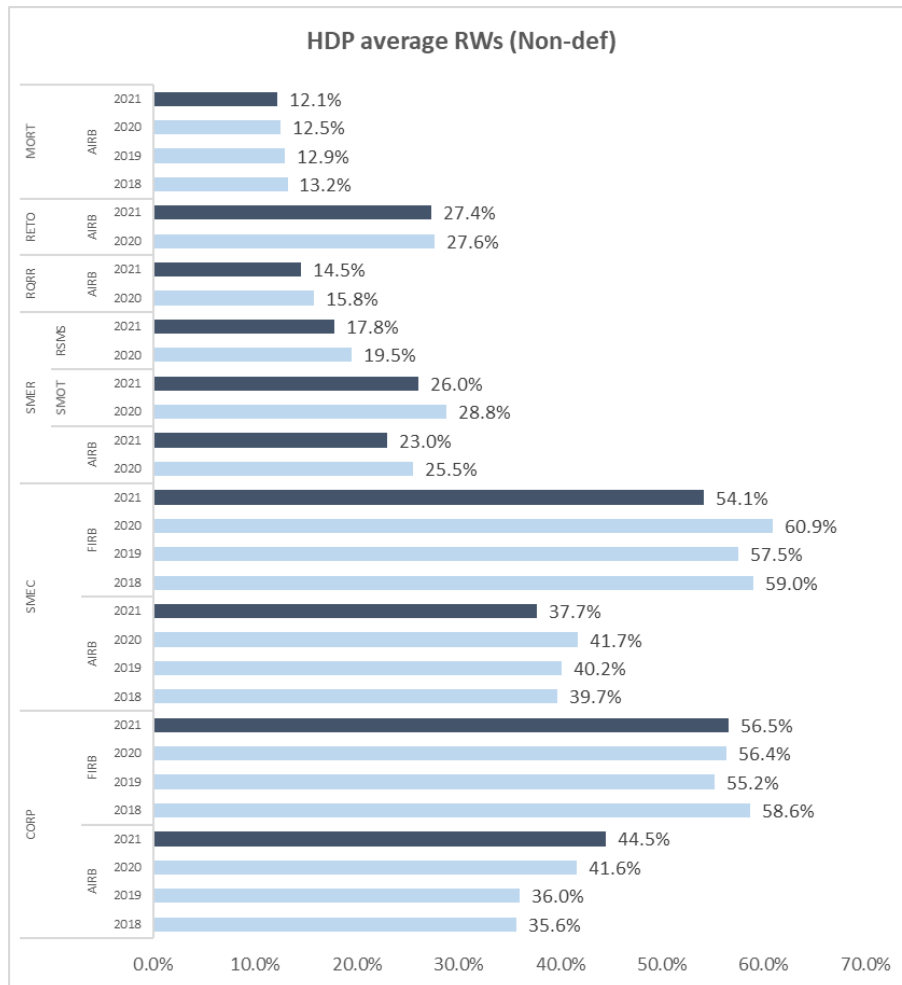
Figure 6 Change in RW by regulatory approach and HDP exposure class for non-defaulted exposures

The following analysis aims, among other things, to reveal the source of the average RW decrease which is observed in many exposure classes. Decreasing RWs were less expected, given the COVID-19 crisis, the implementation of the IRB roadmap in many EU institutions and the results of the TRIM exercise[10]. Thus, it is whether the decrease is a general trend which is mirrored in the sub-portfolios or whether the average decrease is a result of a broader distribution with decreases outweighing increases of risk weights or risk weight drivers and which are the drivers of the decrease.

Figure 7 and Figure 8 illustrate the development of average PDs in the SVB exposure classes. This analysis indicates that changes in average PDs have likely driven some of the observed decreases in RWs.

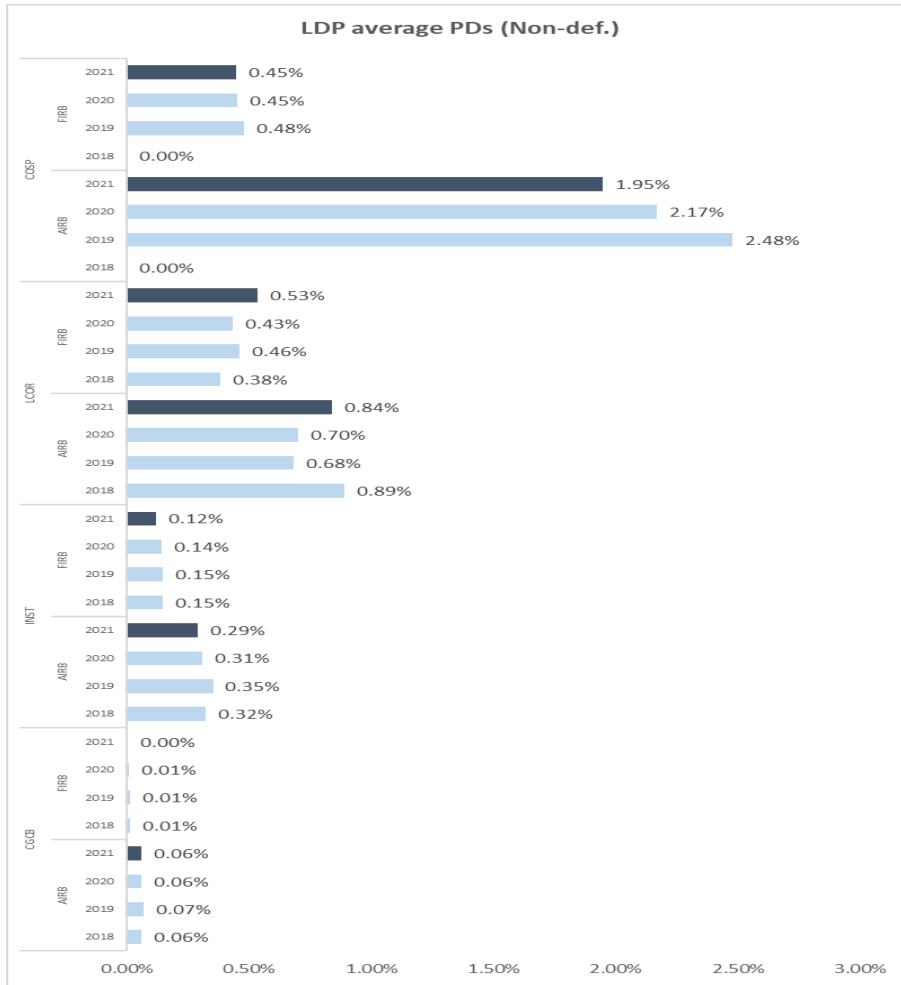[10] ECB's large-scale review boosts the reliability and comparability of banks' internal models (europa.eu)

Figure 7 Change in PD by regulatory approach and LDP exposure class for non-defaulted exposures
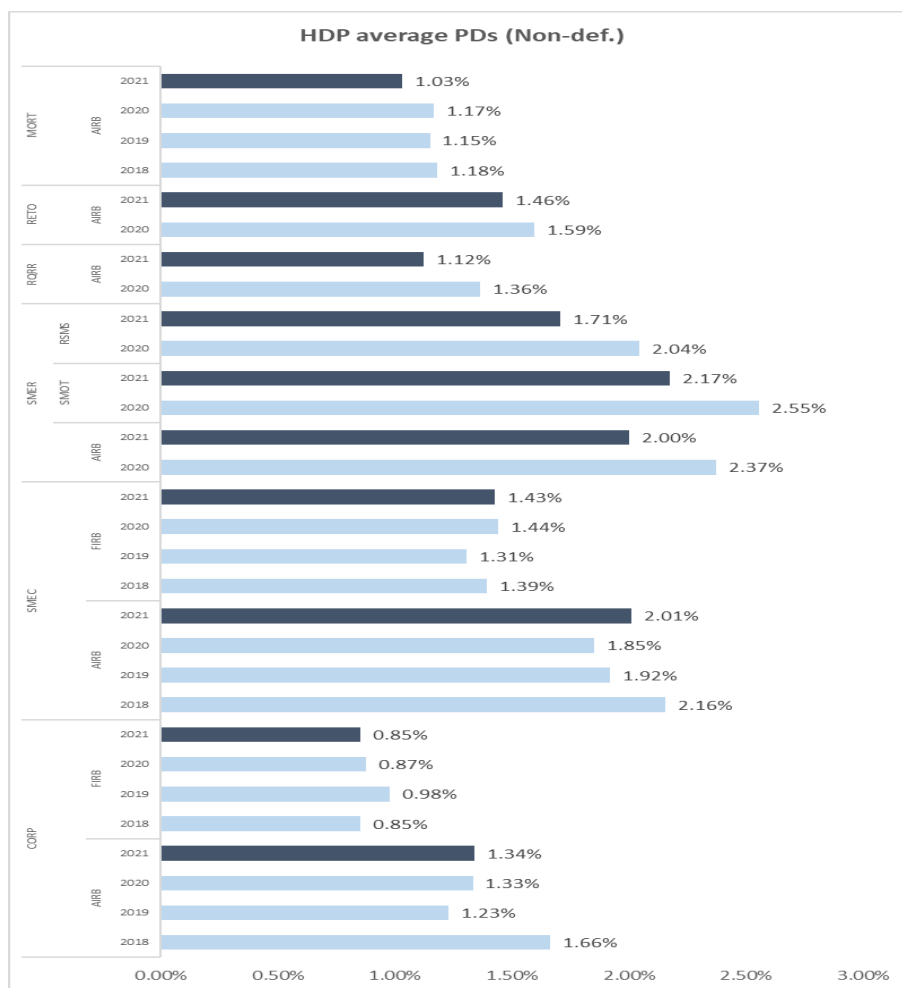
Figure 8 Change in PD by regulatory approach and HDP exposure class for non-defaulted exposures

The above illustrations indicate the following conclusions: The decrease in RW for retail exposures, i.e. MORT, RETO, SMER and RQRR, is connected with a decrease in average PDs. As explained in section 1.1, for these retail exposure classes the PDs are assigned to obligors or exposures by application of automatic scorecards on a more frequent schedule for the vast majority of banks (see). Thus, the decrease may indeed partially be driven by changed input parameters (in particular changed input parameters with respect to the obligor's finance and behaviour). However, it is observed that the magnitude of the decrease in the average PDs does not fully translate to the observed decrease in the average RWs. Provided that the contribution of the LGDs to this effect is small (see below), this effect may be driven by other factors, such as supervisory add-ons or non-uniform changes in the rating distributions of the different institutions (e.g. due to the IRB roadmap implementation).

The decrease in RWs observed for the portfolios SMER, SMEC and COSP FIRB, and SLSC may be related to the CRR quick fix (Article 2 of Amendments to Regulation (EU) 2019/876)[11]. The quick fix was introduced into the legal text to ensure an adequate flow of credit to SMEs (the "SME supporting factor") and to facilitate the capital requirements for exposures to entities that operate

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[11] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0873&from=EN

or finance physical structures or facilities, systems and networks that provide or support essential public services (the "infrastructure supporting factor"). It should be noted in particular that no corresponding PD decrease is observed for SMEC and CORP.

The contribution of changes observed in the LGD is negligible, which validates the required drop in the LGD estimation, at least for the average figures (see Figure 8 of the Chart pack).

3.2 Analysis of decreased average PDs

To analyse the decrease in average PDs for the benchmarking portfolios in depth, a list of potential drivers of this decrease is discussed. The following aspects might have driven the observed decrease in PDs in HDP portfolios:

(a) The annual **review** of estimates and recalibration.

(b) The impact of **national measures** that were imposed to contain the coronavirus and to support the economy. These measures are referred to as **<u>indirect support measures</u>** for the purpose of this report as they do/did not change the obligors' credit contracts with the institutions, but they might have changed the input parameters which are used by the institutions for the assessment of credit risk.

(c) The use of **moratoria and public guarantee schemes** for material shares of a given IRB portfolio. These measures are referred to as **<u>direct support measures</u>** for the purpose of this report, as they directly impacted the banks' data (e.g. via changes in the credit contracts).

(d) The implementation of the **IRB roadmap**.

The above-mentioned potential drivers for the decrease in the average PDs observed for HDP portfolios in 2020 are further analysed in the following subsections.

3.2.1 The annual review of estimates

The implementation of the IRB roadmap in combination with the TRIM project of the ECB might have resulted for many banks in a need for recalibration. As a result, many banks might have re-calibrated their IRB parameter estimates in 2020. However, if they did so, the data they used for the re-estimation of PDs and LGDs associated with obligor grades and facility pools will refer to historical time series up to the point in time where the institution started the data collection. This time series underlying the recalibration will thus most probably not include the 2020 data.

Figure 9 below taken from the background and rationale section of the GL on PD and LGD illustrates the process related to the recalibration of IRB risk parameters. Due to the time needed for the different steps in this process (i.e. data collection and vetting, actual recalibration, internal validation and IT specification and implementation, supervisory approval where necessary) the underlying historical time series for a recalibration in 2020 will most likely refer to a pre-COVID-19 period of time.

Thus, developments in average PDs of institutions portfolios which are due to a recalibration will be based on data which is mainly not impacted by the COVID-19 pandemic.

Figure 1: Life cycle of the estimates of risk parameters
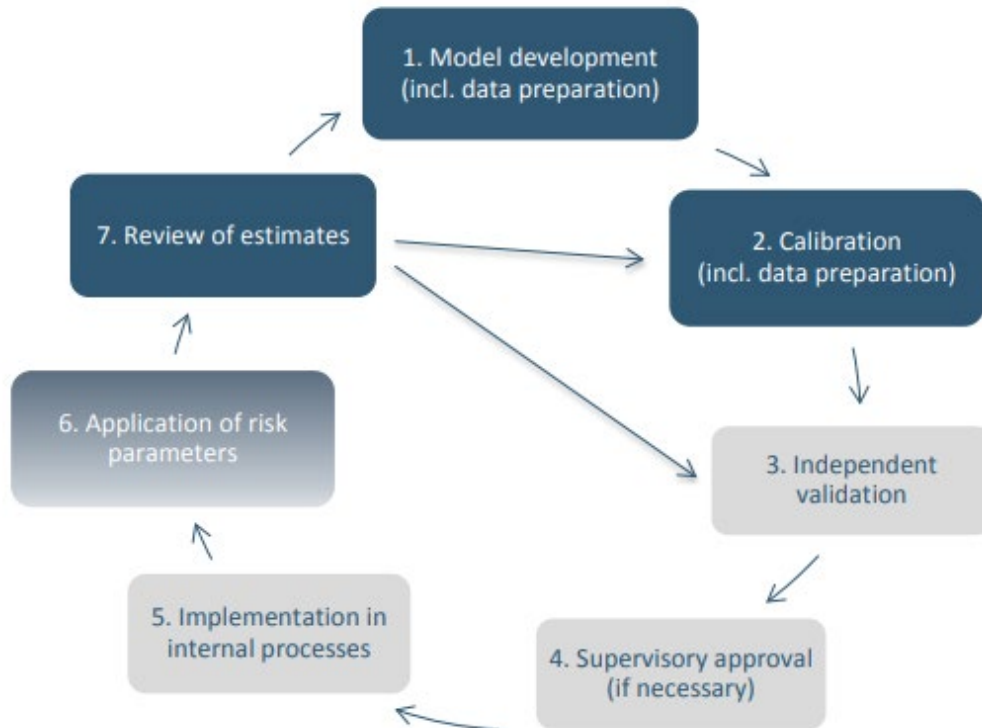
Figure 9 Illustration of the process related to the recalibration of IRB risk parameters (Figure 1 from background and rationale of the GL on PD and LGD)

The general downward trend of one-year default rates (DR) since 2013-2014[12] might have been incorporated into the PD estimations as a result of recalibrations that happened in 2020. Thus, the observed decrease in the average PDs in HDP portfolios may not or may not only be linked to the COVID-19 pandemic or to the changes in the definition of default (DoD) but could also be structural for institutions which recalibrated their PDs in 2020, since the most recent data used for the PD recalibration in 2020 consists of the 2019 default rates (and not the 2020 default rates), which decreased, not because of the Covid-19 crisis, but due to the decreasing trend observed since 2013-2014.

3.2.2 National measure to contain the impact

As described in the introduction, the COVID-19 pandemic and in particular the measures implemented by Member States and by the EU to counter the health crisis and the related economic crisis impact the relevant data for the obligors' rating grade assignment via two channels:

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[12] Compare section 4 for the development of default rates

(a) **Directly,** in the case of the use of moratoria and public guarantee schemes (PGS) and other regulations that led to changes in the contracts with the obligors, and

(b) **Indirectly,** via other COVID-19 support measures that do not change the banks' contracts with the obligors but which impacted the obligor's financials or behaviour, among other things.

