EUROPEAN CENTRAL BANK

BANKING SUPERVISION

IFRS 9 overlays and model improvements for novel risks

Identifying best practices for capturing novel risks in loan loss provisions

Contents

1   Overview of the exercise

In recent years, banks have constantly faced new risks that need to be assessed. The COVID-19 pandemic itself revealed that health risks and related restrictions can threaten the solvency of borrowers. After this threat was managed with the help of public support, a stream of other novel risks emerged, like energy supply, geopolitical stability, high interest rates, inflation, and climate change. And since the list of such novel risks is unlikely to be exhaustive, it is only reasonable to expect further surprises.

This new risk environment poses a significant challenge to banking supervisors, who draw on a traditional supervisory framework largely reliant on historical data series. But such data series lack scope for dealing with risks looming large on the horizon. For this reason, ECB Banking Supervision places a particular focus on supervisory tools and regulations offering a forward-looking perspective. If properly applied, they allow banks to prepare for and cushion against those risks.

One of the areas the ECB is looking into is expected loan loss provisioning under IFRS 9. The accounting requirements are principle-based and require comprehensive consideration of forward-looking information. The resulting provisions impact prudential capital ratios, so adequate accounting provisions for novel risks also act as a prudential safeguard should these risks materialise. While the ECB is not an accounting supervisor, it has been granted a prudential mandate to challenge and influence banks' provisioning practices when there is a particular prudential concern about adequate risk coverage. The topic of IFRS 9 provisioning was also mentioned in the ECB's supervisory priorities for 2022-2024.

To address supervised banks' provisioning systematically, the ECB launched a targeted review in November 2022 and asked 51 banks – almost half of the banks under direct supervision – how their IFRS 9 provisioning framework captured emerging risks. Banks were selected on the basis of a benchmarking framework for assessing the quality of banks' internal provisioning practices and with the objective of a balanced geographical coverage. This large sample allowed quantitative and qualitative benchmarking, and to collect examples of good and bad accounting practices. Banks received detailed questionnaires and data templates to complement information regularly available to the ECB (supervisory reporting).

The review led to numerous bank-specific findings being communicated to banks individually, together with supervisory expectations on how to remediate weaknesses and adopt better practices identified within their peers. The ECB also published a public blog post summarising findings and conclusions.[1]

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[1]   See McCaul, E. and Walter, S., "Overlays and in-model adjustments: identifying best practices for capturing novel risks", *The Supervision Blog*, ECB, 26 May 2023.

In 2024, the ECB repeated the thematic review for the same banks, covering 2023 year-end financial figures.[2] The intention was to monitor banks' implementation efforts and take further supervisory action if necessary. The repetition also allowed to measure supervisory effectiveness. This report shows the progress that has been made and summarises the ECB's expectations. Further bank-specific actions will address identified weaknesses and shortcomings.

Banks were originally asked about five novel risks likely to have a prominent impact on the default rates identified in previous default risk studies, namely energy supply, supply chains in general, environmental risks, inflation and geopolitical risks. This year, the high interest rate environment and a particular focus on commercial real estate (CRE) were also included. All six risks have something in common: they lack the necessary historical data on which classical expected loss provisioning models depend. That is why banks need alternative approaches to quantify and cover these risks reliably.

Previewing some of the salient points in this report, banks acknowledge that there are, indeed, novel risks, and they try to capture them. Most banks are unable to capture novel risks in a fully functional and validated statistical model due to insufficient data. This problem is likely to persist for the foreseeable future. Under these circumstances, an out-of-model measurement via overlays is the best solution to capture novel risks, but also overlays should be based on sound methodologies. Trying to include novel risks in statistical models with insufficient data is inferior to using overlays because it sacrifices model quality. Ignoring novel risks altogether is the least acceptable practice as this systematically underestimates future loan losses.

As expected, most respondents said they use overlays, which is appropriate if they follow a robust methodology. Significantly, within a year the number of banks provisioning for climate and environmental (C&E) risks rose from 16% to 55%, albeit with different degrees of sophistication. This is an initial sign that bank-specific and targeted recommendations have been understood and accepted. However, as a note of caution, there is still a long way to go, and not just on C&E risks. While most banks actively consider those risks, the methodologies of some banks are not commensurate with their risk exposure and, in many cases, they are even contradictory. For example, although banks use specific data to calculate expected losses, many of them ignore this same information when it comes to stage transfers. Not only does this practice systematically underestimate loan losses, but it is also at odds with the requirements of IFRS 9.

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[2] Compared with the previous exercise, this year's sample includes two additional banks, bringing the total to 53 banks. However, for the sake of consistency, the two banks are excluded in comparative analysis.

2   The continued prominence of overlays

When banks use in-model solutions, provisions automatically incorporate novel risks. However, in-model solutions should only be used when there is sufficient data. For most banks, the most adequate approach is to quantify emerging risks outside the existing models through overlays.

IFRS 9 does not include a definition of "overlay"; banks sometimes refer to overlays as "management adjustment", "post-model adjustment" or "top level adjustment". For the purpose of the targeted review, the following definitions were used: (i) overlay: "the type of adjustment that is performed only after the model is operated. Post-model adjustments are considered as overlays for this questionnaire"; (ii) in-model adjustment: "those adjustments that are performed inside of the IFRS 9 model – either before or during the run time of the model. For instance, adjustments to the model input (e.g., overrides to the component of forward-looking information), adjustments to the model parameters (e.g., alteration of a probability-of-default model input parameter), or ad hoc adjustments to the model or model calibration".

