

Capturing  
emerging and  
novel risks in  
credit provisioning

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# Introduction

In a rapidly changing world, financial institutions face growing challenges in assessing and provisioning for credit losses. Given the increasingly volatile macroeconomic environment, institutions need to recognize that model-driven estimates alone are insufficient to accurately reflect emerging and novel risks in credit provisions. Under these conditions, a robust assessment of the allowance requires the use of model risk mitigation techniques to arrive at an adequate estimate consistent with the objectives of the accounting framework.

The adoption of International Financial Reporting Standard 9 (IFRS 9) introduced a forward-looking approach to credit loss provisioning, requiring the consideration of historical performance as well as current and future conditions that could impact credit losses. Financial institutions are encouraged to support IFRS 9 allowance estimates with data-driven and model-based approaches that are designed to estimate losses under multiple forecasted economic scenarios. IFRS 9 models are developed using historical data and often show satisfactory performance when predicting credit losses during periods with macroeconomic conditions comparable to the development data.

As many financial institutions observed during the COVID pandemic, IFRS 9 models have limitations that might affect the reliability of their outputs in periods of economic volatility and when addressing novel or emerging risks. Historical data is the primary input for credit risk models. The quality, quantity, and relevance of such data influence the model's ability to identify relationships between variables, make predictions and adapt to new situations. When macroeconomic and business conditions deviate from historical experience, model development data may no longer be representative of future performance. As a result, financial institutions need to employ model risk mitigation techniques to ensure that their provisioning frameworks remain robust and responsive to such emerging risks.

Different practices exist within the industry to capture risk factors not adequately considered in the modelling process. This document aims to outline leading practices for employing model risk mitigants, such as in-model adjustments and post-model adjustments. These techniques can modify IFRS 9 models or model outputs to better account for emerging and novel risks. They provide a basic toolset that can help financial institutions better manage IFRS 9 model risks and provision for credit losses during difficult periods.

## The importance of capturing emerging risks

Emerging or novel risks, such as trade wars, supply chain disruptions, inflationary pressures, pandemics, environmental changes and geopolitical instability, pose significant challenges to traditional IFRS 9 credit risk models. These risks are often not adequately reflected in historical data, making it difficult for institutions to rely solely on model outputs to reflect reasonable estimates of expected credit losses. Credit losses may be underestimated or overestimated in such circumstances.

Model limitations often arise primarily from the model's dependence on historical data. Model outputs may not fully capture the effects of emerging risks without further consideration of conditions different from those in the development data. It is essential for financial institutions to address these model limitations for several reasons:

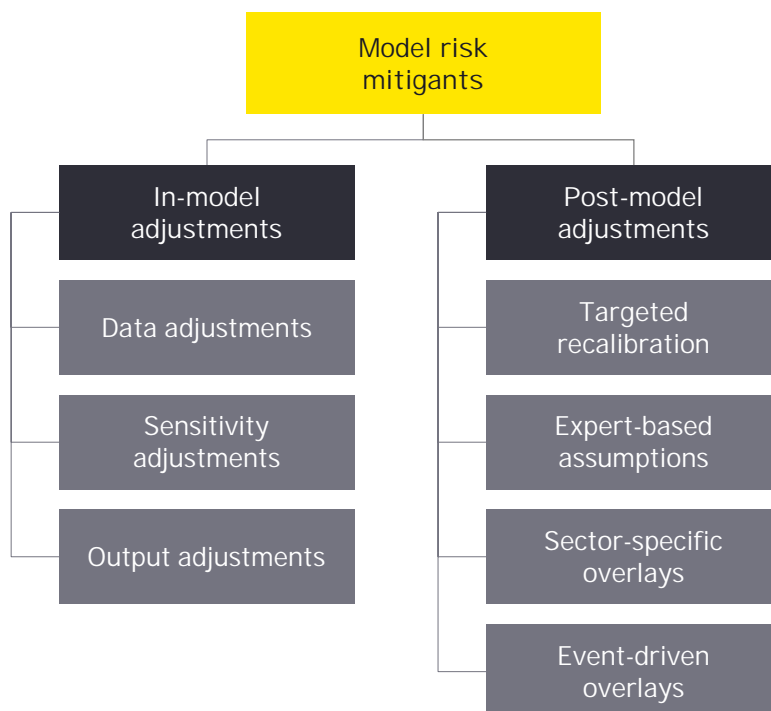
- **Enhanced predictive accuracy:** By considering the impact of emerging risks on model outputs, financial institutions can improve the predictive accuracy of their credit loss models, leading to more reliable provisioning estimates.
- **Regulatory compliance:** Regulators and external auditors increasingly expect financial institutions to demonstrate that their provisioning frameworks account for all relevant risks, including those that are novel or not captured adequately by historical data.
- **Risk management:** Understanding and quantifying emerging and novel risks allows institutions to make informed decisions beyond credit provisioning, including setting appropriate capital aside and mitigating potential losses through credit risk management techniques.
- **Stakeholder confidence:** Transparent and robust provisioning practices that account for emerging risks can enhance confidence of stakeholders, including investors, auditors, regulators and customers.