An overview of measures implemented by EU Member States can be obtained from the ESRB website[13]. The impact of PGS on average PDs of the benchmarking portfolios is analysed in more detail in the next section.

Thus, the following charts aim to illustrate the variability of average PD developments[14] in different jurisdictions. It provides, among other, insight on whether the decrease in average PDs observed in HDPs is a general phenomenon or whether the development of the average PDs between December 2019 and December 2020 is distinct in different Member States. It may provide an indication of the heterogeneity of the impact of the pandemic and of the different national measures to contain the virus and to support the economy. However, for the interpretation of these charts it should be noted that multiple factors can drive the year-on-year relative changes in average IRB risk parameters, such as model recalibration, sample size and supervisory measures such as add-ons or policy implementation, etc.

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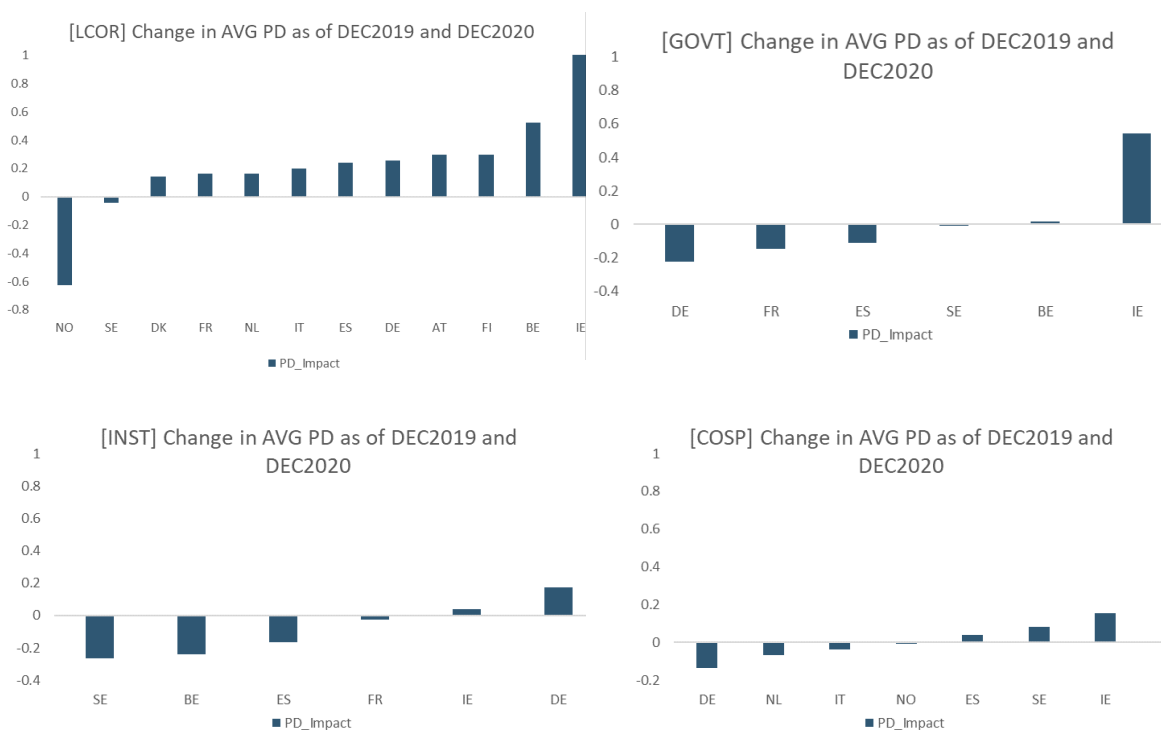
[13] Covid-19 Policy Measures by Country (europa.eu)

[14] The charts illustrate *(average PDs Dec 2020 - average PDs Dec 2019)/ average PDs Dec 2019* per SVB exposure class & member state
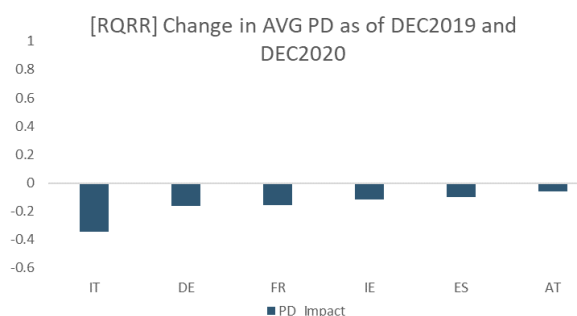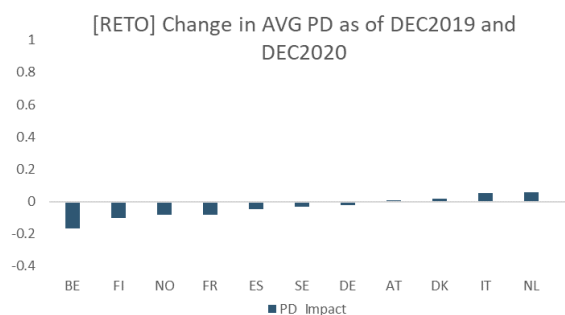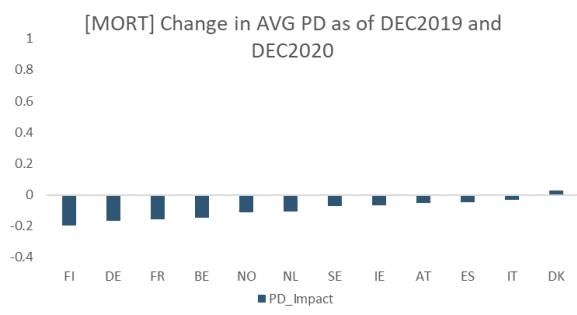
[CORP] Change in AVG PD as of DEC2019 and DEC2020

[SMEC] Change in AVG PD as of DEC2019 and DEC2020

[SMOT] Change in AVG PD as of DEC2019 and DEC2020

[RSMS] Change in AVG PD as of DEC2019 and DEC2020

[MORT] Change in AVG PD as of DEC2019 and DEC2020

[RETO] Change in AVG PD as of DEC2019 and DEC2020
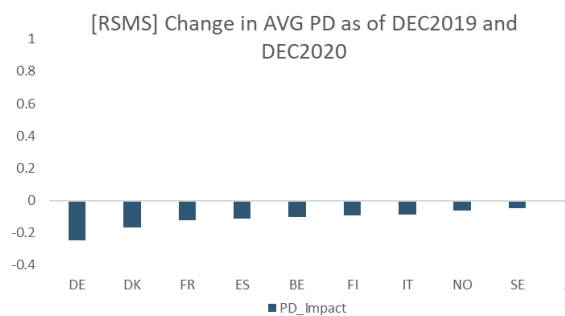

[RQRR] Change in AVG PD as of DEC2019 and DEC2020
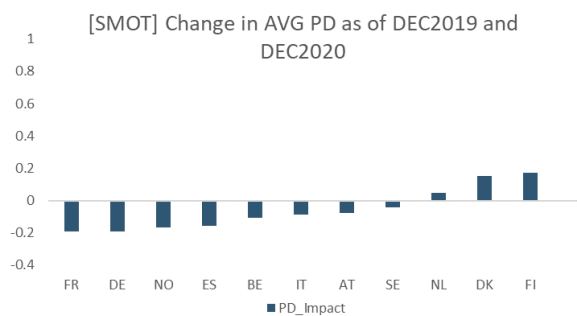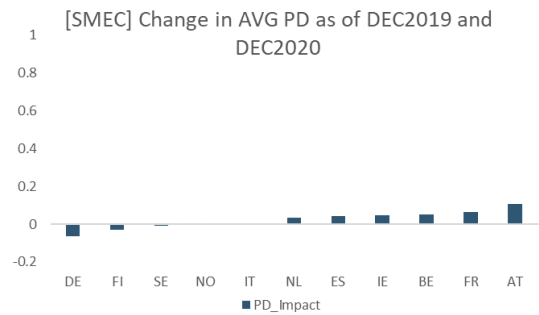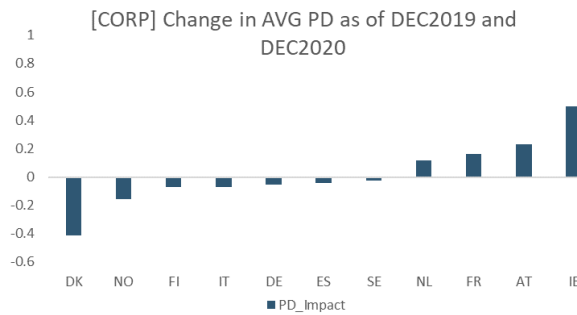
Table 2 Set of charts illustrating the relative changes in average PD in different EU countries

It can be concluded that the decrease in average PDs in HDP can be observed for the majority of countries. For RQRR and RSMS, the decrease in average PDs is even observed in all Member States where at least three banks submitted data for the relevant portfolios and, for MORT, RETO and

SMOT, a decrease in average PDs is visible for the vast majority of countries. **Hence, there is no indication that national measures of single Member States have driven the trend.**

To analyse to which extent the trend of decreasing PDs observed in MORT, RSMS and RQRR is due to the migration of obligors, the exposure before CRM that institutions reported in individual rating grades has been mapped to "hypothetical master rating grades" and is displayed below as of December 2019 and December 2020. At least for RQRR, the chart indicates that migration towards better rating grades has supported the trend. For MORT and RSMS no such indication can be observed from the charts.
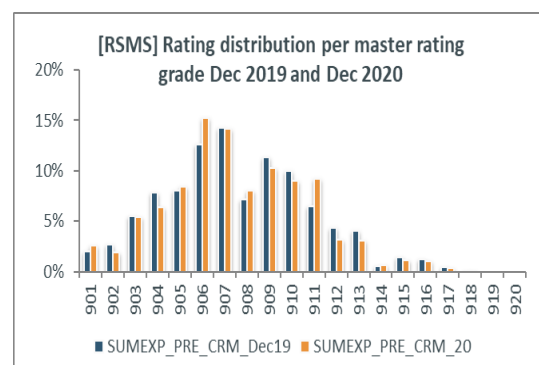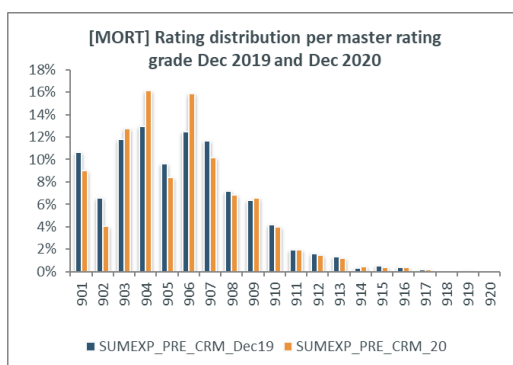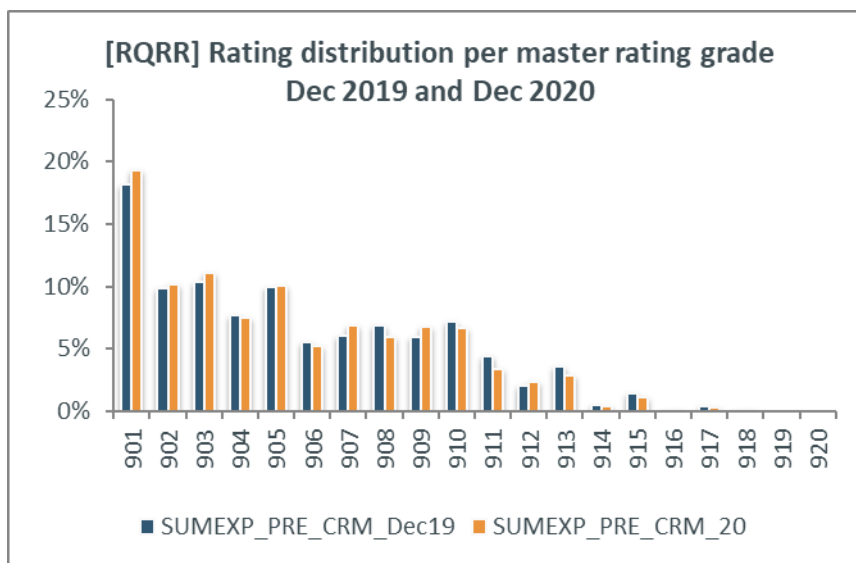

Table 3 Set of charts illustrating the exposure per rating grade for Dec 2019 and Dec 2020

3.2.3   Impact of public guarantee schemes (PGS)

This section explores in more detail one potential source of the decrease in average PDs and increased variability of PD estimates. In detail, EU Member States' national governments have created public guarantee schemes (PGS) to support obligors that are generally viable but which are facing liquidity shortages due to the restrictions which were imposed to fight the virus. A list of the public guarantee schemes created by EU Member States in response to the COVID-19 pandemic

has been published by the EBA[15]. The list includes factual information about the guarantor and the region or district covered by the scheme. In addition, the list clarifies whether the scheme is targeted at new lending or at existing exposures, the type of obligors or exposures covered by the scheme, as well as the level of coverage.

Most likely, the IRB institutions have aimed at taking the new PGS which were created in response to the COVID-19 outbreak into account in their IRB parameters. Following the GL on CRM[16], institutions have the following possibilities to adjust their IRB risk parameters in order to recognise the effects of guarantees and credit derivatives:

> *i. The **modelling approach**. This reflects the effects of the unfunded credit protection (UFCP) by estimating new risk parameters and, in particular, by considering the UFCP in the estimation of LGD, and, in some cases, also in the estimation of PD.*

> *ii. The **substitution of risk parameters approach**. This is understood as an adjustment of PD and LGD, in which both the PD and LGD of the obligor are substituted with the PD and LGD that the institution would assign to comparable direct exposures to the guarantor whose direct exposures are treated under the AIRB or FIRB approach (AIRB guarantor and FIRB guarantor respectively).*

> *iii. The **override**. In accordance with Article 172(3) of the CRR and Section 8.2 of the EBA GL on PD and LGD estimation, if there are individual and exceptional circumstances related to a given UFCP that the model cannot reasonably take into account, institutions have the option of adjusting risk parameters in the application of the model through overrides in the grade assignment process.*

> *iv. In the case of guarantors whose direct exposures are treated under the SA (SA guarantors), according to Article 183(4) of the CRR, institutions may recognise the UFCP in accordance with the requirements (eligibility criteria and methods) of Chapter 4 and therefore by applying the SA risk weight that the institutions would assign to comparable direct exposures to the guarantor **(the substitution of risk weight approach)**.*

> *v. Finally, UFCP may be recognised via the treatment proposed under Article 153(3), Article 154(2), Article 161(4) and Article 164(3) of the CRR (the **double default treatment**) provided that the requirements under Articles 202 and 217 of the CRR are met.*

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[15]   https://www.eba.europa.eu/eba-publishes-overview-public-guarantee-schemes-issued-response-covid-19-pandemic

[16] Guidelines on Credit Risk Mitigation for institutions applying the IRB approach with own estimates of LGDs | European Banking Authority (europa.eu)

It should however be recalled that the guidance laid down in the GL on CRM will only apply starting from 1 April 2022. In addition, it should be recalled that the EBA conducted a survey on how the UFCP is reported in the SVB data collection in 2018, where heterogeneity in practices was revealed.

Figure 10: Distribution of methodologies for the treatment of guarantees and derivatives in RWA calculation by type of guarantor
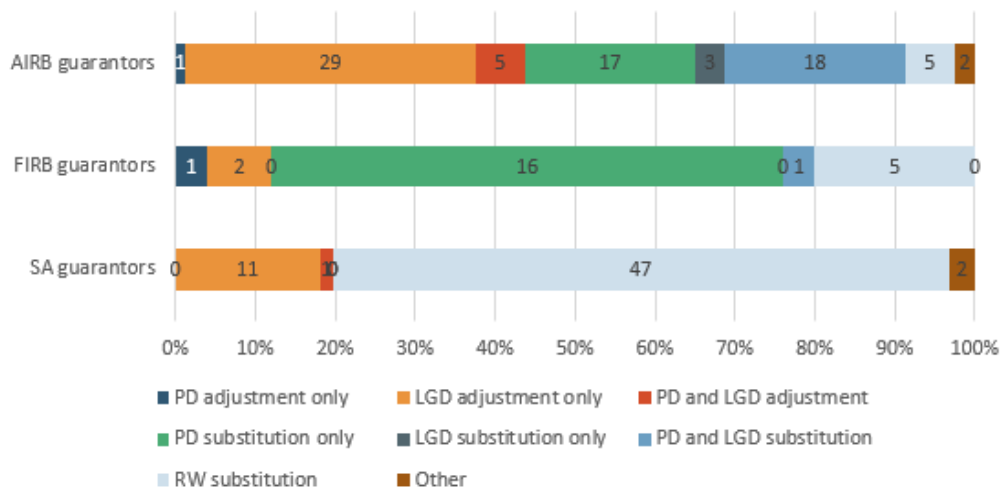
Figure 10 Use of different methodologies for the treatment of guarantees and derivatives by type of guarantor (Figure 10 from BM Report 2018)

Lastly, it should be mentioned that there is also the possibility that banks had not incorporated the new PGS in their IRB RWA calculations by December 2020 (e.g. due to high operational implementation costs or where new supervisory approval would have been required).