Overlays became prevalent during the pandemic and are now widely used for different novel risks not easily captured by models. Clearly, using overlays that are grounded in sound analysis with strong governance and transparency is welcomed.

Market participants often state that novel risks cannot be modelled with traditional expected credit loss models for lack of historical data. While IFRS 9 requires "considering all reasonable and supportable information, including that which is forward-looking", it does not prescribe using a model.[3] Most importantly, neither does it constrain the measurement to those risks with sufficient historical data. In some cases, relatively simple modelling may be sufficient, without the need for a large number of detailed simulations of scenarios.[4]

When banks do have functioning models in place, but these cannot capture novel risks for lack of data, an "overlay" added to the existing model outputs is an adequate and frequently used technique that fulfils the accounting requirement. While the standard exempts banks from running a "large number of detailed simulations of scenarios", such an overlay must still incorporate all reasonable and supportable information, such as a small number of less detailed simulations and scenarios that can be generated or obtained with reasonable efforts, for instance from internal experience, peer or public information.

The survey shows the use of overlays remains as prominent as during the pandemic and Russia's invasion of Ukraine (Chart 1a). Roughly a quarter of the loan loss coverage in banks' performing loan books is due to overlays, and there is no visible downward trend. The often-expected reduction in overlays, given the constant inflow of data, did not materialise. This is plausible to us, as the number of novel risks and

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[3]   See IFRS 9.5.5.4.

[4]   See IFRS 9.B5.5.42.

their interaction is too complex to capture with legacy default risk models. Even in the long run, banks will need to improve their forecasting capabilities by using simulations and scenario analysis to complement legacy models. The continued prominence of overlays may well be a result of supervisory efforts to require adequate provision coverage for novel risks.

While overlays are an effective tool for capturing emerging risks, to date banks' reliance on them has varied considerably (Chart 1b). While this may be due to the different capabilities of banks' legacy models and differences in their risk exposures, the thematic review also suggests that this variance is also a result of a number of banks having unsubstantiated methodologies, together with an overreliance on purely subjective estimation.

Chart 1

Overlays maintain their significance in the loan loss provisions of banks' performing loan books, with mean values concealing significant variance among banks

a) Aggregated coverage ratio of the sample

(percentages)

■ Provision coverage added by ECL model
■ Provision coveraged added by overlays
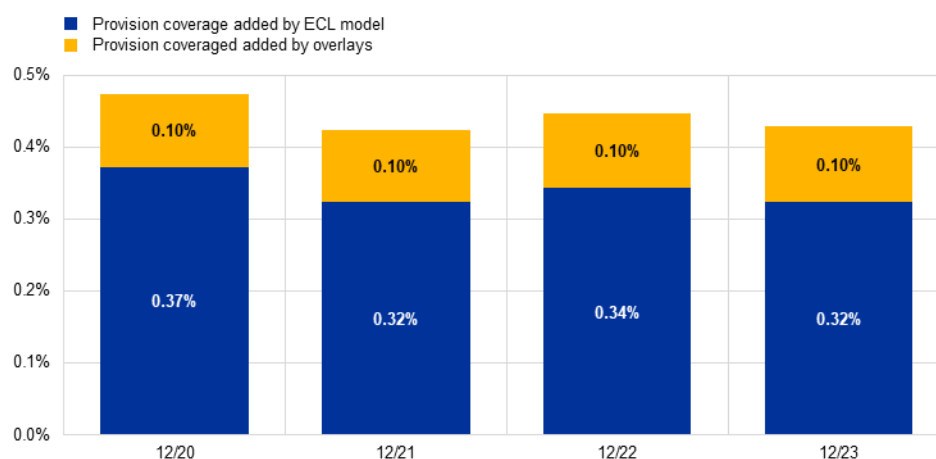
b) Share of loan loss provisions recognised through overlays
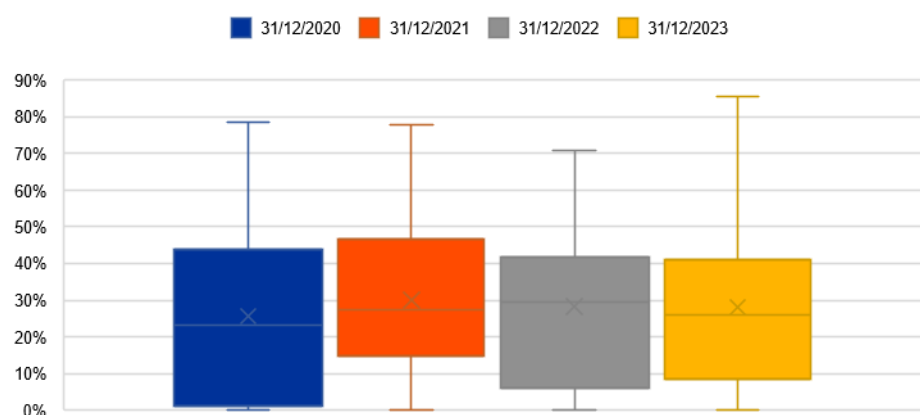
■ 31/12/2020 ■ 31/12/2021 ■ 31/12/2022 ■ 31/12/2023