## Leveraging the model risk management toolkit

To address emerging and novel risks in credit provisions, financial institutions can draw on a range of model risk mitigation techniques. Traditionally employed to resolve model performance issues and incorporate conservatism into regulatory models, these techniques can also enhance the robustness and reliability of IFRS 9 models under unprecedented conditions. The toolkit features in-model adjustments and post-model adjustments such as management overlays. Collectively, these techniques can help maintain a robust and adaptive provisioning framework in a changing risk environment.

## Types of model modifications

There are two main types of model modifications that financial institutions can leverage to capture emerging and novel risks: In-model adjustments and post-model adjustments.



## In-model adjustments

In-model adjustments are modifications made to the credit risk model itself to enhance its predictive accuracy, align it with regulatory requirements, meet accounting standards or specifically address known model limitations and uncertainties. Importantly, the adjustments are made as part of the modelling process and are subject to independent review. This approach leverages expert judgement, modifying any part of a model (input, processing, output) to address an identified limitation and render the model more appropriate for its intended use. In the context of IFRS 9, models developed using solely an institution's own data can have severe limitations which render them less reliable outside of historically observed conditions. Leading institutions are employing various techniques to develop appropriate in-model adjustments that enhance robustness and improve reliability of IFRS 9 models under atypical macroeconomic or business conditions. These methods include:

- **Data adjustments:** Adding synthetic or external data to the development dataset to increase the diversity of macroeconomic conditions used to fit the model.
- **Sensitivity adjustments:** Adjusting the model coefficients or key assumptions to increase sensitivity to macroeconomic factors.
- **Output adjustments:** Adjusting the model output to better calibrate outputs with expectations based on stress testing, scenario analysis, sensitivity analysis or expert judgement.

Financial institutions should clearly link model adjustments to identified limitations. Transparency as to how expert judgment is used for inputs, assumptions, or methodology changes is essential. Each adjustment should be justified, documented and communicated to stakeholders, especially when it affects related models. Additionally, financial institutions should regularly revisit the need and calculation method for adjustments to ensure they remain appropriate.

## Post-model adjustments

Post-model adjustments (PMAs) refer to modifications made to the model outputs after initial results are generated. Unlike in-model adjustments, PMAs address limitations and capture risks or uncertainties not accounted for during model development. They can also be used to address model performance issues on a temporary basis while models are undergoing recalibration or redevelopment. PMAs may include model overlays, management overlays, or any other adjustments that enhance the accuracy of initial estimates. For credit provisioning purposes, PMAs are used by financial institutions to modify either the outputs of IFRS 9 component models (probability of default, loss given default, exposure at default) or the overall ECL estimate. Adjustments are ideally evidence-based and constructed using various combinations of expert judgement, scenario analysis, alternative models or data analysis.



Financial institutions currently employ several types of post-model adjustments for IFRS 9 purposes. One common approach is targeted recalibration, where model outputs are adjusted for specific groups of facilities to reflect recent performance trends or to account for risk factors inadequately captured by the model. Additionally, expert-judgement based assumptions play a crucial role, as they leverage qualitative insights into emerging risks to modify outputs. Institutions may also apply sector-specific overlays, identifying sectors or borrower groups that are especially vulnerable to emerging risks, such as geopolitical tensions or supply chain disruptions. Furthermore, event-driven overlays are implemented in response to specific occurrences like natural disasters or economic shocks that go undetected by models but may have a significant impact on creditworthiness. PMAs must be auditable and sufficiently supported. The table below presents some of the leading practices observed when applying PMAs to reflect novel and emerging risks.