Of the considered SVB sample, 47 (out of 100) banks reported AIRB or FIRB exposure in the GOVT exposure class. In combination with the fact that the PGS were issued by the Member States, it is likely that a significant share of PGS were taken into account via the substitution of risk weight approach.

An indication of the extent to which PGS have been taken into account via substitution approaches (RW substitution) can be derived from comparing the original exposure before CRM to the exposure after CRM (and before CCF). Following the reporting instructions, in case of RW substitution (SA guarantor), the guaranteed exposure is deducted from the obligor's original exposure in the reporting of the exposure after CRM (outflow) and added to the guarantors' exposure after CRM (inflow).

The charts provided in point (i) to (iii) visualise the use of risk weight substitution before (as of December 2019) and after (as of December 2020) the outbreak of COVID-19:

(i) by exposure class;

(ii) by exposure class and EU Member State;

(iii) by rating grade.

In point (iv) below, it is analysed (for relevant exposure classes) whether there is an indication that the increased use of substitution had an impact on the average PDs.

However, the analysis in this section needs to be interpreted very carefully, as the data fields c0800 (original exposure) and c0090 (Exposure after CRM substitution effects pre conversion factors) have not been used in earlier horizontal analyses in SVB. Therefore, there is limited experience as regards the data quality and the expected annual variability. For the analysis illustrated below a major bank had to be excluded due to data quality issues in the exposure after CRM.

The charts in point (v) below provide insight into changes in the structure of collateralisation (used in LGD estimation) as of December 2020 and December 2019. Thus, this analysis provides insight into the potential impact of the PGS where these are treated under the modelling approach or substitution of risk parameters approach.

Lastly, point (vi) provides an overview of the use of PGS in the benchmarking sample and the insights from this section.

Methodology used to illustrate the use of RW substitution

The use of guarantees can be assessed by comparing the original exposure pre conversion factors (column 0080 of templates C102 & C103) to the exposure after CRM substitution effects pre-conversion factors (column 0090 of templates C102 & C103).

These fields, defined in the context of benchmarking for benchmark portfolios, are specified in template 8.1 of Annex I to Implementing Regulation (EU) No 680/2014. Following these instructions, the ORIGINAL EXPOSURE PRE-CONVERSION FACTORS shall be reported in accordance with Article 24 CRR and paragraphs 1, 2, 4, 5, 6 and 7 of Article 166 CRR and the EXPOSURE AFTER CRM SUBSTITUTION EFFECTS PRE-CONVERSION FACTORS refers to the exposure assigned in the corresponding obligor grade or pool and exposure class after taking into account outflows and inflows due to CRM techniques with substitution effects on the exposure.

In this context, outflows shall correspond to the covered part of the original exposure pre-conversion factors, that is deducted from the obligor's exposure class and, where relevant, obligor grade or pool, and subsequently assigned to the guarantor's exposure class and, where relevant, obligor grade or pool. That amount shall be considered as an inflow into the guarantor's exposure class and, where relevant, obligor grades or pools.
Inflows and outflows within the same exposure classes and, where relevant, obligor grades or pools, shall also be considered. Exposures stemming from possible in- and outflows from and to other templates shall be taken into account.

For the illustration in this section the relative outflows have been calculated as

CRM_Impact_Dec2019 = (SUMEXP_PRE_CRM_Dec2019 - SUMEXP_AFTER_CRM_Dec2019)/ SUMEXP_PRE_CRM_Dec2019

CRM_Impact_Dec2020 = (SUMEXP_PRE_CRM_Dec2020 - SUMEXP_AFTER_CRM_Dec2020)/ SUMEXP_PRE_CRM_Dec2020

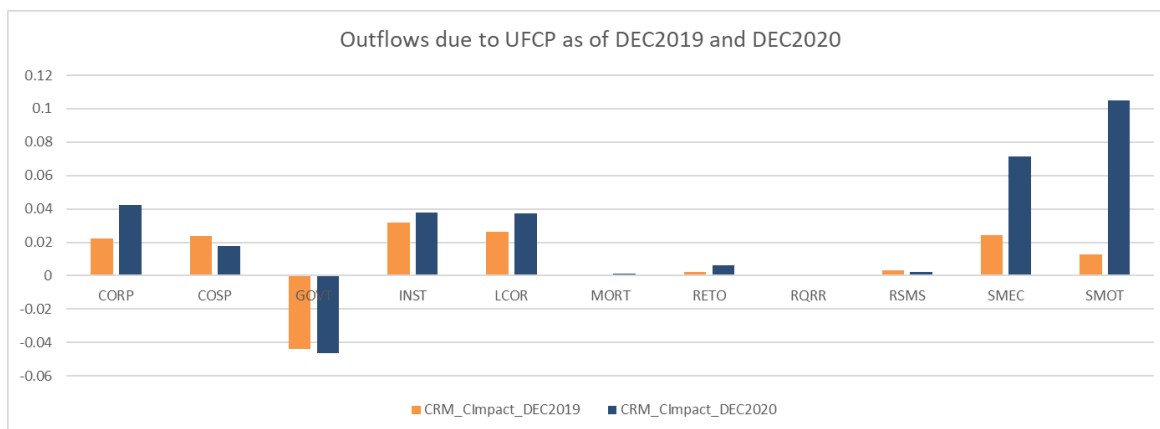### (i) The use of RW substitution by exposure class

Figure 11 Outflows due to RW substitution by exposure class

The increased outflows observed in CORP, SMEC and SMOT as of December 2020 indicate an increased use of RW substitution in these portfolios compared to December 2019.

The negative inflow observed for the exposure class GOVT reflects the extent to which exposure has been added to GOVT obligors as a result of RW substitution. It should be noted that GOVT exposures are only covered by this analysis to the extent that they are treated by the IRB approach. GOVT exposures under the SA are outside the scope of the benchmarking exercise, and the corresponding inflows thus cannot be depicted in this analysis.

(ii) The use of RW substitution by exposure class – breakdown by country

The following set of charts aims to illustrate the increased use of substitution approaches by EU Member States (and where at least three institutions submitted data in the relevant portfolios). It can be observed in the figure in Table 4 that the increased outflows in the exposure classes CORP, SMEC and SMOT are mainly driven by a few jurisdictions (FR, IT, ES). However, there is no indication in the charts presented in Table 2 that the general PD trend is different for those countries than for the other countries. Thus, it can be concluded that there is no indication that the increased use of RW substitution due to COVID-19 PGS impacted the development of average PDs of the benchmarking portfolios. However, the figures below show the heterogeneity in the increased use of CRM via RW substitution in the reported non-defaulted SVB exposure classes specific to IRB portfolios.
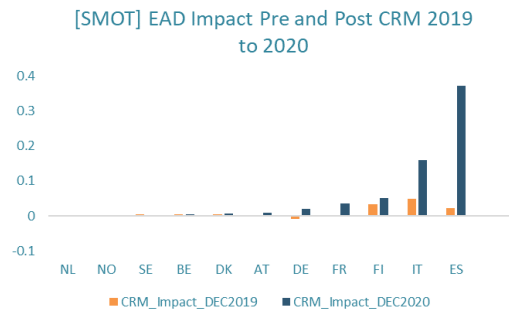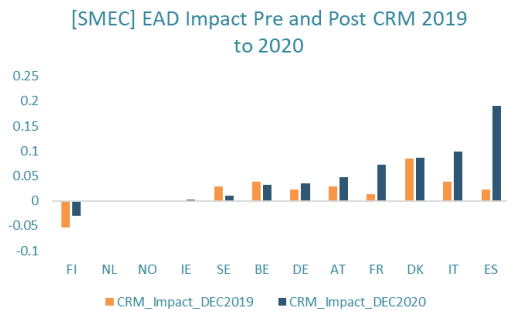
[LCOR] EAD Impact Pre and Post CRM 2019 to 2020

[GOVT] EAD Impact Pre and Post CRM 2019 to 2020

[INST] EAD Impact Pre and Post CRM 2019 to 2020

[CORP] EAD Impact Pre and Post CRM 2019 to 2020

[SMEC] EAD Impact Pre and Post CRM 2019 to 2020

[SMOT] EAD Impact Pre and Post CRM 2019 to 2020

[RSMS] EAD Impact Pre and Post CRM 2019 to 2020

[RETO] EAD Impact Pre and Post CRM 2019 to 2020
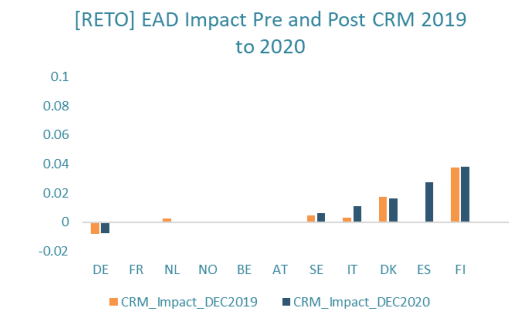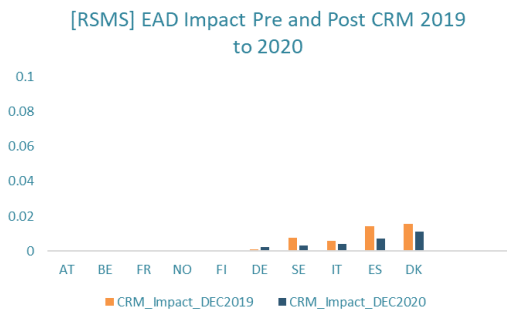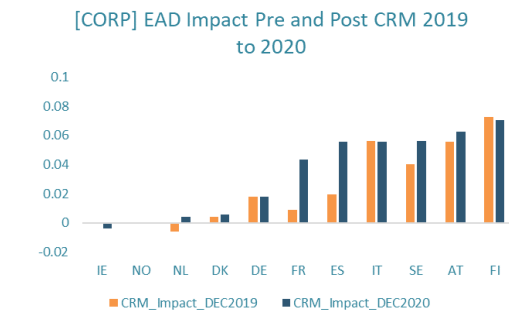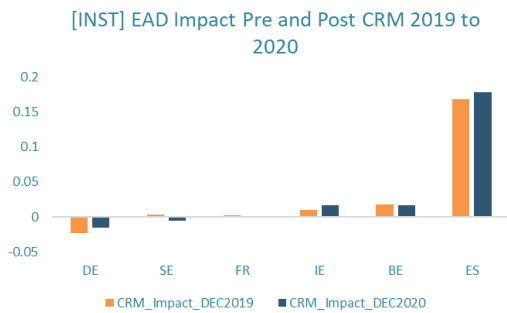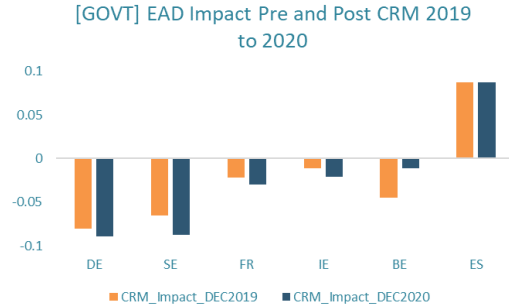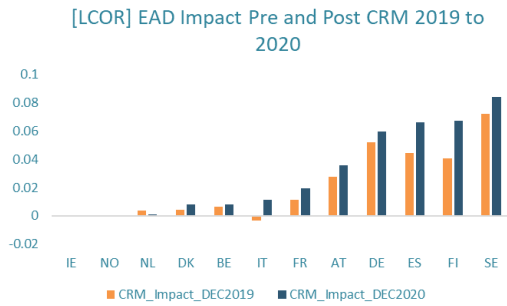
Table 4 Set of charts illustrating the increased use of RW substitution by Member States. MORT and RQRR are not reported due to insignificant or no use of RW substitution.

(ii) The use of RW substitution by exposure class – average PDs of top ten users of PGS
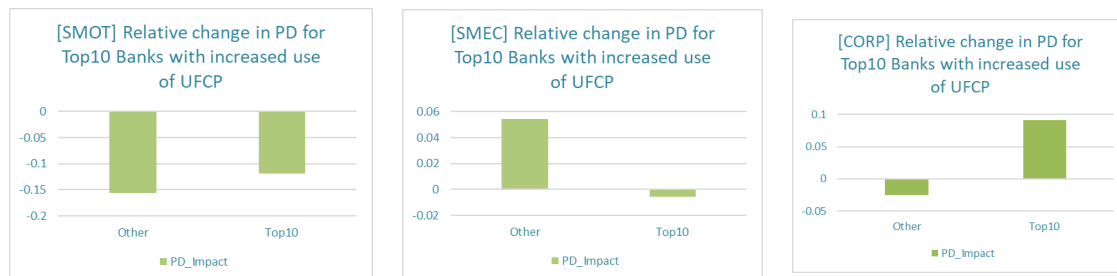
Table 5 Set of charts illustrating the changes of average PD for Top10 users of PGS

The charts above display the relative change in weighted average PD between December 2019 and December 2020 of the top 10 banks with the highest increased outflows between December 2019 and December 2020 for SMOT, SMEC and CORP. There is no common trend visible for the changes in average PDs of institutions that made increased use of RW substitution.

However, the increase in weighted average PDs for CORP exposures benefiting from UFCP may be due to overwrites, which might have been triggered by the change of the obligor's contract. Moreover, it should be noted that the average PD at portfolio level is computed as the EAD-weighted average of the PDs after having applied the substitution approach. As a consequence, exposures benefiting from UFCP via RW substitution moved to the guarantor's exposure class and only residual uncovered exposure (if any) is included in the average PD computation of the original obligor's exposure class.

(iii) The use of RW substitution by exposure class – breakdown by rating grades

The three charts below show the relative change in the difference between the exposure before and after CRM per master rating grade for those exposure classes where significantly increased outflows are observed for 2020 (i.e. SMEC, SMOT).

The objective of this analysis is to shed light on the quality of the exposures which benefited from the COVID-19 PGS. A significant change in the structure of the distribution of the outflows by rating grade between 2019 and 2020 could indicate that loans benefiting from the COVID-19 PGS have a different asset quality than those loans not benefiting from PGS.

Methodology used to analyse the asset quality of exposures benefiting from PGS

As an indication of whether loans benefiting from PGS are different in asset quality, the following set of charts illustrates the distribution of outflows per master rating grade. In order to generate this, the benchmarking data that is collected by the individual rating grade of the institutions is mapped to a master rating grade, based on table 1 of the Annex. The aggregated relative outflows for all institutions in the sample are shown in the charts below as of December 2019 and December 2020.
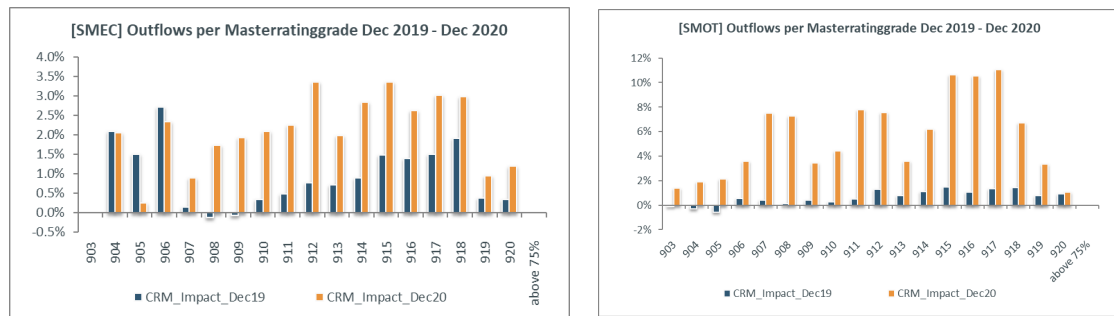

Figure 12 Outflows per master rating grade in 2019 and 2020 for SMOC and SMOT

For SMOT, a large general increase of outflows across all rating classes can be seen. For SMEC, there seems to be a small decrease in the better rating classes 904 to 906. For all remaining rating classes, there is a visible increase in outflows. For both exposure classes, a significant increase in outflows is also observed for the worst rating grades (918-920), although for the SMOT exposure class, an increase in outflow is observed for all rating grades and the increase for the worst rating grades (918-920) is lower (in relative terms) compared to the increase observed in the remaining grades. An increase in outflows in the worse rating grades is to some extent in line with the economic expectation, i.e. that support is more needed by less solvent obligors.