Sources: ECB calculations based on data collected in the two IFRS 9 questionnaires (November 2022 and November 2023) and supervisory reporting (FINREP).
Notes: The figures are for all sample banks that reported overlays in each reference period (year-end 2020: 51; year-end 2021: 51; year-end 2022: 52; year-end 2023: 53), complemented by FINREP data fields F18.00 r0180 ("Debt instruments at cost or at amortised cost"). Panel a) shows the coverage ratio for Stage 1 and Stage 2 exposures at the aggregated level for the sample. Panel b) shows the share of overlays in the total accumulated impairment for Stage 1 and Stage 2 exposures. The boxes represent the interquartile range and show the spread of the middle 50% of the data, with the line inside the boxes marking the median. The whiskers extending from the boxes indicate the data range.

Previous research published in the Financial Stability Review has already shown that IFRS 9 provisions significantly correlate with pre-provisioning income, indicating that provisions are used for earnings management.[5] A similar analysis of the data collected in this exercise confirms these correlations. But in addition, it indicates earnings management was achieved by means of overlays. Pure ECL model outcomes showed no correlation with pre-provisioning income (Chart 2). While this finding does not speak against overlays in general, it shows that overlays are not just a best effort forecast but also a potential tool for earnings management. It also

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[5]   See *Financial Stability Review*, ECB, November 2020.

validates the ECB's efforts to enforce better and more objective practices to capture novel risks.

Chart 2

Loan loss provisions made using overlays seem connected to earnings management, while provisions from ECL models do not

Loan loss provisions and pre-provisioning profits

(percentage of total Stage 1 and Stage 2 exposures)
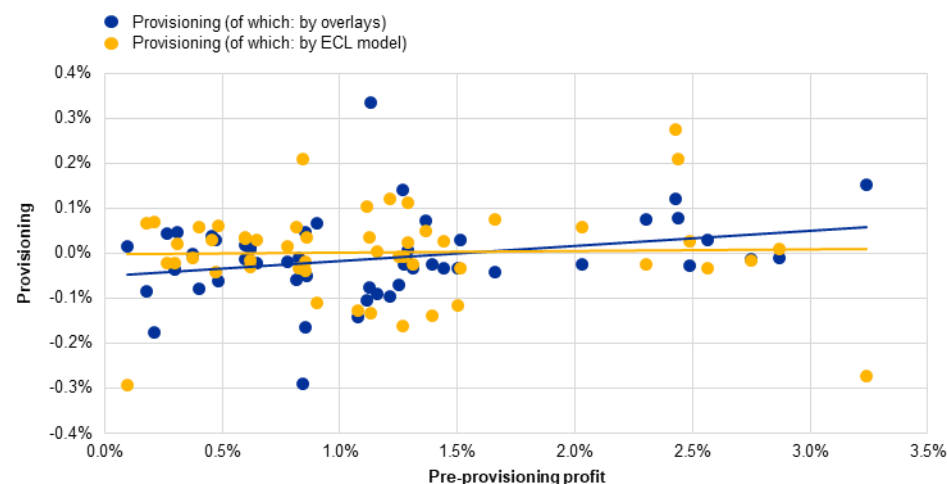
Sources: ECB calculations based on data collected in the two IFRS 9 questionnaires (November 2022 and November 2023) and supervisory reporting (FINREP).
Notes: The figures are for the 51 banks in the sample and complemented by FINREP data fields F02.00 r0670 c0010 ("Profit or (-) loss for the year") and F18.00 r0180 ("Debt instruments at cost or at amortised cost"). The reference date is 31 December 2023. The chart plots banks' pre-provisioning profits, scaled to the total carrying amount of Stage 1 and Stage 2 exposures, (x-axis) against the provisioning of Stage 1 and Stage 2 exposures, scaled to the total carrying amount of Stage 1 and Stage 2 exposures, (y-axis). The blue dots represent provisioning added by overlays, the yellow dots represent provisioning added by expected credit loss (ECL) models. A trendline is shown for both groups. The coefficient (slope) of the blue line is statistically significant at a 95% confidence level.

Chart 3 shows that banks now use overlays for the main parts of the banking book. They are commonly used for corporate loans and loans to small and medium-sized enterprises. Most banks also use them for retail loans. Banks seem to acknowledge that novel risks affect all of their lending business and that legacy models are not sufficient to measure them.