## Leading practices for applying post-model adjustments

Avoid general overlays	Refrain from using broad or general overlays that lack specificity. Instead, focus on targeted adjustments that directly address identified model limitations or specific risks.
Apply overlays to IFRS 9 parameter outputs	Implement PMAs directly to the IFRS 9 parameter outputs rather than the final expected credit loss (ECL) outputs. This ensures that staging impacts are properly accounted for.
Engage in root cause analysis	Conduct thorough root cause analyses to understand the underlying limitations of models that necessitate PMAs. This can help identify areas for model improvement and reduce reliance on adjustments over time.
Support significant PMAs with robust risk quantification approaches	For significant PMAs, utilize appropriate risk quantification methods, including bottom-up analysis, scenario analysis, simulations, stress testing, alternative models, or alternative datasets alongside expert judgement.
Establish a clear governance framework	Develop a robust governance structure that outlines roles, responsibilities and oversight mechanisms for the application of PMAs. This should include involvement of senior management and relevant committees.
Document supporting rationale	Maintain comprehensive documentation that clearly justifies the need for each PMA. This should include the specific model limitations being addressed, the methodology used for the adjustment and the expected impact on credit loss estimates.
Implement a consistent process	Ensure there is a consistent, firm-wide process for applying PMAs across different models and portfolios. This helps maintain uniformity and transparency in how adjustments are made.
Conduct independent reviews	Subject PMAs to independent review to assess their relevance, appropriateness and effectiveness. This review should evaluate the underlying assumptions, data integrity and the plausibility of the outputs.
Monitor and reassess regularly	Continuously monitor the effectiveness of PMAs and reassess their relevance in light of changing market conditions, emerging risks or model improvements. This includes setting triggers for when PMAs should be reduced or removed.
Ensure transparency in reporting	Present model results to stakeholders both with and without PMAs, providing clarity on the impact of adjustments on credit loss estimates. This transparency is crucial for informed decision-making.
Integrate PMAs into model monitoring and model validation	Incorporate PMAs into the model monitoring and model validation processes to ensure that adjustments are considered as part of the overall assessment of model performance and effectiveness.
Integrate PMAs into future model development	Incorporate feedback from the use of PMAs into future model development exercises to explore techniques to directly address model limitations as well as emerging and novel risks.

## Model overrides

In some extreme cases, applying PMAs may not be an option if the model has severe performance issues or is unsuitable for current conditions. Overriding the production model may be necessary in these cases. Model overrides involve replacing model outputs with management judgment or the results of alternative models. Model overrides should be rare and generally, post-model adjustments, which are more specific and targeted, are preferred to capture emerging and novel risks.

### Leading practices for overriding model outputs

Limit the use of overrides	Use model overrides sparingly and only when absolutely necessary. Frequent overrides of model outputs indicate larger issues with model risk management across the model lifecycle.
Establish clear criteria for overrides	Define specific criteria and circumstances under which model overrides may be justified. This should include instances where model outputs do not align with observed market conditions, emerging risks or significant changes in the economic environment and therefore cannot be modified appropriately using post-model adjustments.
Document supporting rationale for overrides	Maintain comprehensive documentation that clearly explains the reasons for each model override. This should include the specific limitations of the model being addressed, the methodology used for the override and the expected impact on credit loss estimates.
Utilize data and quantitative analysis	Support model overrides with robust data analysis and quantitative approaches. This may include scenario analysis, stress testing or the use of alternative models to support the need for the override.
Conduct independent reviews	Subject model overrides to independent review to assess their appropriateness and effectiveness.
Overrides should be temporary	Model overrides should only be a temporary solution while the financial institution addresses issues with model performance or model design.
Plan for recalibration or redevelopment	Develop a clear plan for transitioning from overrides to model recalibration or redevelopment, ensuring that adjustments are temporary and based on sound reasoning.

## Governance considerations

Effective governance is essential for implementing model risk mitigants for novel and emerging risks. Financial institutions should build robust governance frameworks with key components.

First, establish dedicated *oversight committees* to manage model risk, including adjustments and overlays.

Secondly, implement *independent review* processes to evaluate the appropriateness and effectiveness of such adjustments, verifying they address risk factors that have not been adequately considered in the IFRS 9 model and that they do not create any additional bias.

Clear *documentation standards* are necessary, detailing the rationale, methodologies, and data sources for each adjustment. Regular reporting to senior management and the board keeps them informed about adjustments, provisioning impacts and the evolution of emerging risks.

Lastly, foster a *culture of risk awareness* by training staff involved in model development and validation. This ensures they understand the importance of addressing emerging risks within IFRS 9 models and why purely statistical approaches may be insufficient to meet the requirements of the standard.



# Conclusion

In conclusion, identifying and incorporating emerging and novel risks in credit loss provisioning is essential for financial institutions complying with IFRS 9. The strategic use of model risk mitigants, including in-model adjustments and post-model adjustments, can significantly enhance provisioning frameworks and assist in navigating periods of uncertainty. These techniques allow financial institutions to effectively manage IFRS 9 models during turbulent times, thereby maintaining stakeholder confidence in their provisioning practices.

## Key takeaways for financial institutions

- Recognize the importance of integrating emerging risks into credit loss provisioning to improve the accuracy of IFRS 9 allowance estimates.
- Identify relevant limitations that may exist in IFRS 9 models and understand how well they reflect emerging and novel risks.
- Allow for the use of various types of model risk mitigants, ensuring each type is applied effectively and in accordance with best practices.
- Establish robust governance structures to oversee the use of model adjustments and other model risk mitigants, ensuring transparency and accountability.
- Include in-model and post-model adjustments in independent model review and ongoing model monitoring processes.

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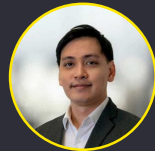


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