For SMOT, there is a slight indication that outflows as of December 2020 are distributed differently over master rating grades than outflows observed as of December 2019. This could mean that there has been an overcompensation of the expected impact of the lockdown measures.

(iv) The use of guarantees in LGD estimation

The figure below illustrates the breakdown of exposure which is subject to eligible CRM by type of collateral used in LGD estimation. Following the instructions of Annex 2 of the ITS 2021, the exposure is split into parts and assigned to portfolios based on the collateral type:

a) Eligible financial collateral;

(b) Other eligible collateral: receivables;

(c) Other eligible collateral: residential real estate;

(d) Other eligible collateral: commercial real estate;

(e) Other eligible collateral: physical collateral;

(f) Other funded credit protection;

(g) Credit derivatives;

(h) Guarantees;

(i) Other unfunded credit protection: exposures subject to double default;

(j) Not applicable.

The part of the exposure secured by a specific type of collateral is determined by the value of that specific type of the collateral after the haircuts required in accordance with the CRR and, where applicable, institutions' internal guidelines.

Exposures with unfunded credit protections treated under the substitution approach are already shifted to the corresponding exposure classes and are thus not reported under (g), (h) or (i).

It should be noted that this breakdown is based on the data fields specified for columns 150 to 220 of template 8.1 of Annex I to Implementing Regulation (EU) No 680/2014, which refers to CRM techniques taken into account in LGD estimates, excluding double default treatment and excluding CRM techniques that have an impact on LGD estimates as a result of the application of the substitution effect of CRM techniques.
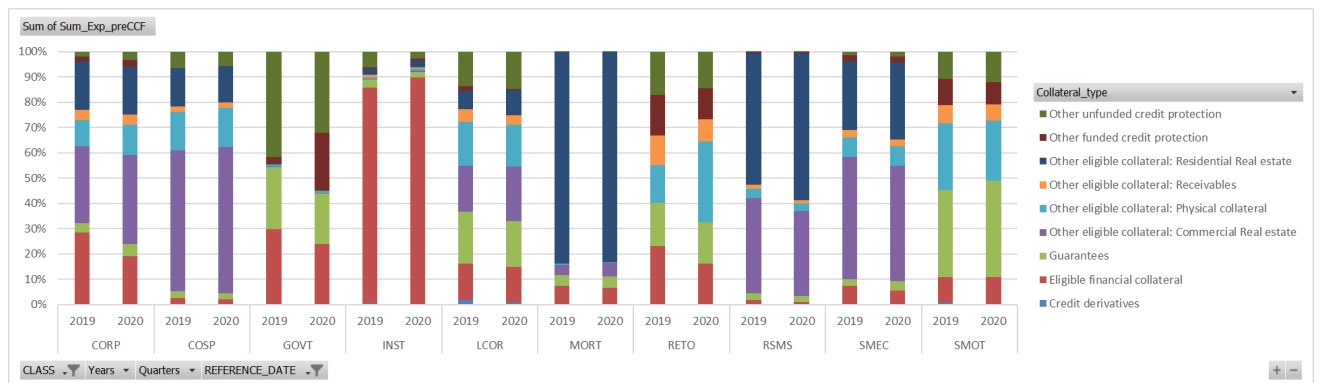
Figure 13 Breakdown of secured exposure by type of collateral

Only the SMOT portfolio shows a visible (but small) increase in the share of EAD that is protected by guarantees which are taken into account via LGD estimation.

(v) The use and impact of COVID-19 PGS in EU Member States

The following chart illustrates the use of PGS for the institutions participating in the benchmarking exercise and as of December 2020. As such, it resembles the analysis which is provided in the EBA's thematic note on THE USE OF MORATORIA AND PUBLIC GUARANTEES IN THE EU BANKING SECTOR which was published by the EBA in November 2020[17].
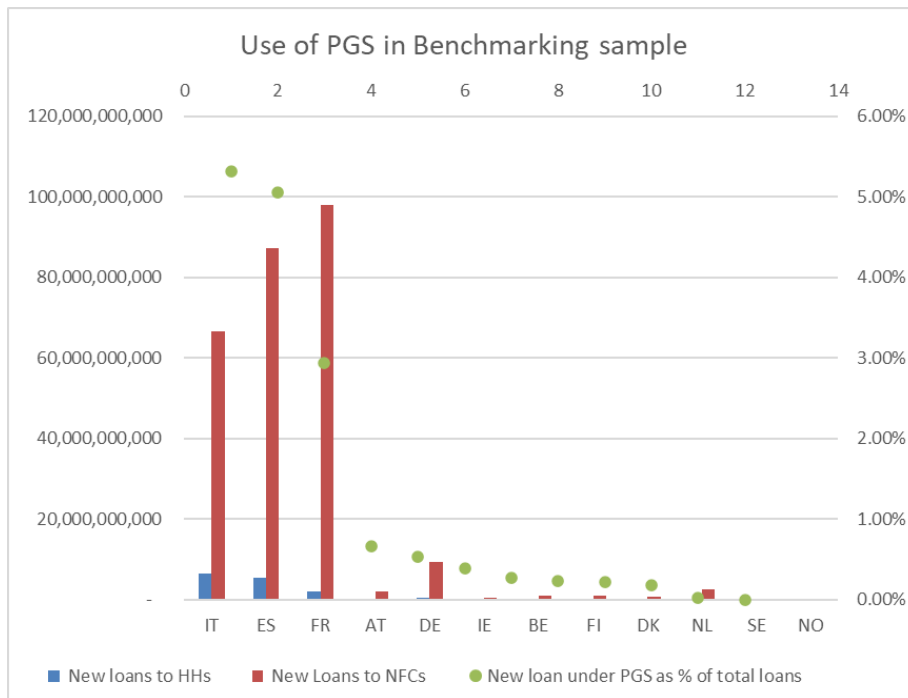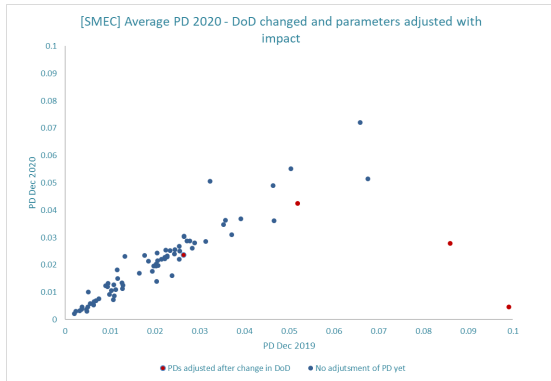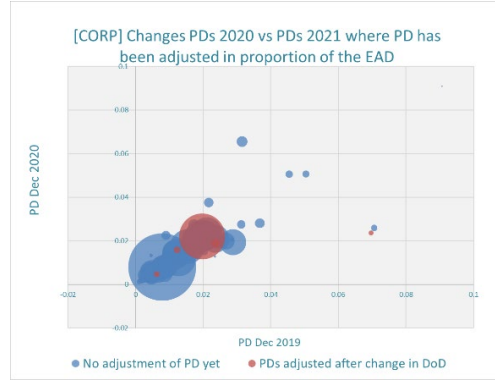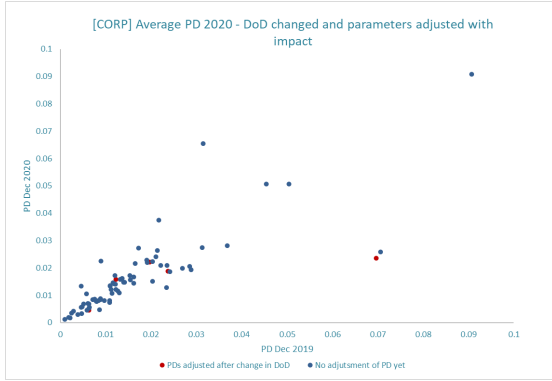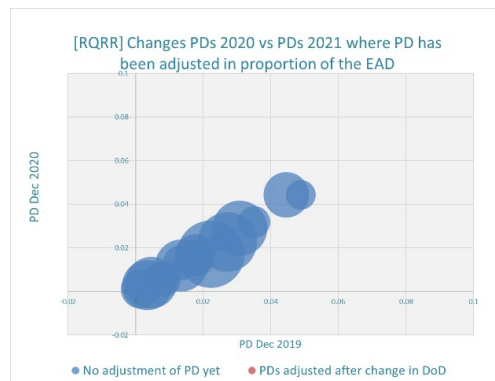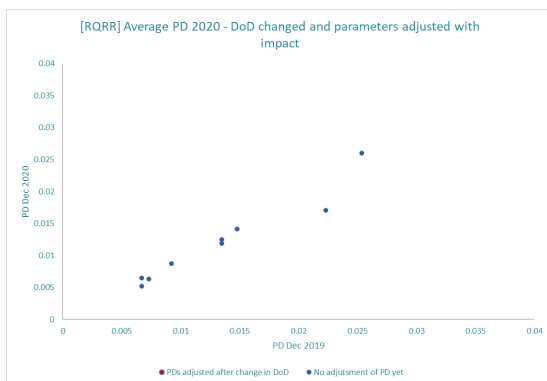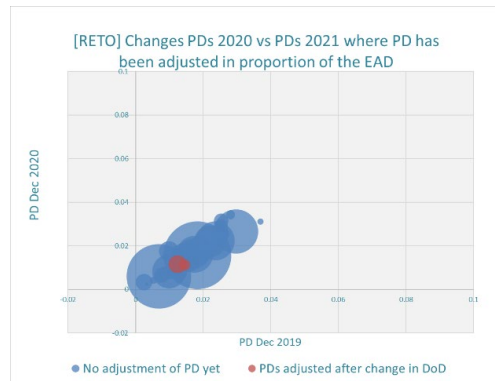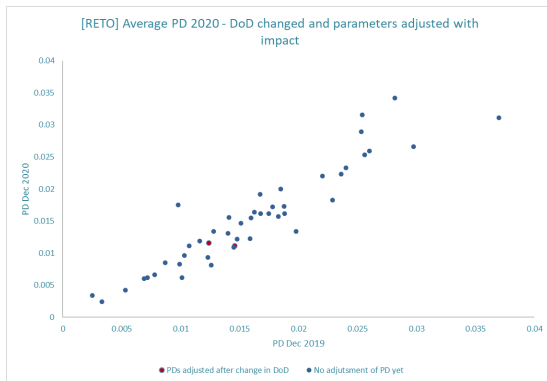

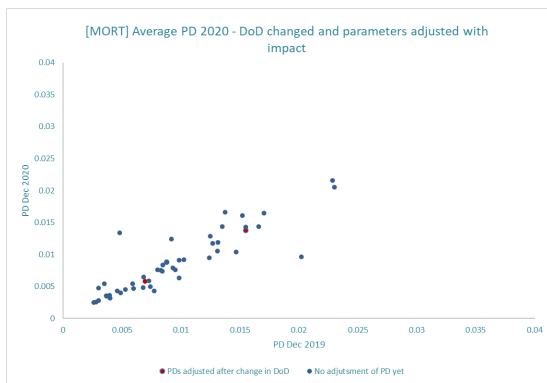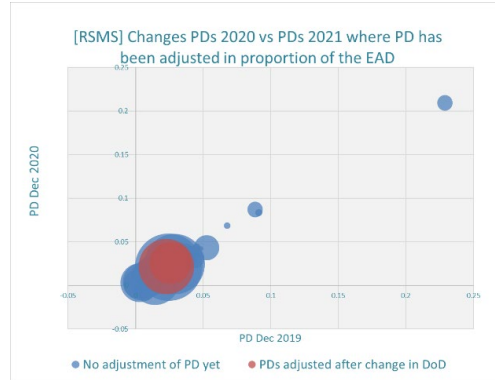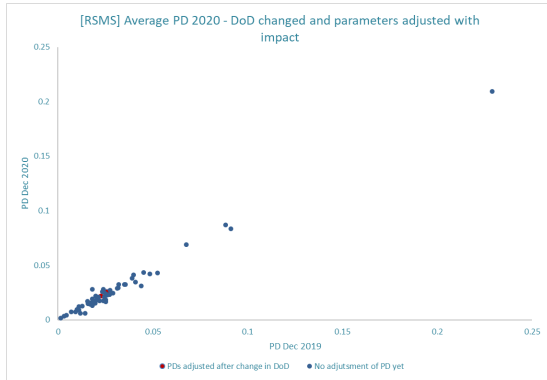*Figure 14 The use of COVID-19 PGS in the Benchmarking sample*

For the sake of completeness, it should be noted that the above analysis was done for the banks participating in the SVB benchmarking exercise but without controlling for the share of IRB exposure that is subject to the guarantees (i.e. the corresponding loans and PGS could be applied to an SA portfolio of an IRB bank considered).

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https://www.eba.europa.eu/sites/default/documents/files/document_library/Risk%20Analysis%20and%20Data/Risk%20Assessment%20Reports/2020/Thematic%20notes/Thematic%20note%20on%20moratoria%20and%20public%20guarantees/936761/For%20publication%20-%20Thematic%20note%20on%20moratoria%20and%20public%20guarantees.pdf

3.2.4 Impact of the IRB roadmap

[CORP] Average PD 2020 - DoD changed and parameters adjusted with impact

[CORP] Changes PDs 2020 vs PDs 2021 where PD has been adjusted in proportion of the EAD

[SMEC] Average PD 2020 - DoD changed and parameters adjusted with impact

[SMEC] Changes PDs 2020 vs PDs 2021 where PD has been adjusted in proportion of the EAD

[SMOT] Average PD 2020 - DoD changed and parameters adjusted with impact

[SMOT] Changes PDs 2020 vs PDs 2021 where PD has been adjusted in proportion of the EAD

Table 6 Chart set on average PDs observed as of December 2019 compared to the average PDs observed as of December 2020. The circles indicate the size of the relevant portfolio in terms of EAD.

The above set of charts displays the average PDs observed as of December 2019 (PDs 2020) compared to the average PDs observed as of December 2020 (PDs 2021) for the individual institutions' benchmarking portfolios per exposure class. In addition, it provides information on the state of the implementation of the IRB roadmap, where institutions for which the CAs claimed that the new DoD has been implemented and the parameters have been adjusted accordingly with a significant impact are displayed in red and institutions for which the parameters are not yet based on the revised DoD (or where no impact has been observed) are displayed in blue. Although in SMEC and CORP major developments for single institutions can be related to the impact of the implementation of the new DoD, it can be deduced that the general trend of decreasing PDs for HDP portfolios is not driven by the IRB roadmap implementation.

3.3   Variability of IRB parameters

A top-down analysis was performed with a methodology broadly unchanged from previous years. The top-down analysis approach shows that the overall variability has slightly decreased from the 2020 to 2021 exercise. A relevant share (around 61–63%) of the observed total variability can be explained by two simple drivers: the share of defaulted/non-defaulted exposures and the extent to which the portfolio composition (i.e. riskiness due to portfolio mix) contributes to differences in the average global charge (GC). Thus, the explained share of the observed total variability has slightly decreased. A more significant decrease in the share of explained variability could have been expected due to the COVID-19 pandemic and the still partial implementation of the IRB roadmap, both of which are expected to temporarily increase the unexplained variability.

However, a top-down approach does not explain the remaining unexplained variability. It should be noted that differences in institutional and supervisory practices, interpretations of regulatory requirements, business strategies or modelling choices may all contribute to the unexplained variability. In addition, unexplained variability may also be caused by effects, such as idiosyncratic variations in the riskiness within an exposure class, CRM (i.e. the business and risk strategy of the institutions in terms of the use of credit risk mitigation) and jurisdictional differences affecting the IRB risk parameters estimation (e.g. national laws on forced sales).