Chart 3

Overlays are generally applied to all portfolios of the banking book

Portfolio allocation of overlays

(percentages)
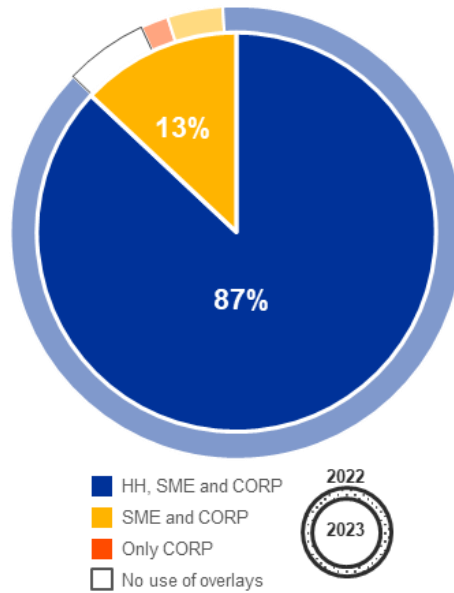
Sources: ECB calculations based on data collected in the two IFRS 9 questionnaires (November 2022 and November 2023).
Notes: Based on a sample of 51 banks. The pie chart shows the allocation of overlays within different portfolios, or combinations of portfolios, in particular loans to households (HH), small and medium-sized enterprises (SME) and corporates (CORP). The outer ring shows the results for the first questionnaire (launched in November 2022) and the inner circle for the second questionnaire (launched in November 2023).

3 Consideration of novel risks: mainly the issue of laggards

Adequate provisioning for novel risks starts with their identification and finding a metric for measuring their impact on expected credit losses. The ECB sent specific recommendations to those banks that did not identify a material novel risk and, over the last year, observed some progress. A small, but significant number of banks does not treat novel risks with the importance they deserve – the banks were not in a position to explain their novel risk coverage and admitted either to not considering such risks or to simply declaring them immaterial without thorough analysis. Depending on the type of risk, the proportion of banks in this group currently ranges from 2% to 30% of the sample – shown in dark red in Chart 4.

The vast majority of banks in the sample consider each novel risk in various ways. Overlays remain the tool most used by banks to address novel risks (including C&E risks), in a range of 53-76% of the sample – shown in dark green. In-model adjustments only (e.g., to inputs) continue to be used by a small minority, in a range of 2-10% – shown in light green. The ECB believes that in-model adjustments and overlays may remain necessary for the time being, allowing the necessary flexibility to use more adequate tools like simulations, while not impairing model quality for those risks for which there is sufficient historical data to model.

An increasing number of banks, however, rely primarily on their legacy macro-overlay models[6] to capture novel risks, e.g., restricting the consideration of novel risks to their aggregate impact on future GDP. The proportion of these banks ranges from 12% to 21% of the sample – shown in light red in Chart 4. This use directly runs counter to the ECB's recommendations to adopt a more robust approach, which were also published in a Supervisory Blog: "banks [...] claim that their legacy IFRS 9 macro-overlay will capture novel risks. However, these legacy models were designed before 2018 to prepare for the introduction of IFRS 9. By definition, such models lack sensitivity towards the novel risks we are concerned about today. They are incapable of differentiating the nuanced sectoral impacts of each novel risk"[7]. This approach ignores the non-linear nature of expected credit losses, thus systematically underestimating the mean impact. The ECB therefore plans to take further supervisory actions as for those banks that completely ignore novel risks.

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[6]　Macro-overlay models are defined as those models that complement an existing client rating model and provide or alter credit risk parameters (e.g., probability of default) by incorporating forward-looking macroeconomic information.

[7]　See McCaul, E. and Walter, S., "Overlays and in-model adjustments: identifying best practices for capturing novel risks", *The Supervision Blog*, ECB, 26 May 2023.

Chart 4

While an increasing number of banks provision for novel risks mostly through overlays, some continue to rely on legacy IFRS 9 models contrary to the ECB's recommendations

Proportion of respondents using specific methods to capture emerging risk factors

(percentage of total)

Sources: ECB calculations based on data collected in the two IFRS 9 questionnaires (November 2022 and November 2023).
Notes: Based on a sample of 51 banks. The pie charts show, for each risk factor considered in the questionnaire, how banks said they capture that risk factor in their IFRS 9 provisioning framework. The outer ring shows the results for the first questionnaire (launched in November 2022) and the inner circle for the second questionnaire (launched in November 2023). The risk factor "interest rate risk" was not surveyed in the first IFRS 9 questionnaire.

4 Specific considerations for long-lasting novel risks

A particular supervisory focus is now directed towards C&E, geopolitical and interest rate risks for CRE portfolios. These risks are difficult to measure and appear to affect banks also in the long run. ECB Banking Supervision therefore expects significant attention and system investment in these areas.

As a result of the first targeted IFRS 9 review and other initiatives in this area, C&E risks are now considered by a majority of banks (55%), up from 16% in 2023 shown in dark green and light green, respectively, in Chart 4. This is a big improvement but not yet fully satisfactory.

Of these banks, some use models or simulation-based approaches (e.g., to consider different scenarios regarding increased transition risk or a scoring system to synthesise the exposure of debtors to transition and physical risks). Others try to account for C&E risks directly in the underlying credit ratings through several qualitative elements. These practices were recommended by the ECB for broader consideration.

33% of banks [shown in dark red] do not consider C&E risks and 12% of banks [light red] state that the macro-components of their IFRS 9 models already consider C&E risks (indirectly) through the general forward-looking scenarios (e.g., the effect of C&E risks on GDP forecasts). As mentioned in the previous chapter, this approach lacks all necessary risk sensitivity and does not ensure risk differentiation between debtors that are unevenly affected by C&E risks in general and specific C&E risks in particular.

In the case of geopolitical risk, the use of overlays and in-model adjustments increased slightly [to 63% and 4% respectively – shown in dark green and light green], which is not commensurate with the rising uncertainties and downside risks associated with the current geopolitical environment. This shows that many banks are not prepared for the new political and economic landscape.

Other banks still include geopolitical risk in the narrative underpinning their macro-economic scenarios[8] or they stress existing macro-economic scenarios [19% – light red]. Using legacy macro-overlays is too crude: while GDP might not fall during a trade war, it may still push certain export-reliant clients into insolvency. Not differentiating the unevenly affected client groups averages out non-linear effects and prevents a timely identification of risk. Only a few banks include structural variables in forecasting (some banks identified clients based on "foreign demand").

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[8] The "narrative of a macro-economic scenario" refers to the set of assumptions that underpin the input variables of the forecasting approach of macro-economic variables. For instance, the narrative might state that *"increased trade tensions will lead to higher oil prices (i.e. > USD 100)"*. One would then forecast macro-economic variables – such as the level of GDP or the unemployment rate – based on that narrative, which includes oil prices at *USD 100* or higher.

A particular weak spot is provisioning for the CRE sector. Unfortunately, only half of the banks described having a sectoral approach to measure the impact of interest rate risk (i.e., interest rate overlays specifically for CRE[9] – 47%, in dark dotted green in Chart 5). Half of the banks in the sample are still not compliant with the ECB's expectations: "We recommend that others follow the good example set by banks using such in-model adjustments or overlays for the effects of higher interest rates on CRE client debt capacity".[10] Other bad practices were observed: some banks generally refer to expert judgment without further corroboration. One bank applies lifetime ECL to CRE portfolios (or specific sub-portfolios) without transferring debtors to Stage 2 or considering how the novel risk might impact lifetime losses.
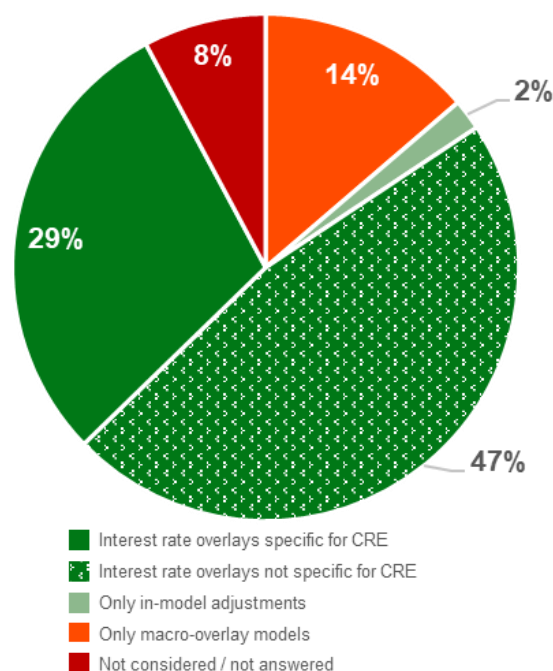
Good practices include simulations of probability of default/rating effects by stressing the financial figures of counterparties subject to high interest rates, and simulations of probability of default/loss given default effects coming from further falls in collateral valuations.

Chart 5

Almost half of respondents report an interest rate overlay for CRE exposures

Proportion of respondents applying certain methods to capture different interest rate risk: focus on commercial real estate

(percentage of total)

- Interest rate overlays specific for CRE
- Interest rate overlays not specific for CRE
- Only in-model adjustments
- Only macro-overlay models
- Not considered / not answered

Sources: ECB calculations based on data collected in the second IFRS 9 questionnaire (November 2023).
Notes: Based on a sample of 51 banks. The pie chart shows if and how banks consider the impact of changing interest rates on the creditworthiness of borrowers in their IFRS 9 provisioning framework and, in case of overlays, whether or not there is a risk differentiation between commercial real estate (CRE) exposures and other exposures (i.e. whether banks consider interest rate overlays specifically for CRE exposures).

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9   Main reasons for overlays specific for CRE: (i) lack of historical data on real estate crisis in some countries, (ii) challenges in updating valuations, (iii) insufficient sensitivity of ratings to refinancing risk, and (iv) interest rates not used as IFRS 9 macro-economic drivers.

10   See McCaul, E. and Walter, S., "Overlays and in-model adjustments: identifying best practices for capturing novel risks", *The Supervision Blog*, ECB, 26 May 2023.

5 Quantification, IFRS 9 stage transfers and governance

The ECB's targeted review looked at not only how banks consider novel risks through the use of different tools but also quantification methods, the IFRS 9 stage transfer methodology and process governance. The most severe deficiencies and even non-compliance with requirements of the accounting standards were revealed in the area of stage transfers.