In the analysis of the evolution of top-down results between 2020 and 2021, the overall variability in GC in terms of normalised STD deviation is illustrated as a normalised quantity with respect to GC variability as of 31 December 2020. Thus, the difference in the starting point of the 2020 and the 2021 top-down analyses illustrates a decrease in the overall normalised GC variability. The results depicted in the figure below are based on a common sample of 82 institutions.
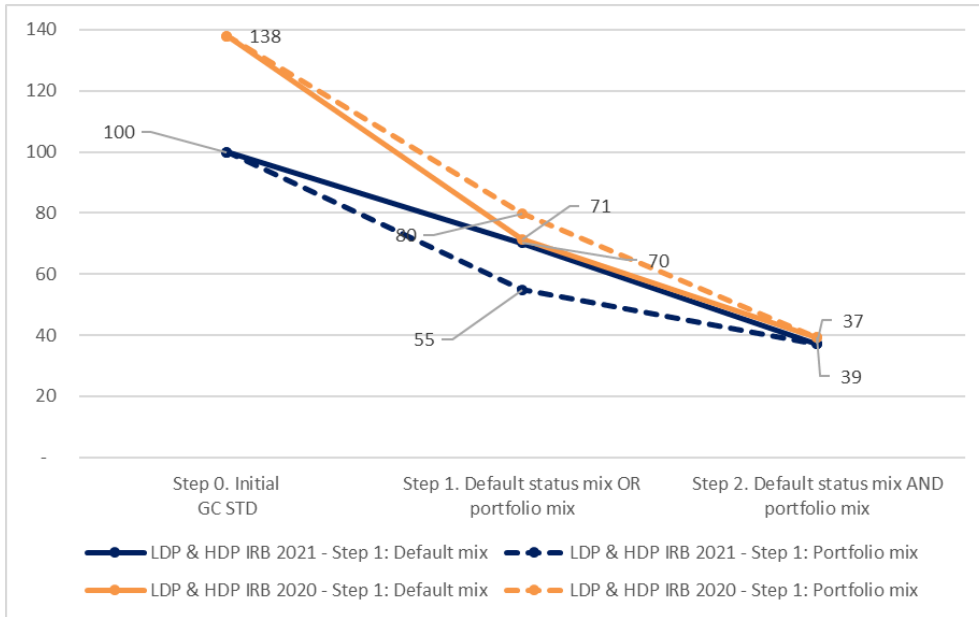
Figure 15 Comparison of the top-down analysis, HDPs and LDPs, 2020 and 2021 exercises (common sample 82 institutions)
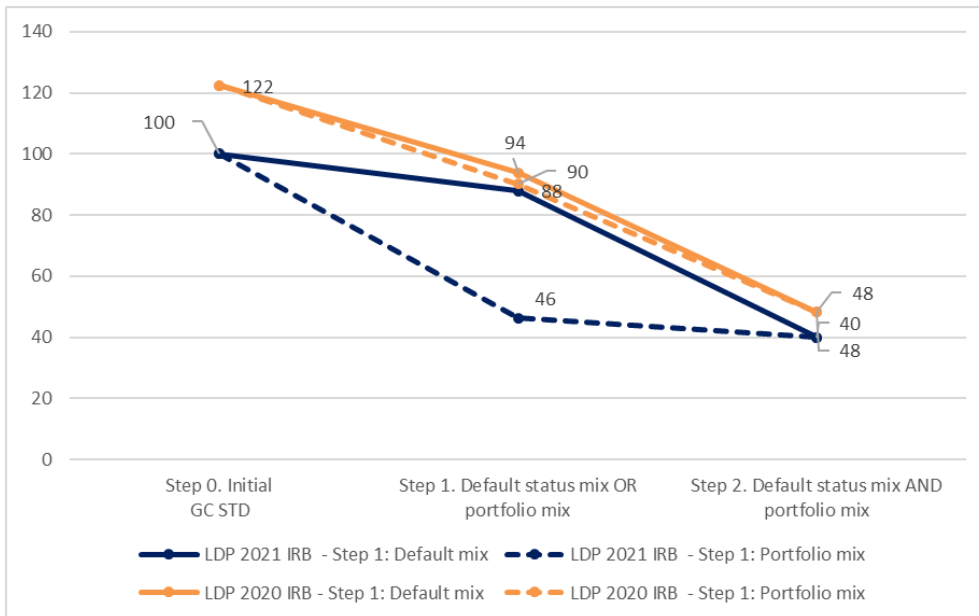

Figure 16 Comparison of the top-down analysis, LDPs, 2020and 2021 exercises (common sample of 82 institutions)
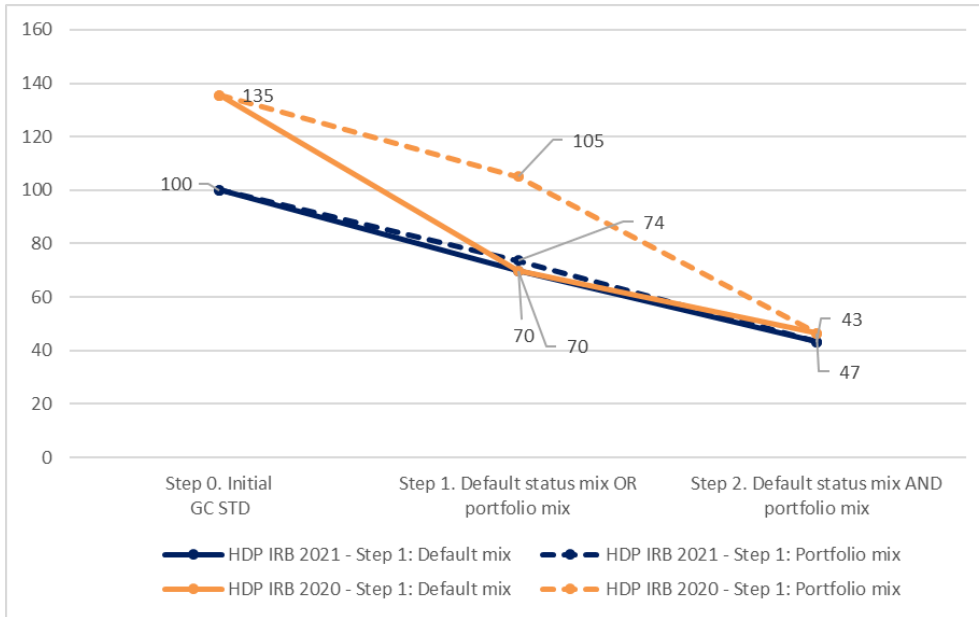
Figure 17 Comparison of the top-down analysis, HDPs, 2020 and 2021 exercises (common sample of 91 institutions)

4. Default rates as of end 2020

4.1 Description of observed default rates

Figure 18 includes a comparison of the EAD weighted average default rates observed as of December 2019 (denoted as DRw_L1Y_20) and as of December 2020 (denoted as DRw_L1Y_21). As can be inferred from this figure, with reference in particular to the SMOT and RSMS exposures classes, the average default rates observed in 2021 (i.e. as of December 2020) are significantly lower than those observed in 2020 (as of December 2019). This can probably, among others, be explained by the different materiality and effects stemming from the public support measures and from the use of moratoria in particular. However, such evidence would also raise some concerns about whether an increase in the level of defaults might be expected in the following years, once all the public support measures are discontinued, especially if these measures are discontinued when the macroeconomic context is still fragile.
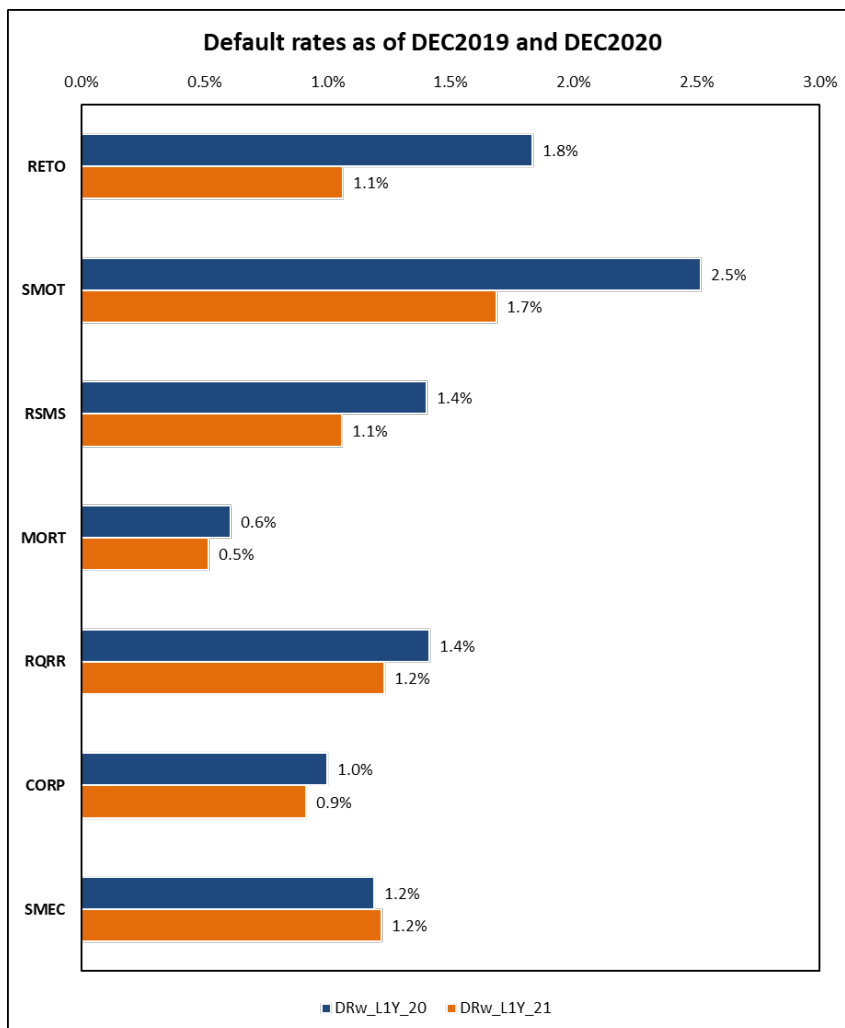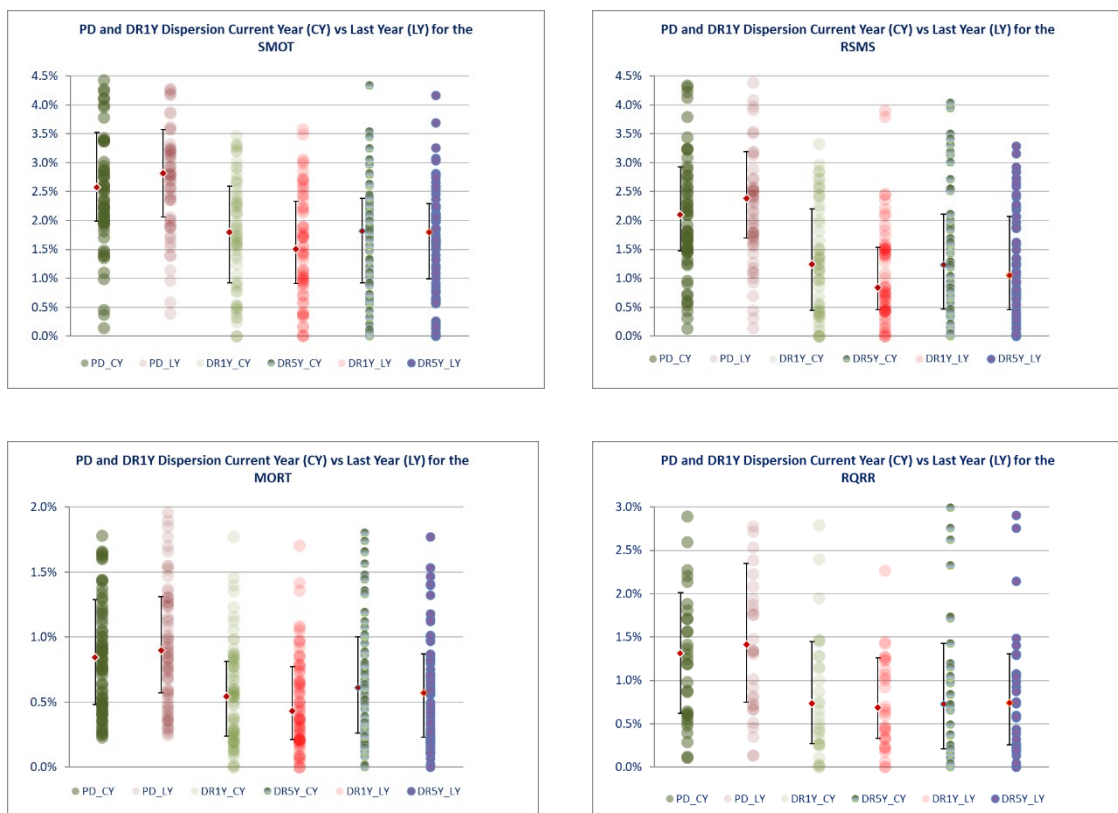
Figure 18 Comparison of average default rates (December 2019 vs December 2020

4.2   Variability of observed default rates

Figure 19 provides a comparison between the data collection in 2021 and in 2020 as regards the dispersion of PD estimates and one-year and five-year average default rates. As for the previous figure, this information is provided by exposure class.

As shown in the following set of figures, overall, the dispersion in the PD estimates among the banks in the sample did not change significantly for most exposure classes. However, an increase is observed for SMOT and more slightly for MORT. Given that the IRB roadmap implementation does not seem to have an impact on the general trend at this point in time (as concluded in section 3.2.4) the slightly increased dispersion in SMOT and MORT may indeed stem from the heterogeneity of IRB approaches in combination with the heterogeneity of national support measures (in particular for SMOT). As regards the one-year default rates overall, the dispersion has increased for all exposure classes mentioned below except SMEC, where it decreased, and MORT, where it remained stable). The increase in the dispersion of default rates is likely driven by the extent to which moratoria (and other default-preventing measures) were applied to the considered portfolio.

The red dot in the charts below marks the median and the black line indicates the interquartile range, which is used to assess the dispersion.
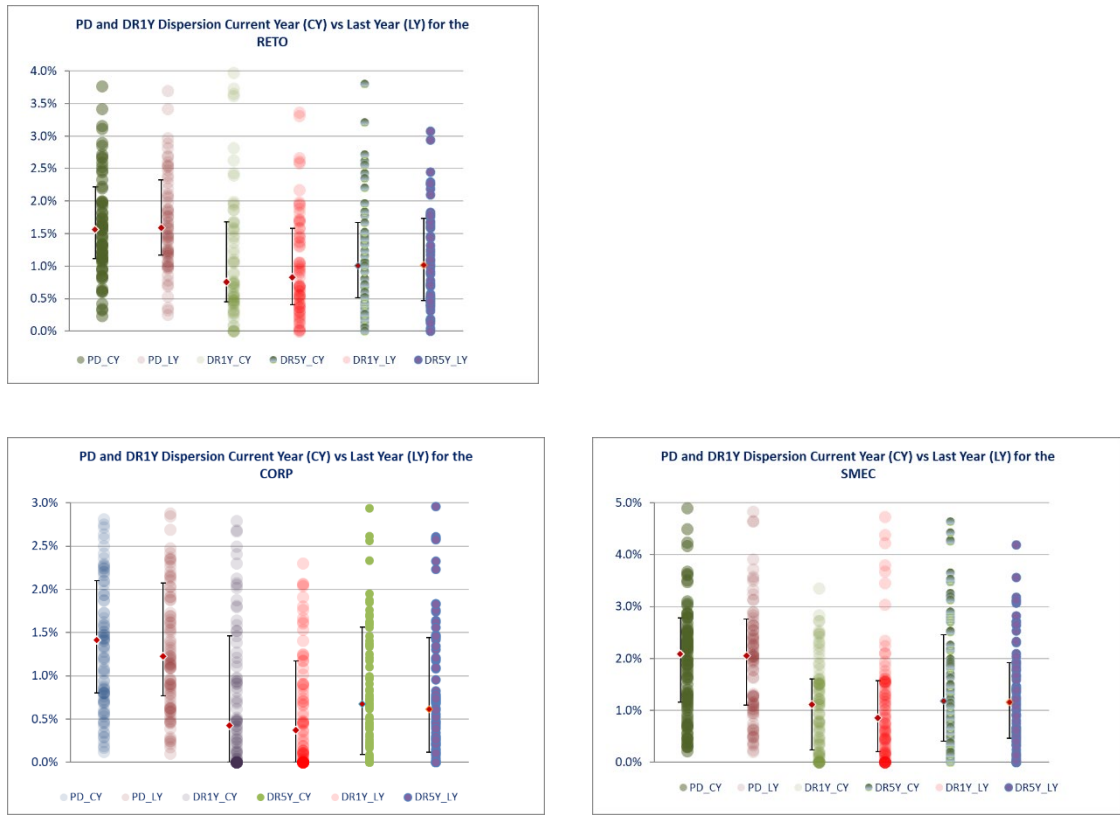
Figure 19 Comparison of the dispersion in the PD, one-year default rates (DR1Y) and five-year default rates (DR5Y) for 2020 (CY) and 2019 (LY)

4.3 Analysis of impact of changes in DR

4.3.1 Changes in default rates (DRs) by country

Figure 20 illustrates the changes observed in the average default rates by country and for each HDP exposure class. When this information is combined with that included in , as regards the use of moratoria in the EU, it can be inferred that those institutions that have reported a decrease in the default rates for the majority of exposure classes are generally located in countries where an extensive use of moratoria measures has been applied[18]. This seems, in particular, the case for France, Italy and Spain, for which the ratio between the loans in moratoria to the total amount or loans granted is higher compared to the other European countries. Such evidence seems to confirm that the trend observed in the default rates as of December 2020 is mainly due to the effect of public support measures and, especially, to the use of moratoria, which have helped to delay the occurrence of defaults that would have been normally observed on loan exposures.

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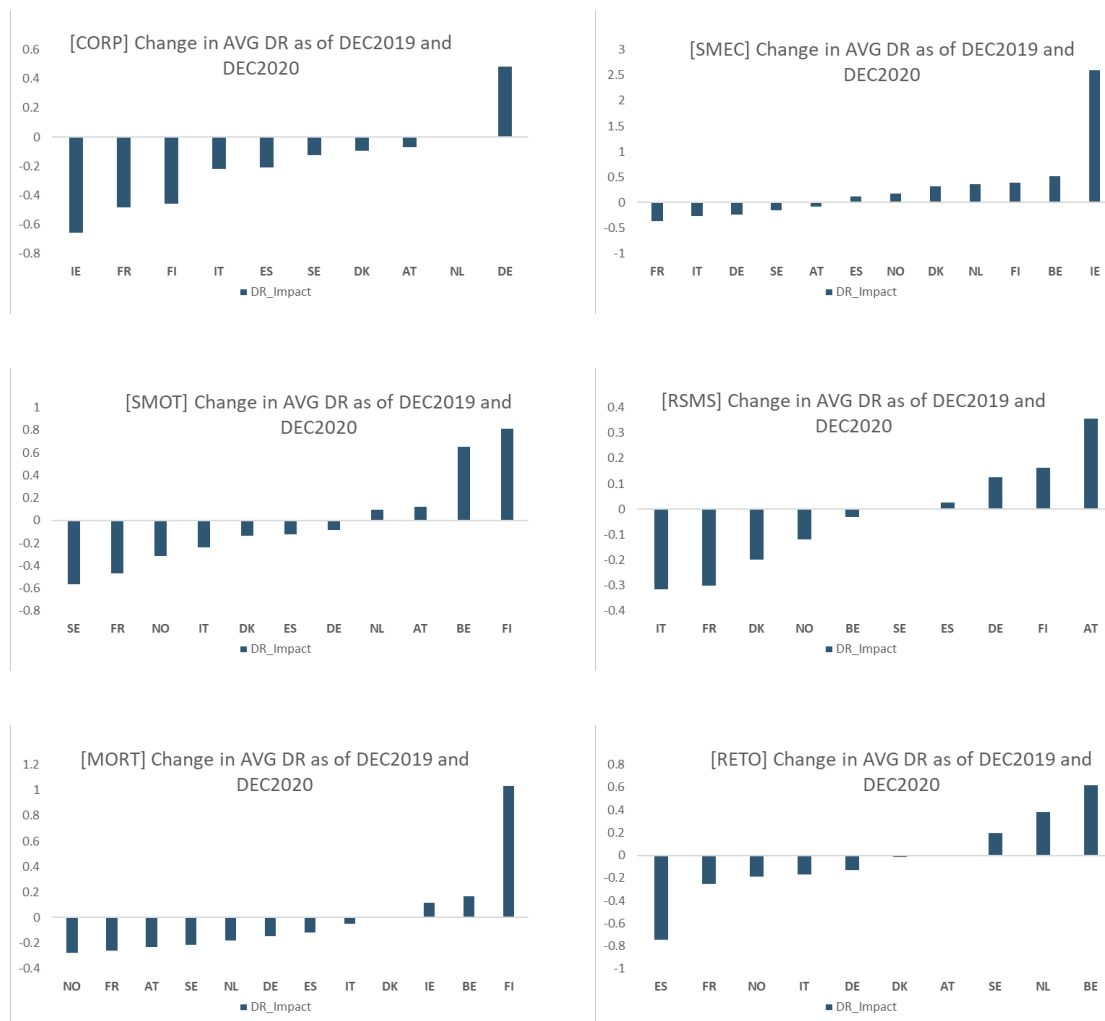
[18] Either in terms of i) ratio between the loans in moratoria to the total amount or loans granted or of ii) absolute level of loans in moratoria (see Figure 24).
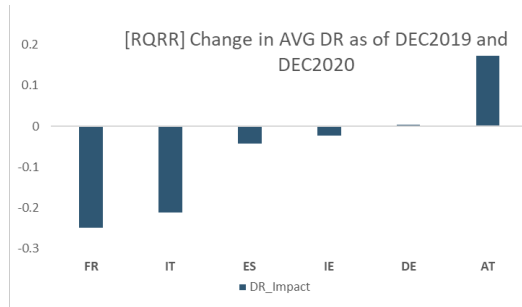
Figure 20: Changes in average DRs by country for HDP exposure classes

The following chart illustrates the use of moratoria as reported to the EBA for the institutions participating in the benchmarking exercise and as of December 2020. As such, it resembles the analysis which is provided in the EBA's thematic note on THE USE OF MORATORIA AND PUBLIC GUARANTEES IN THE EU BANKING SECTOR which was published by the EBA in November 2020[19].
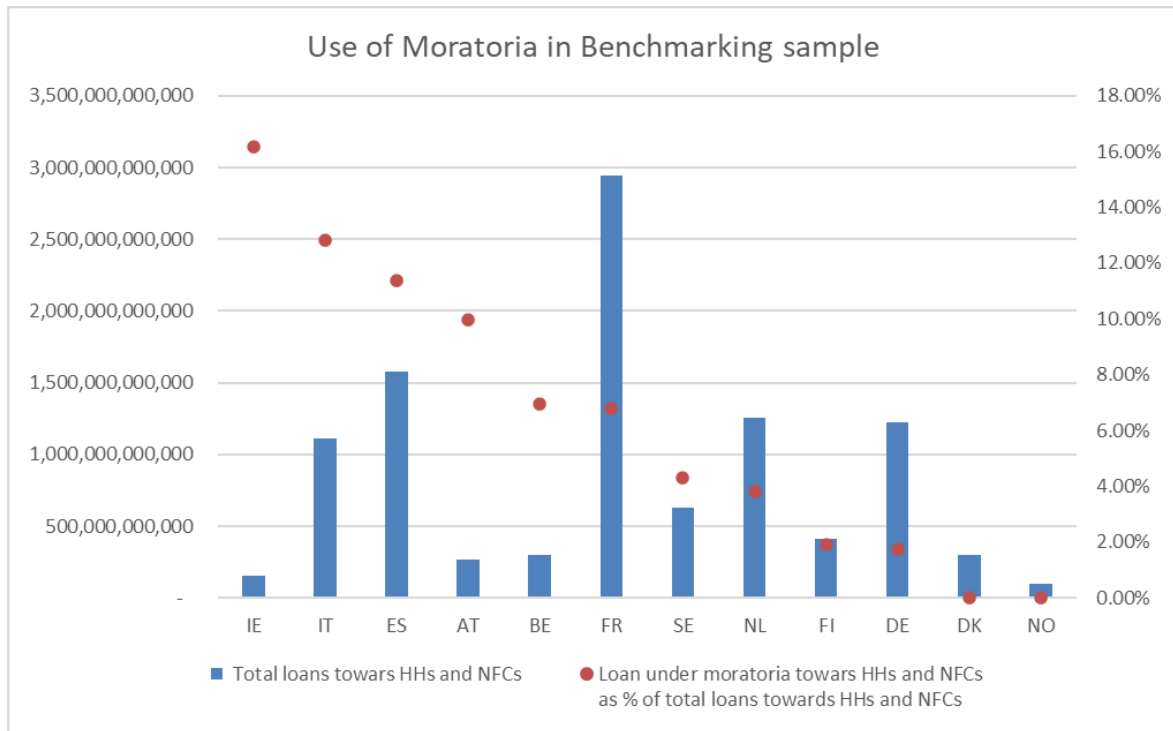

Figure 21 Information on loans under moratoria by country

19

https://www.eba.europa.eu/sites/default/documents/files/document_library/Risk%20Analysis%20and%20Data/Risk%20Assessment%20Reports/2020/Thematic%20notes/Thematic%20note%20on%20moratoria%20and%20public%20guarantees/936761/For%20publication%20-%20Thematic%20note%20on%20moratoria%20and%20public%20guarantees.pdf
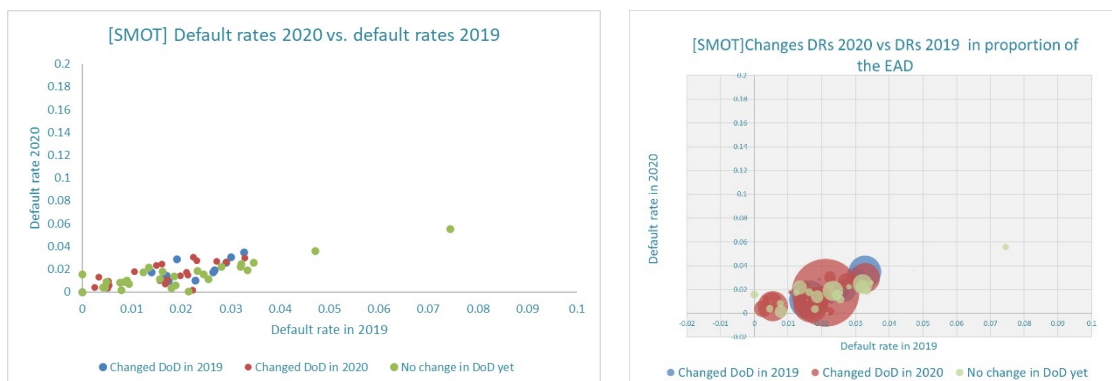
4.3.2   Impact from the implementation of the new DoD

The charts included in Figure 22 aim at investigating the interplay between i) the trend observed in the default rates and ii) the introduction of the new definition of default. In this regard, these charts provide for each HDP exposure class a view of the average default rates as of December 2020 and 2019 reported by each institution in the sample, distinguishing between:
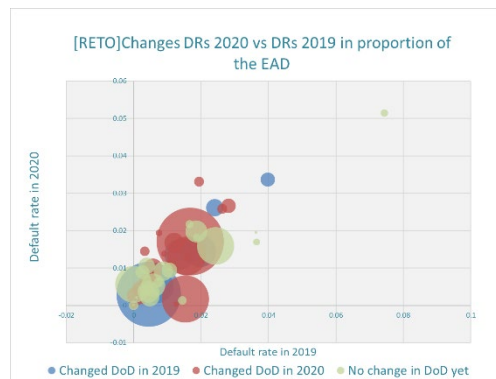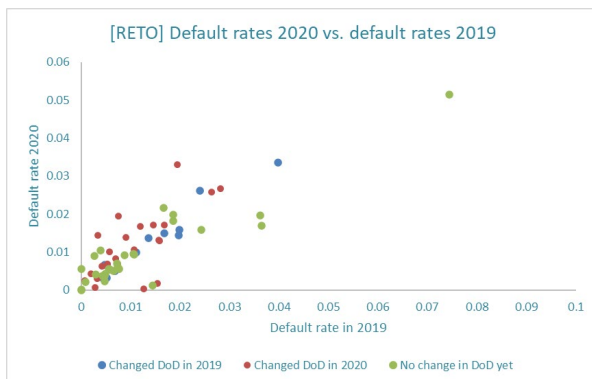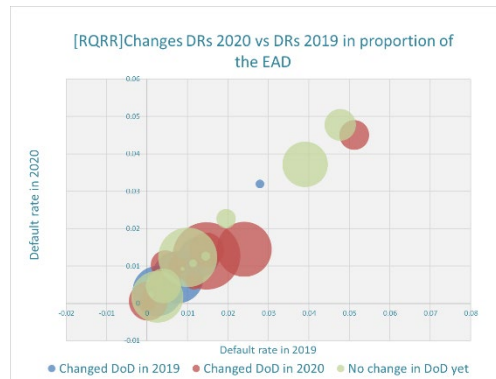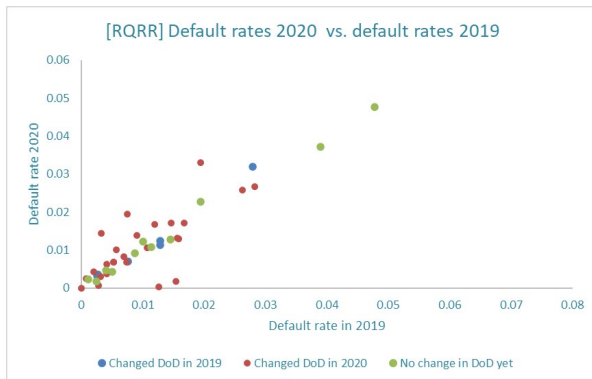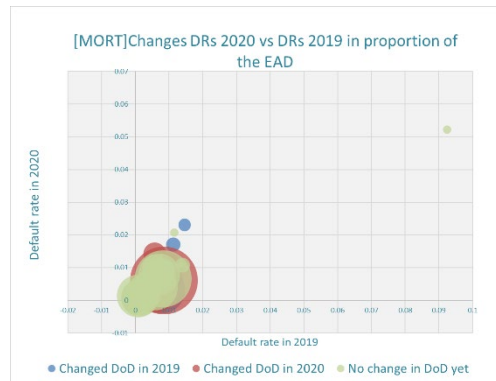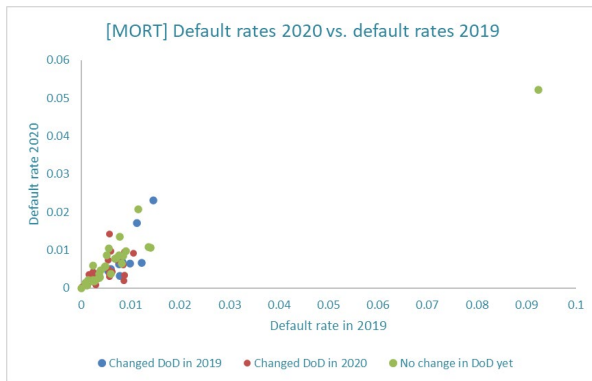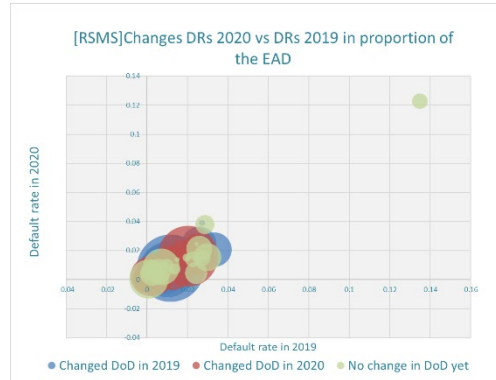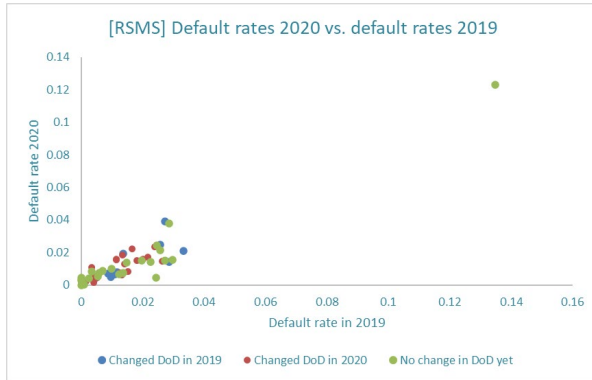
a.   those institutions which introduced the new definition of default in 2019 (blue dots);

b.   those institutions which introduced the new definition of default in 2020 (red dots);

c.   those institutions which have not changed the definition of default yet (green dots).).