The proportion of severe design flaws declined (Chart 6). But a small number of banks still do not follow up on the ECB's recommendations and can expect further supervisory action. The most common design flaws are umbrella overlays that cover a wide range of risks with no further differentiation, and the application of lifetime losses to vulnerable sectors without measuring the impact of the risk on the lifetime loss or consideration of the necessary stage transfers. A third of the banks still lack a sound process for processing information and rely excessively on purely subjective judgement. While the difficulties are well understood, the large number of banks that master the task is proof that the ECB's expectations are valid.
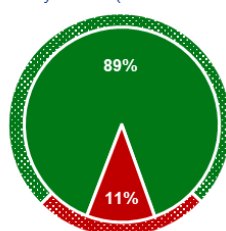
Chart 6

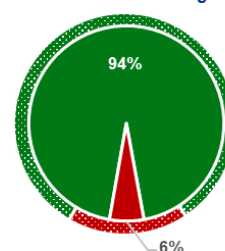**Improvement observed in the design and quantification methodologies of overlays**

Compliance with the ECB's recommendation on ECL quantification methodology
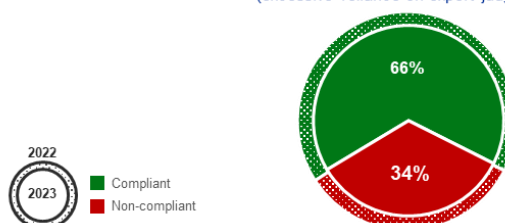
(percentage of total)

Sources: ECB calculations based on data collected in the two IFRS 9 questionnaires (November 2022 and November 2023).
Notes: Based on a sample of 51 banks. The pie charts show the percentage of banks complying with the ECB's recommendations regarding the methodology for expected credit loss (ECL) quantification. The outer ring shows the results for the first questionnaire (launched in November 2022) and the inner circle for the second questionnaire (launched in November 2023). The risk factor "interest rate risk" was not surveyed in the first IFRS 9 questionnaire.

A common bad practice is the use of overlays at the total ECL level, and the ECB strongly recommends banks cease this practice: "Banks using "overlays at the total ECL level" did not reflect the risks driving ECL overlays in their Stage 2 classification. This practice is not just contradictory, but it also leads to insufficient risk coverage"[11]. Similarly, overlays at the total ECL level are not in line with the principles of IFRS 9, which require capturing all identifiable risks also in probabilities of default and thus staging.[12]

Chart 7

Banks continue to apply overlays at an aggregated level, which does not easily allow risk differentiation

Level in the provisioning process where overlays are applied

(percentage of total)
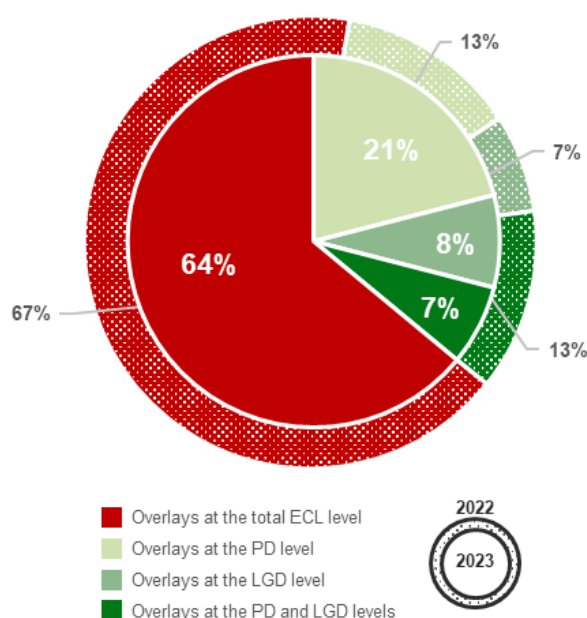
Sources: ECB calculations based on data collected in the two IFRS 9 questionnaires (November 2022 and November 2023).
Notes: Figures are for all banks in the sample that reported overlays. The ECB asked banks to report detailed information about their ten most significant in-model adjustments and overlays. The outer ring shows the results for the first questionnaire (launched in November 2022) and the inner circle for the second questionnaire (launched in November 2023). The risk factor "interest rate risk" was not surveyed in the first IFRS 9 questionnaire.

Considering a risk material enough to increase ECLs but ignoring it for staging is a clear contradiction. A way to comply with IFRS 9 would be to consider the information incorporated in the overlay on a collective basis also for staging, using the so-called top-down approach required by IFRS 9.[13] The top-down approach is to IFRS 9 stage transfers what an overlay is to ECL quantification. This is because both have the same underlying rationale: losses that cannot be identified at the client or portfolio level must be quantified out of the model and allocated to portfolios in a consistent way.

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[11] See McCaul, E. and Walter, S., "Overlays and in-model adjustments: identifying best practices for capturing novel risks", *The Supervision Blog*, ECB, 26 May 2023.

[12] See IFRS 9, B5.5.15.

[13] See IFRS 9, B5.5.1 and B5.5.6, as well as IE38 and IE39.