As can be inferred from the charts below, it does not seem that the change in the definition of default has significantly affected the overall trend observed in the default rates, although further analyses would need to be carried out to confirm this on the individual bank level. Indeed, those cases of banks reporting a significant divergence in the average default rates between December 2019 and December 2020 are generally associated with portfolios with a very low exposure value[20], rather than with the implementation of the new definition of default. However, an exception in this regard is provided by the SMEC exposure class, where two institutions, moving to the new definition of default in 2020, presented a relevant increase in the average default rates in the same year. In one case, the supervisor confirmed bilaterally that the institution in question experienced a significant impact from the implementation of the new definition of default. The portfolios of RSMS shown in red would also require further analysis.
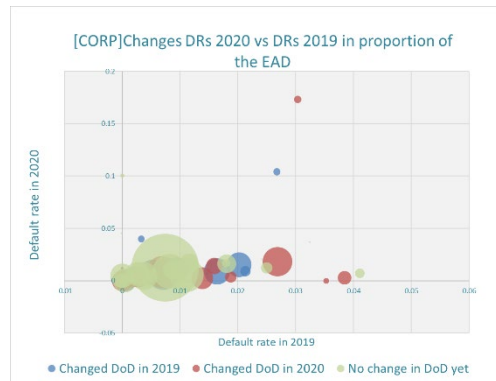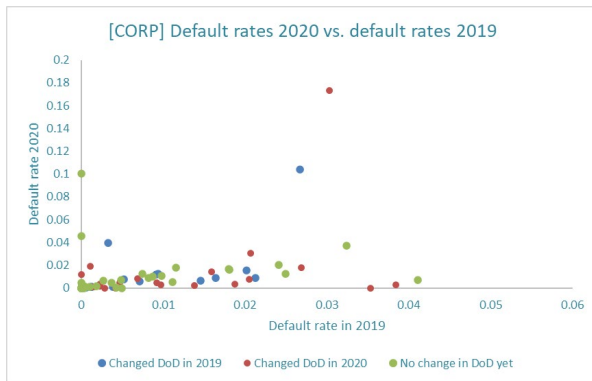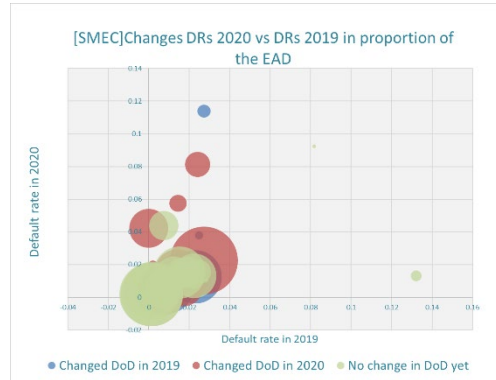
Figure 22 Interplay between the changes in default rates and in the definition of default by exposure class

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[20] And as such of limited representative value for the purpose of the analysis.

[RSMS] Default rates 2020 vs. default rates 2019

[RSMS]Changes DRs 2020 vs DRs 2019 in proportion of the EAD

[MORT] Default rates 2020 vs. default rates 2019

[MORT]Changes DRs 2020 vs DRs 2019 in proportion of the EAD

[RQRR] Default rates 2020 vs. default rates 2019

[RQRR]Changes DRs 2020 vs DRs 2019 in proportion of the EAD

[RETO] Default rates 2020 vs. default rates 2019

[RETO]Changes DRs 2020 vs DRs 2019 in proportion of the EAD

[SMEC] Default rates 2020 vs. default rates 2019

[SMEC]Changes DRs 2020 vs DRs 2019 in proportion of the EAD

[CORP] Default rates 2020 vs. default rates 2019

[CORP]Changes DRs 2020 vs DRs 2019 in proportion of the EAD

5. Sectorial analysis of IRB risk parameters

This section provides a set of charts for CORP and SMEC that illustrate the development of RW, PDs and DRs between December 2019 (e.g. RWs – 2020) and December 2020 (e.g. RWs – 2021) for a number of industry sectors. The selection of sectors is defined by the NACE codes in the ITS 2021 for which IRB institutions are asked to break down their IRB portfolios for the corporates exposure class.

It seems that the actual change in risk (observed in the one-year DR for CORP) for the sectors F Construction and H Transport and storage might not be covered by some of the internal models. This indicates that risk drivers relevant in the pandemic situation might be missing in some of the models.
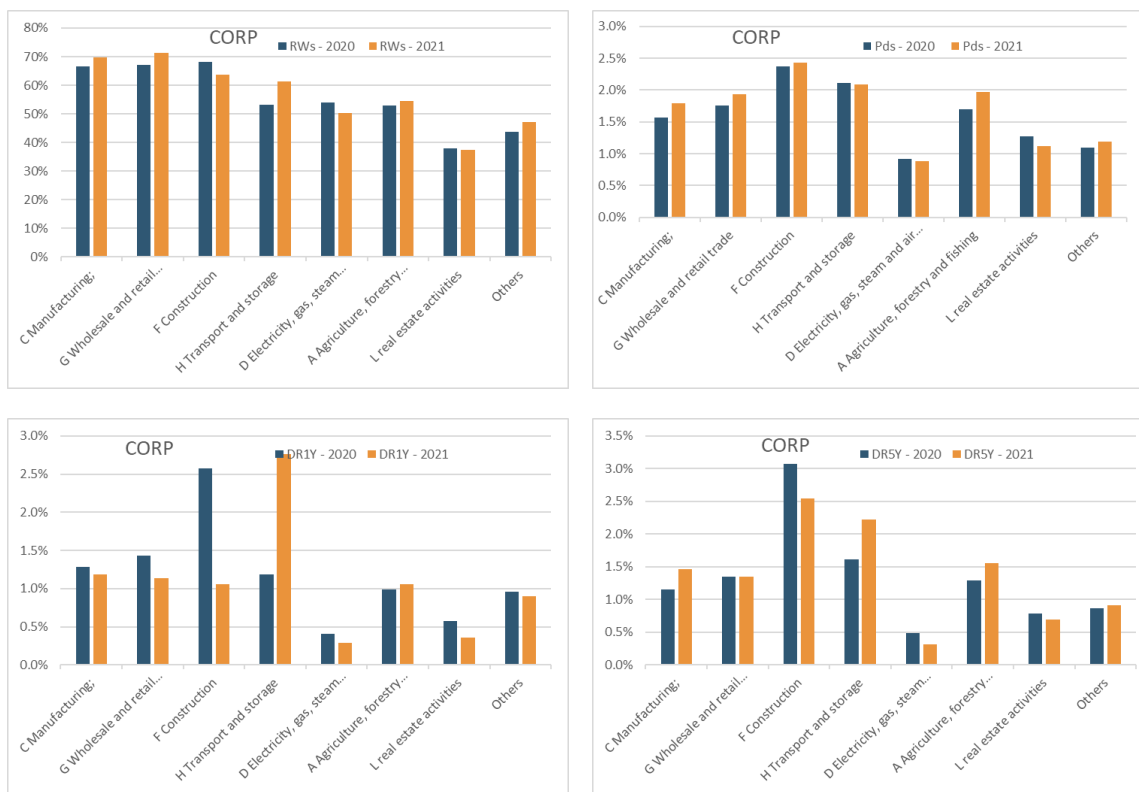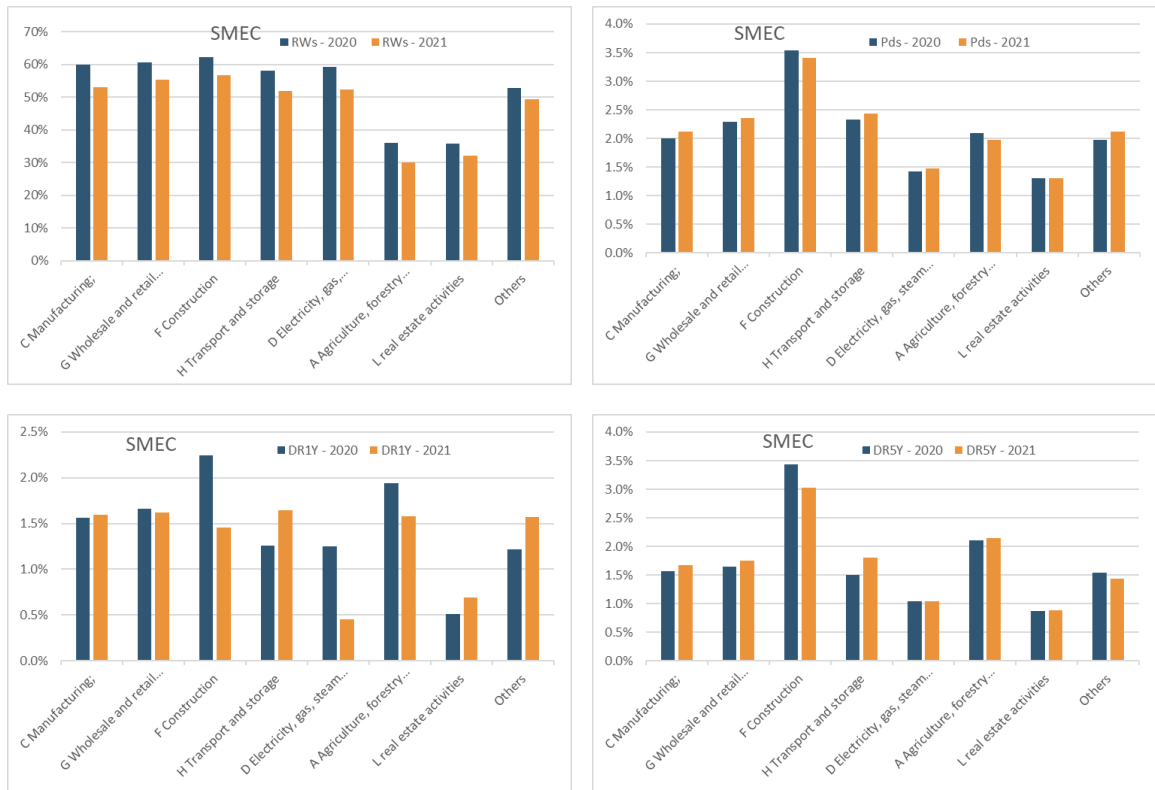
Figure 23 IRB parameter development by sector (CORP & SMEC)

6. Results of the supervisory benchmarking (questionnaire)

According to Article 78 of the CRD, the CAs must monitor the range of risk-weighted exposure amounts or own funds requirements for the exposures or transactions in the benchmark portfolios and, at least annually, make an assessment of the quality of the internal approaches for calculating own funds requirements. CA should pay particular attention to those approaches:

- that exhibit significant differences in own fund requirements for the same exposure and/or for the same risk profile;

- where there is particularly high or low diversification;

- where there is a significant and systematic underestimation of own funds requirements.

Where the risk weights or risk parameters of institutions diverge significantly from the majority of their peers for predefined comparable portfolios, the competent authorities must investigate the reasons and, if it can be clearly identified that an institution's approach leads to underestimation of own funds requirements, the institution must take corrective action.

In order to ensure a harmonised process and to assist the CAs in their quality assessment of the internal approaches, the EBA developed a CA questionnaire designed to collect the results of the benchmarking exercise with an emphasis on:

- Providing a standardised report with specific sections, including closed-ended questions, on an institution-by-institution basis to enable the EBA/CAs to have an overview of the main issues across the benchmarking exercise;

- Allowing sufficient room for explanations, with some open questions, on an institution-by-institution basis to enable the EBA to drill down on some specific issues and have an understanding of the CA's assessment.

The EBA received the responses for 100 institutions. This section summarises the key information derived from these assessments.
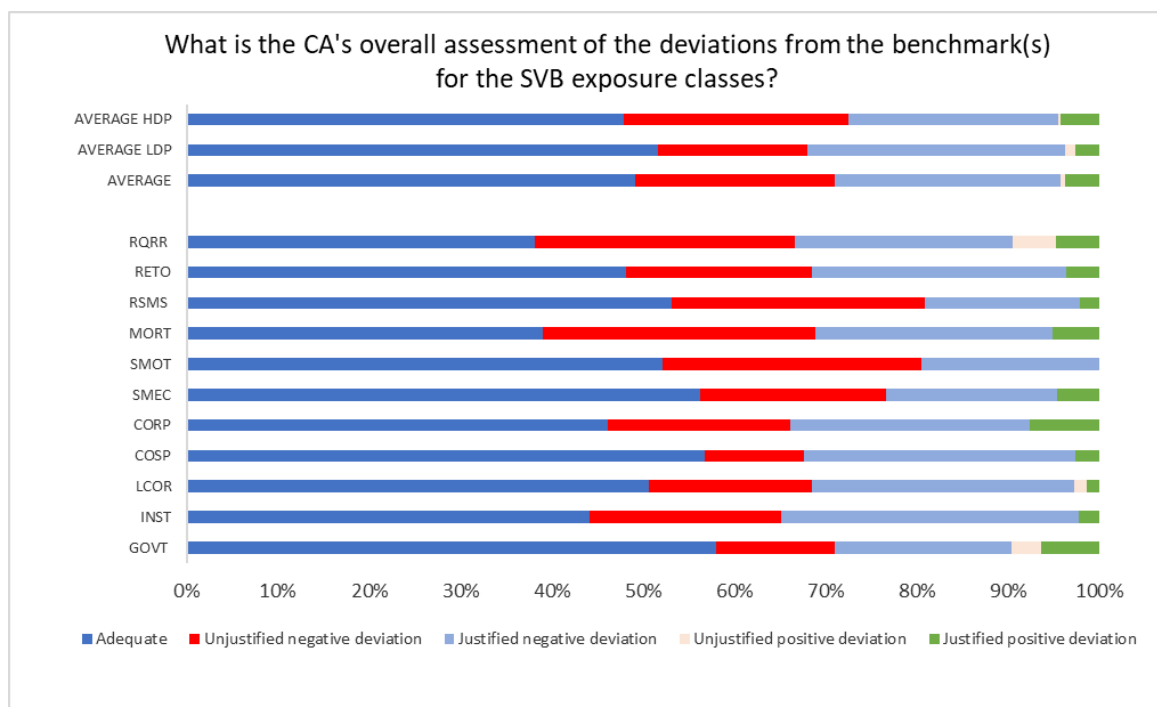
Figure 24 CA's overall assessment of the deviations from the benchmark(s) for the SVB exposure classes

To categorise the deviations from the benchmarks as illustrated in the figure above, supervisors considered positive or negative deviations from the benchmarks as justified by providing the main reasons. However, the estimates were considered adequate if no material share of an SVB exposure class was flagged in the benchmarking tool[21] (for negative deviations) or if no material share of an SVB exposure class was above the third quartile with respect to the distributions of the considered parameters (for positive deviations).

It can be read from Figure 24 that on average half of the deviations from the benchmarks were considered adequate, with a low difference between LDP and HDP. The percentage of justified/unjustified negative deviations amount to around 46% of the cases while justified/unjustified positive deviations are naturally less relevant and amount to around 6% of the sample.

Interpreting the above chart, it is important to emphasise that an unjustified negative deviation is not equivalent to an underestimation of the own funds requirement. Figure 25 and Figure 26 provide an overview of the main reasons for justified deviations, and Figure 27 summarises the main reasons for unjustified deviations. It should be noted that, following the responses to the questionnaire, in more than 70% of the unjustified deviations these were already identified by the institution's internal audits (and thus probably also by the supervisor, due to the obligation to submit audit reports, which exists in many jurisdictions).

For 23% of the banks that submitted relevant data on HDP portfolios, there were justified negative deviations. For relevant LDP portfolios, 28% were assessed as showing justified negative deviations. This year's questionnaire provided a broader list of possible reasons for justified deviations by taking into account the possible effects of the pandemic.

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[21] The benchmarking tool is a visualisation tool prepared by the EBA for the CAs, containing the bank data, around 20 different types of analysis and a dashboard that highlights outliers.

While the main reasons for justified negative deviations remain either a low number of outlier observations or an underlying business model which explains the observed deviation, this year's questionnaire also provided the following possible reasons for justified negative deviations:

[COVID-19 justification 1] Mitigating measures due to the COVID crisis (such as state guarantees) had an over-proportionately positive impact on estimates and/or outcomes compared to other institutions.

[COVID-19 justification 2] The institution benefited from its specific portfolio composition with regards to the economic sectors of the obligors.

[COVID-19 justification 3] The institution benefited from its specific portfolio composition with regards to the country/regions of the obligors.

[IRB roadmap implementation]

Figure 25 Justification for negative deviations in LDP portfolios

Following the above illustrated distribution of reasons for justified negative deviations, the impact of the COVID-19 pandemic was rather limited in LDP portfolios. In fact the implementation of the IRB roadmap seems rather to have driven such observations. In these cases as well as in the cases that fall under the category "other", several instances were commented on, with explanations that the negative deviations were observed for models which are awaiting approval of a revised or recalibrated PD model.

For HDP portfolios, the chart below illustrates the distribution of reasons for justified negative deviations and, in line with the other parts of this report, more justified negative deviations were related to the COVID-19 pandemic for HDP than for LDP. In fact the chart indicated that a major impact of the pandemic and related measures has been observed for SMEC CFs. This could be an aspect of future focus analysis, as the analysis of CFs was out of scope of the horizontal analysis in sections 3 and 4.
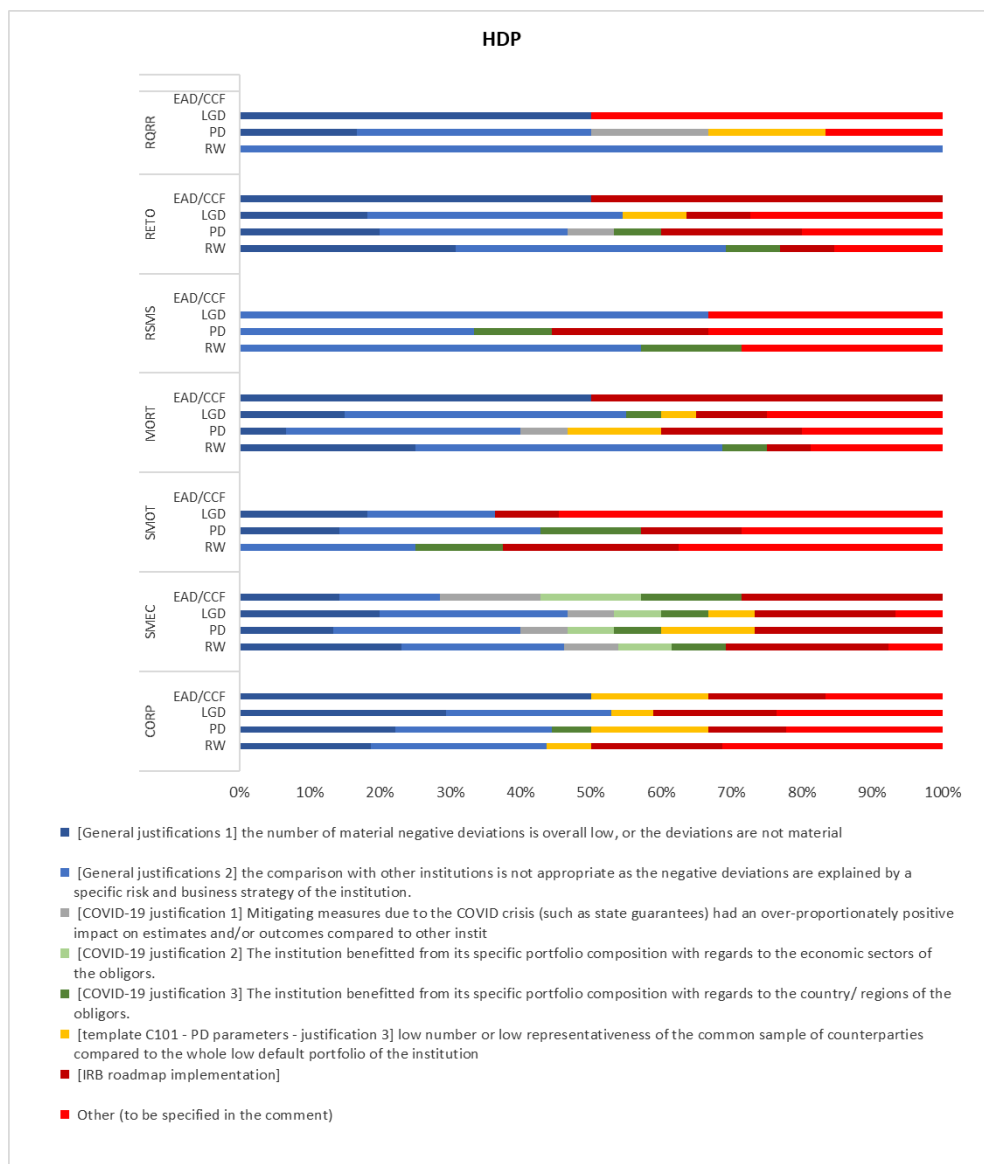

Figure 26 Justification of deviation in HDP portfolios

The chart below illustrates the drivers of unjustified negative deviations. These are quite heterogeneous. However, taking into account the CAs' comments, some of the problems related to the application of the model (below in grey) seem to stem from the COVID-19 pandemic as well.
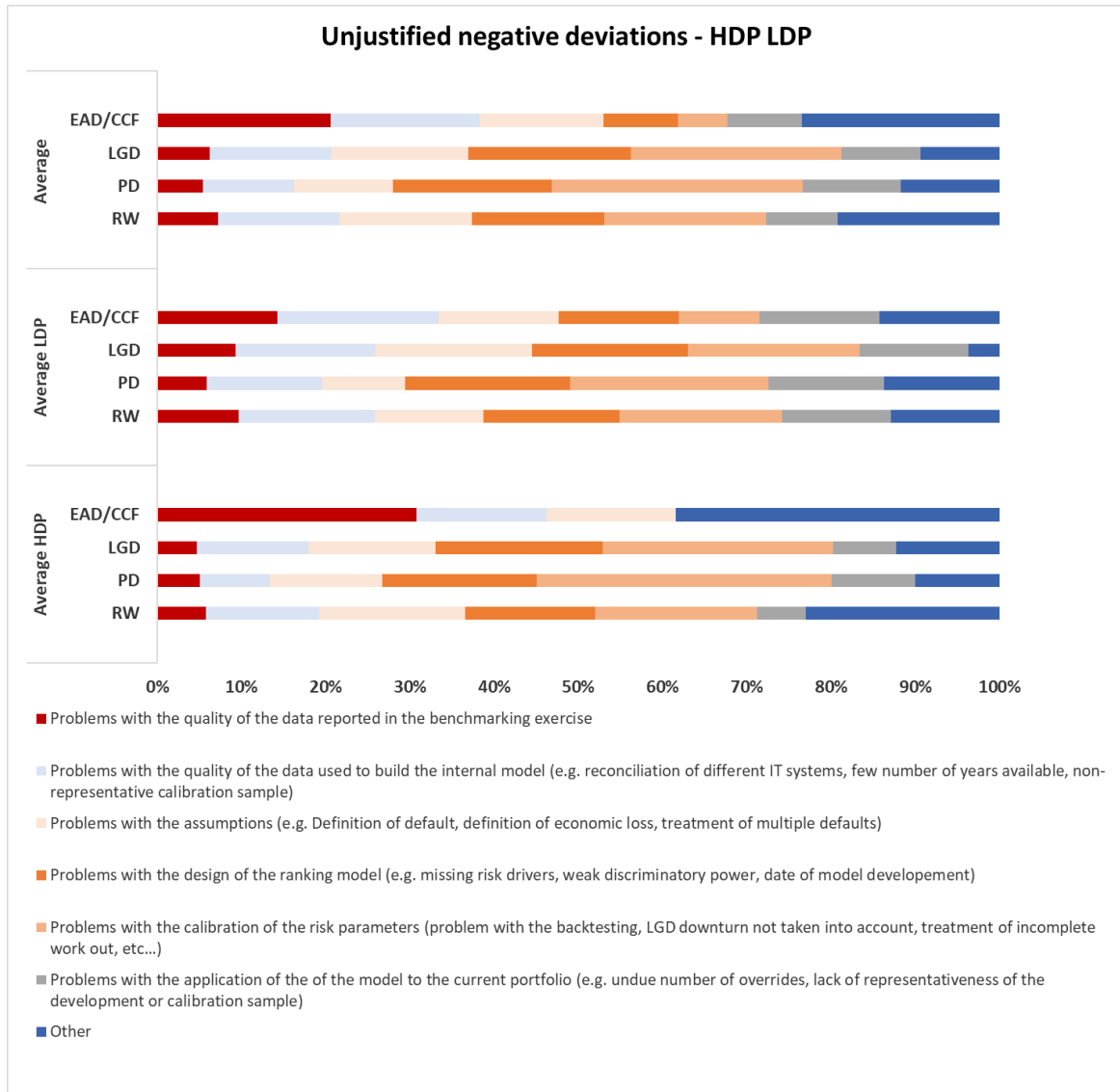

Figure 27 Reasons for unjustified negative deviations

The following set of charts illustrate the responses of CAs to questions as regards the implementation of the IRB roadmap. The first chart provides an overview of the percentage of IRB models in each exposure class for which the new implementation of the DoD has been approved and applied.
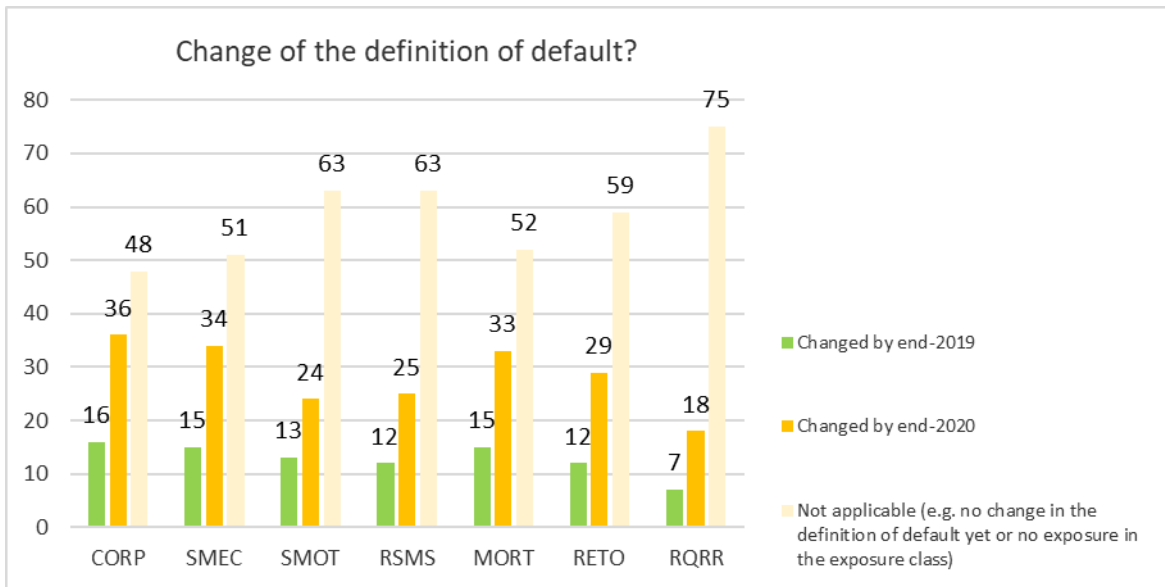
Figure 28 Change in the definition of default

Comparing this to Table 1 Use of different regulatory approaches by SVB exposure class, it can be concluded that the implementation of the new DoD is lagging behind and that variability in the default rates due to the implementation of the new DoD can still be expected in 2022.

The next chart indicates to what extent the IRB parameters (PD, LGD, CCF) were adjusted to reflect the new DoD and whether this caused a material impact. The latter was only the case for a few institutions. Indeed the majority of institutions that implemented the new DoD in CORP and SMEC did not see any material impact on their estimates. For the retail portfolios SMOT, MORT, RSMS and RETO, it seems that half of the considered banks expect a material impact, whereas the other half does not observe any material impact.
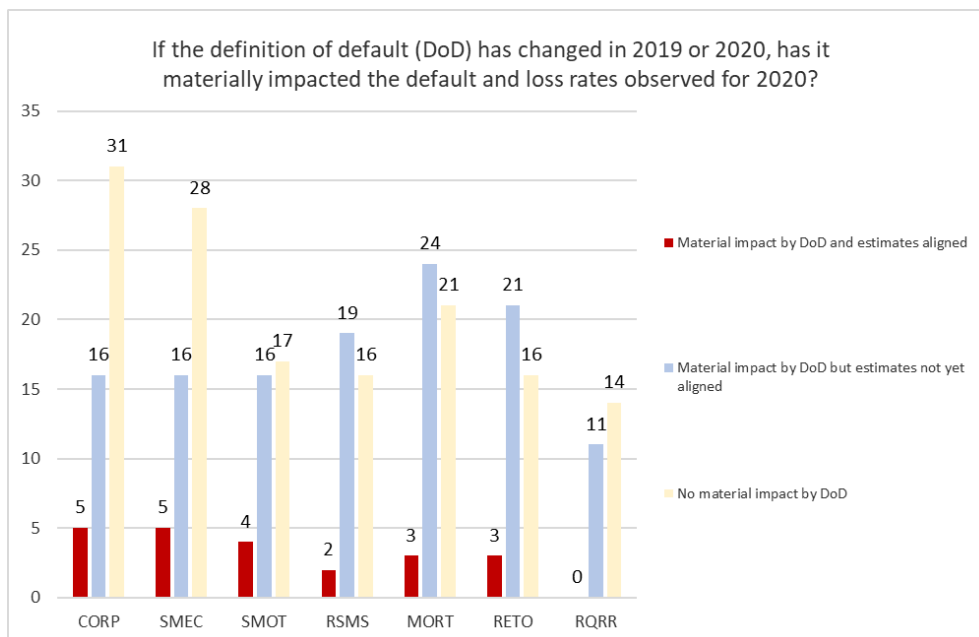

Figure 29 Impact of the changes in DoD.

RESULTS FROM THE 2021 CREDIT RISK BENCHMARKING EXERCISE

The last chart shows that only the minority of institutions already apply IRB approaches which comply with the GL on PD and LGD. The main impact from the implementation of the IRB roadmap is yet to come.
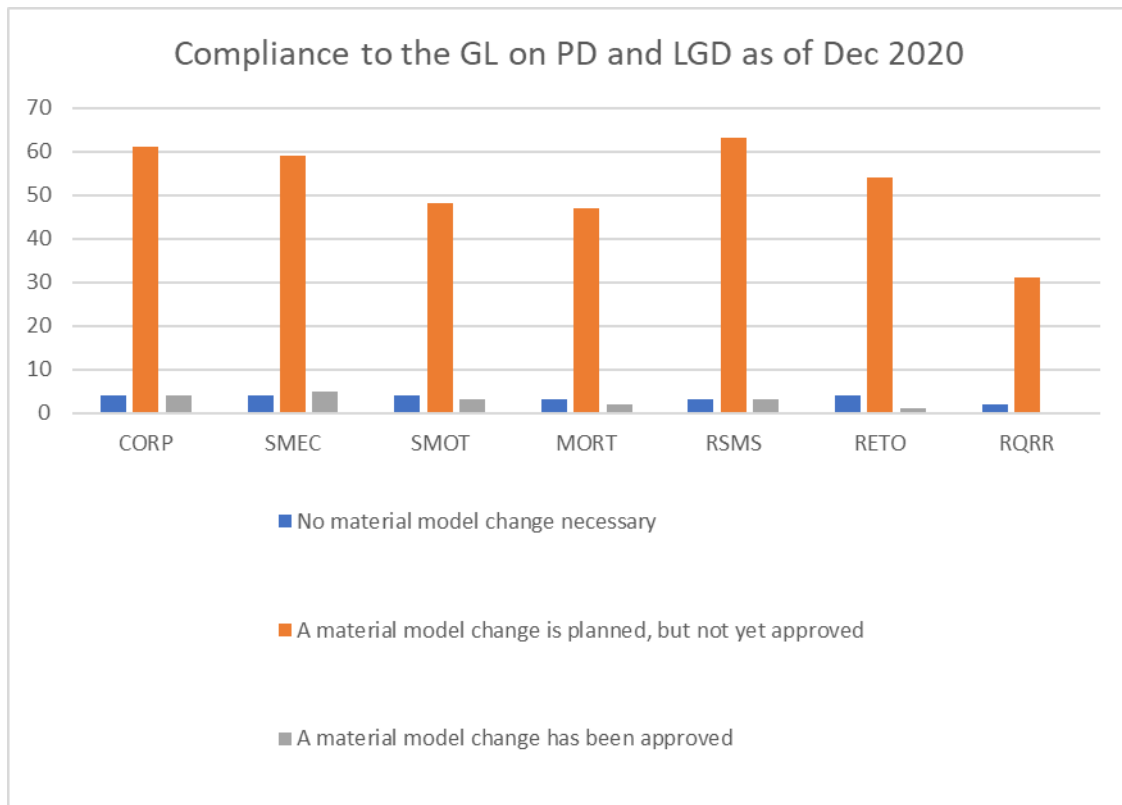

Figure 30 State of compliance with the GL on PD and LGD

Annex

Rating grade ID	Lower boundaries	Upper boundaries
901	*0.000000*	*0.000099*
902	*0.000100*	*0.000199*
903	*0.000200*	*0.000299*
904	0.000300	0.000499
905	0.000500	0.000791
906	0.000792	0.001255
907	0.001256	0.001990
908	0.001991	0.003154
909	0.003155	0.004999
910	0.005000	0.007923
911	0.007924	0.012558
912	0.012559	0.019904
913	0.019905	0.031547
914	0.031548	0.049999
915	0.050000	0.079244
916	0.079245	0.125593
917	0.125594	0.199053
918	0.199054	0.315478
919	0.315479	0.499999
920	0.500000	0.999999

Master scale used for the analysis of the rating migration.