However, the overlays at the total ECL level have mostly not been complemented by collective staging (Chart 8). This means that risks deemed material enough to increase ECLs were ignored for staging. Despite previous exercises[14], the Stage 2 assessment is performed predominantly at the individual borrower level, with very limited use of collective assessment (38%).
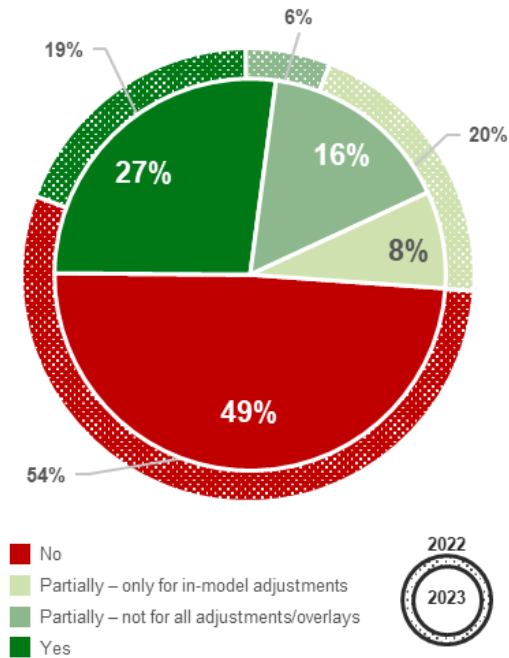
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[14] See the ECB's letters to CEOs (April 2020 and December 2020) and the EBA IFRS 9 Monitoring Report.
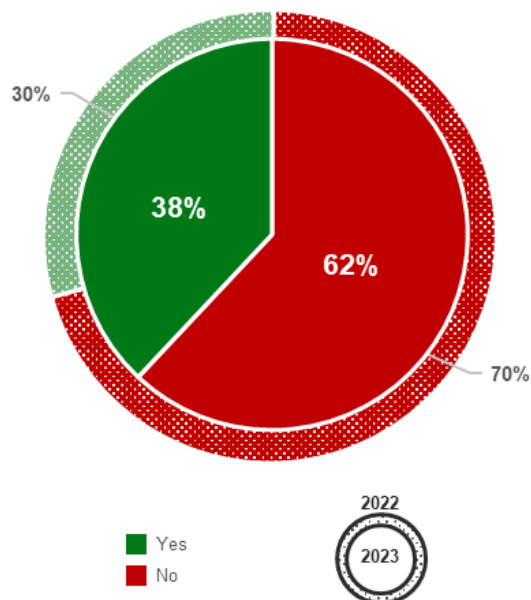
Chart 8
Most banks do not complement overlays with staging migrations

a) Proportion of respondents connecting overlays to IFRS 9 staging assessment

(percentage of respondents)

Legend:
- No (red)
- Partially – only for in-model adjustments (light green)
- Partially – not for all adjustments/overlays (medium green)
- Yes (dark green)

Inner ring: 2022, Outer ring: 2023

Values shown: 6%, 19%, 27%, 16%, 20%, 8%, 49%, 54%

b) Proportion of respondents applying an IFRS 9 collective staging assessment

Legend:
- Yes (green)
- No (red)

Inner ring: 2022, Outer ring: 2023

Values shown: 30%, 38%, 62%, 70%

Sources: ECB calculations based on data collected in the two IFRS 9 questionnaires (November 2022 and November 2023).
Notes: Based on a sample of 51 banks. The pie charts show whether banks are compliant with the ECB's recommendation to connect the information considered in overlays and in-model adjustments with their stage transfer methodology (at least on a collective basis). Panel a) shows the relationship between overlays/in-model adjustments and staging. Panel b) shows the proportion of banks that do not apply the collective staging approach.

Improvements were only observed for a limited number of banks: compared with last year's exercise, the number of banks reporting that overlays/in-model adjustments affected (at least partially) stage assessment was up from 43% to 49% (Chart 8,

panel a)). Collective staging is now envisaged by 38% of banks in the sample, in comparison with 29% last year (Chart 8, panel b)).

The ECB's concerns are not just theoretic in nature but supported by numerical evidence, as shown in Chart 9. Non-compliant banks show a lower coverage ratio, a lower Stage 2 ratio and fewer Stage 2 transfers. While the ECB's primary aim is to improve the robustness and quality of the methodology, it seems that bad provisioning practices are not just less reliable but also lead to insufficient aggregate risk coverage, which may need supervisory attention. This is due to the single-sided and skewed nature of default loss distribution: the more the information that is gathered and processed, both within measurement and through stage transfers, the more provisions will increase. In the area of expected loan loss provisioning, there are natural incentives for banks not to improve their accounting quality.
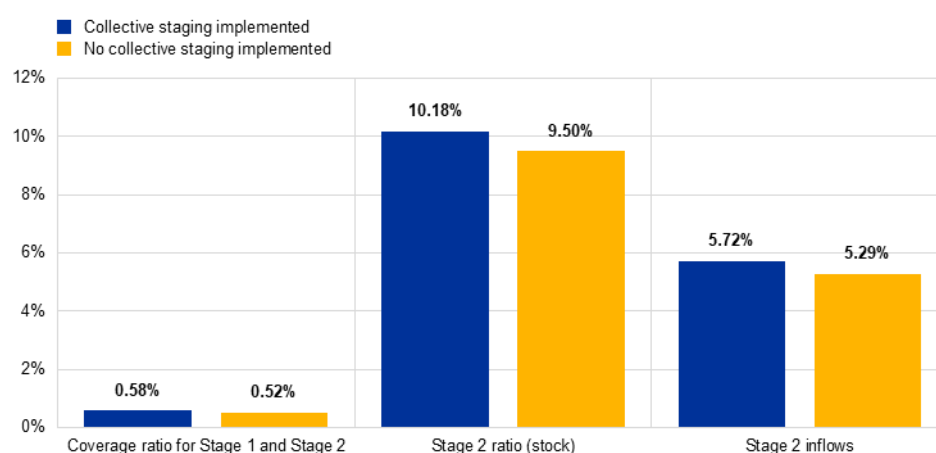
Chart 9

Weak practices correlate to lower coverage of risks

a) Coverage of risk compared with connection of in-model adjustments/overlays to IFRS 9 staging assessment

(percentage)

■ Connection or partial connection
■ No connection
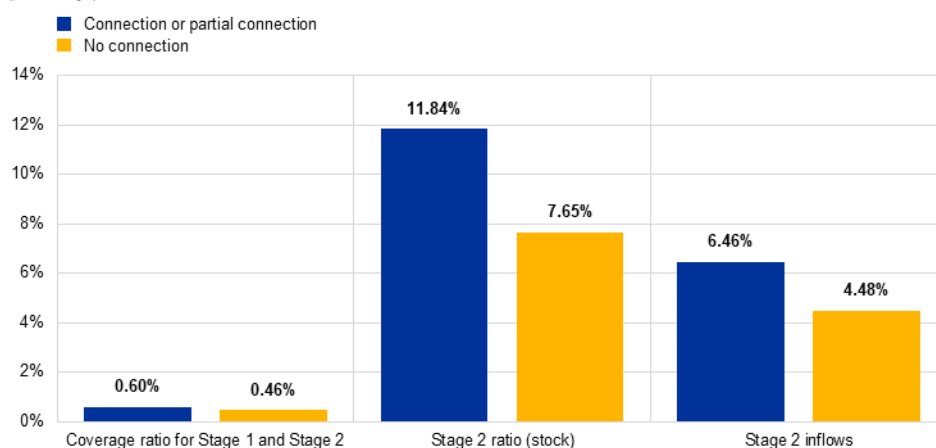
b) Coverage of risks compared with the implementation of the IFRS 9 collective staging assessment

■ Collective staging implemented
■ No collective staging implemented

Sources: ECB calculations based on data collected in the two IFRS 9 questionnaires (November 2022 and November 2023) and supervisory reporting (FINREP).
Notes: Based on a sample of 51 banks. Data shown are for F18.00 r0070 ("Loans and advances at cost or at amortised cost") and F12.02 r0070 ("Loans and advances at cost or at amortised cost"). The reference date is 31 December 2023. The three metrics shown are calculated as: **(i) the coverage ratio**: the ratio of accumulated impairment recognised for Stage 1 and Stage 2 exposures (F18.00 and IFRS 9 questionnaires) to the carrying amount of Stage 1 and Stage 2 exposures (F18.00); **(ii) Stage 2 ratio (stock)**: the Stage 2 ratio at the end of the period (F18.00); and **(iii) Stage 2 inflows**: the ratio of stage transfers from Stage 1 to Stage 2 during the period (F12.02) to the carrying amount of Stage 1 exposures (F18.00).

This is why robust provisioning methodologies are key, but also an adequate governance framework. Internal supervisory scores showed banks improved on governance and control processes for novel risks and overlays, but even so, only 30 banks were classified as satisfactory. The others have room for improvement and will see some follow-up supervisory actions.

65% of banks have a process in place for identifying novel risks with adequate frequency and deciding if and which overlays to record. However, 44% of banks did not describe a clear allocation of tasks, including escalation procedures, and reported no or limited involvement of finance and business units in the process. This left a predominant role and the initiative to the risk unit(s), with little review and few

checks in place. The risk is one of overreliance on statistical models and limited vision surrounding those risks that can be modelled with historical data. Accountants, on the other hand, have dealt with risks that cannot be modelled statistically for centuries, and IFRS contain sufficient binding rules and abundant practical guidance to achieve adequate provision coverage. This framework should therefore be reflected by clear responsibilities and the involvement of the financial reporting functions.

6　Conclusions and next steps

The review, and in particular the repeated review after banks received specific recommendations for improvement, revealed clear progress in banks' identification of novel risks. Only a small number of banks still ignore these risks in their provisioning process. The progress is particularly evident in the area of C&E risks, where the number of banks provisioning for those risks has increased from 16% to 55%.

Most banks are unable to capture novel risks in a fully functional and validated statistical model due to insufficient data. This problem is likely to persist for the foreseeable future. Under these circumstances, an overlay is the best solution to capture novel risks. This overlay should be based on sound methodologies, like simulations and scenario analysis. Trying to include novel risks in statistical models with insufficient data is inferior to overlays because it sacrifices model quality. Ignoring novel risks altogether is the least acceptable practice as this systematically underestimates future loan losses.

When it comes to quantification and accounting implementation, banks still have a long way to go. Bad practices, such as considering novel risks only via their aggregate impact on future GDP, are widespread and tend to underestimate the true impact of novel risks on expected losses. In addition, far too many banks ignore the impact of novel risks on staging, which even contradicts the accounting requirements. Moreover, bad practices like the use of overlays on the total ECL level (instead of the parameter level) and responsibility and empowerment shortcomings in financial reporting functions create vulnerabilities. Evidence indicates banks with bad practices have, on average, lower provision coverage.

While progress is evident, some supervised banks are still far from considering all reasonable and supportable information, including that which is forward-looking, as required by IFRS 9. In any case, there is no level playing field in the industry. The ECB will thus continue to follow up with the laggards with appropriate supervisory measures, which may include requiring banks to apply a specific provisioning policy.[15]

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[15] Article 16 of Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions.