



Forward-Looking Information (FLI) Framework

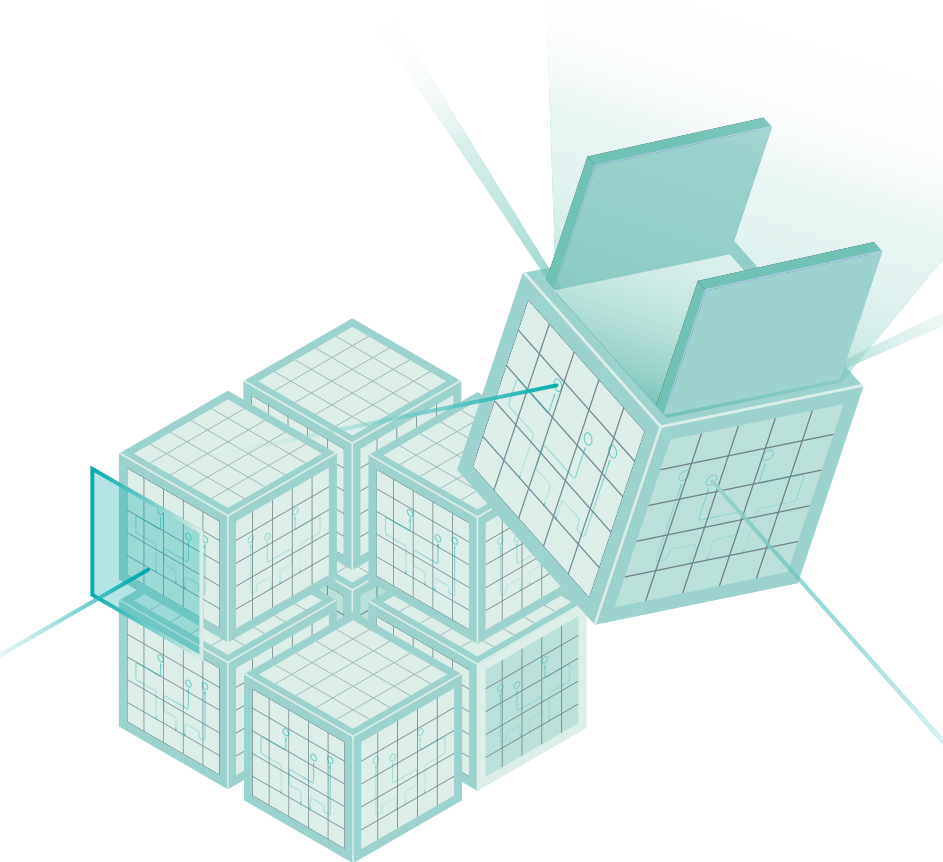
Key considerations for incorporating Forward-Looking Information (FLI) and credit overlay adjustments in an IFRS 9 ECL model using a hybrid approach





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Introduction





Background on the macro-economic environment

The COVID-19 pandemic affected financial markets, and virtually all industries face challenges associated with the economic conditions resulting from efforts to address it. As the pandemic increased in magnitude and duration, entities experienced conditions often associated with a general economic downturn. This included, but was not limited to, financial market volatility and erosion, deteriorating credit, liquidity concerns, further increases in government intervention, increasing unemployment/layoffs, broad declines in consumer discretionary spending, increasing inventory levels, reductions in production because of decreased demand, supply chain derangements, and other restructuring activities.

Since the first lockdowns, economies have become more resilient to COVID-19 disruptions, while an improvement in the global growth outlook continued to benefit export sectors. Governments' support to their economies to lift activity and employment and global vaccine rollouts have limited the extent to which the economy could have been affected. That said, new variants and seasonal waves of COVID-19 infections have weighed on but are not expected to derail economic activity. Some industries and regions should continue to outperform others based on their resilience.



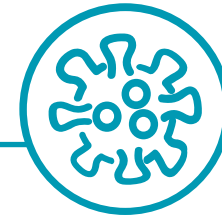
One of the main reasons IFRS 9 Financial Instruments (IFRS 9) was published was to allow for the timely recognition of loan losses by requiring a forward-looking loss estimate while also reflecting the non-linear nature of credit losses. This required users to recognise expected credit losses (ECL) based on how their forward-looking view would be affected by the pandemic over and above the persistent non-pandemic-related exogenous effects.



The accounting for ECL by banks is particularly challenging given that it is designed to incorporate estimations of credit events and their consequential cash shortfalls based on a probability-weighted approach. Having been comparatively stable since adopting IFRS 9 in January 2018, many economic outlooks have changed fundamentally since the end of 2019, and banks have been reworking their scenarios and probability weightings accordingly. Historical relationships may not reflect the current and future economic environment, where movements in certain factors result in counterintuitive adjustments to credit parameters and movements in the ECL. For example, a single-factor model based on the Prime lending rate predicted a decrease in default risk despite the increase in the lending rate and a consequence of the turmoil during the pandemic restrictions.



Including multiple economic scenarios in an ECL model is particularly important during heightened uncertainty, given the potentially increased non-linearity of credit losses. Forward-looking information (FLI) should be designed to be as specific to a borrower's economic circumstances as is practicable.



The economic impacts of COVID-19 are unevenly distributed. For example, corporate borrowers in different industries and sectors were impacted differently, depending on geography, employment status and other credit commitments. This may require evaluating portfolios on a more segmented basis to achieve homogeneity. Where quantitative and qualitative modelling falls short, the need for post-model adjustments (PMA) increases, e.g., overlays, underlays, and overrides. Globally, banks' internal group economics units are expanding their forecasts with additional relevant factors and incorporating additional scenarios. Factors crucial to their strategies, including those beyond the pandemic, such as climate risk (both transitional and physical), are included.



Hybrid approach





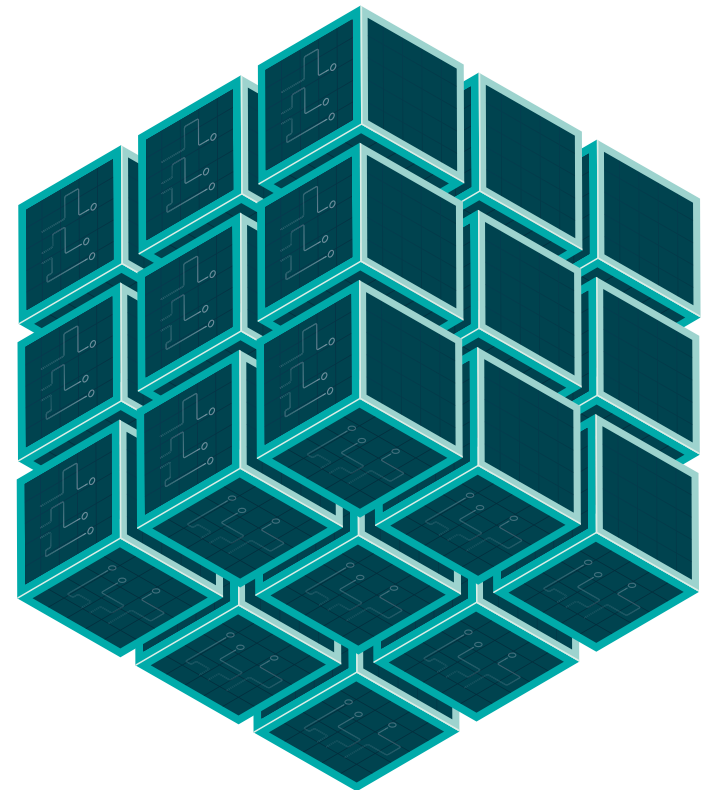
Hybrid approach

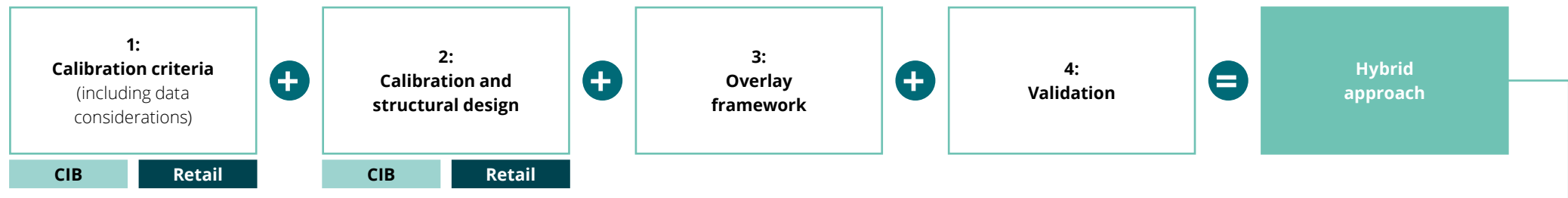
A robust manner of incorporating FLI in an ECL model, especially during times of economic stress, is a future-proof hybrid approach that consists of in-model components with macroeconomic forward-looking adjustments to the credit risk parameters, e.g., PD, EAD, LGD, and SICR, supplemented by PMAs by credit risk specialists that reflect event risk, emerging risks, model error, bias and volatility amongst other forward-looking information not catered for by the model.

IFRS 9 requires that historical, current, and forward-looking information be used in estimating ECL. Macroeconomic linkage models, e.g., quantitative or expert-based, aim to include all this information. However, these models rely on historical relationships and are limited regarding the level of granularity, e.g., industry, subindustry, and jurisdiction, they can cater for. The level of granularity and segmentation of the overlay calculation should depend on the materiality thereof. Based on recent experience, forward-looking overlays have been material and, as a result, included industry and jurisdiction segmentation within Corporate Investment Banking (CIB), plus industry, unemployment, and income-level and income-change segmentation within Retail and Retail SME (incl. business banking). Regardless of the approach chosen, it must meet the technical requirements of IFRS 9, supported by regulatory guidance and industry

practice. Material overlay adjustments should be allocated to the respective segment or portfolio to which they apply to ensure comparability.

The approach aims to be future-proof and address emerging risks, e.g., climate risk and divergences between sectors, not seen in data. The hybrid approach is based on four building blocks and is explained on the following pages. While generalised, the proposed four building blocks provide a robust framework for incorporating FLI into ECL estimation. They can meet the goals of increasing model accuracy, capturing and catering for uncertainty and not breaching model risk appetite thresholds. The hybrid approach provides a solution that does not constrain the natural evolution of models and overlays.





For a macroeconomic linkage model, the approach includes:

- Testing whether to include (quantitatively or qualitatively) a macroeconomic relationship for one or more credit risk parameters, e.g., PD, EAD, LGD, SICR, or more granular components of such assumptions.
- Decide on the level of sophistication of the modelling approach, i.e., high to low, based on several criteria, including whether to adopt a “top-down” or “bottom-up” approach.
- Including COVID-19-affected performance data in the calibration of FLI models if the necessary transformations (to macroeconomic and performance data) to extract relationships have not been affected. Alternatively, excluding this data provided sufficient evidence and arguments are supplied.
- Assessing the impact of, for example, the quality, volatility, variable breadth, and appropriateness of the number of macroeconomic scenarios and their associated weights on the linkage model.
- Consuming the appropriate number of macroeconomic scenarios and their associated weights to capture non-linear credit losses.
- Producing a range of ECL estimates based on the range of macroeconomic scenarios combined into an ECL estimate at every relevant future period.
- Calculating 12-month and lifetime ECL using a discounted expected loss approach.
- Ensuring that accurate stage allocation is performed.

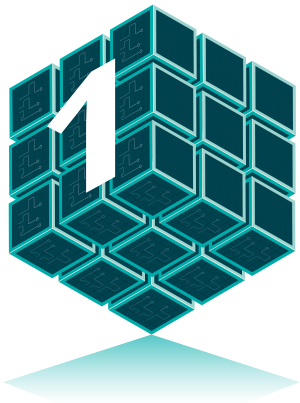
For a credit overlay adjustment, a credit overlay framework will be incorporated to cater for:

- Adjusting for events after the reporting period, e.g., late risk.
- Events manifesting between the approval of the macroeconomic forecasts and the reporting date, e.g., late risk.
- Cases where the calibration data does not include recent relevant data, e.g., late risk.
- Events where the macroeconomic forecasts “breach the bounds” of the modelling methodology:
 - Rare events:** Low frequency and high quantum risks, e.g., the COVID-19 pandemic, climate risk, political unrest, hyperinflation, and Brexit.
 - Less-rare events:** E.g., political instability, elections, load shedding, drought, and a sovereign downgrade.
- Shortcomings in the data that cannot yet cater for specific future events.
- Policy effects (incl. internal policies such as a change in the write-off point) that cannot or have not been captured by the model, e.g., masked arrears, emerging risk, and forced restructures.
- Response modelling error: Undue uncertainty relating to the accuracy of the quantitative model (“model break”).
- Macroeconomic forecasting model error: Undue uncertainty relating to the accuracy of the macroeconomic forecasts and associated weights.
- Shortcomings in the data, implementation platform, technology, ECL calculation process, and the specialists’ experience and skillset.



Building blocks





Building block 1 | Calibration criteria

Considering how the data, assumptions, limitations, and benchmarks may impact the model design by comparing each portfolio (or customer/account if more relevant) to a set of calibration criteria that can be measured to the extent to which a FLI framework with higher or lower levels of sophistication is appropriate and available. The level of sophistication required is driven by the demands on (i) accuracy or acceptable uncertainty, (ii) robustness, (iii) performance or pace, and (iv) cost.

Criterion 1 – Materiality (Low to High)

Not all portfolios (or customers/accounts) are equally material. For example, while a specific portfolio may be material at a local entity level and, therefore, demanding a more sophisticated treatment, it may be less material or even immaterial at a group consolidated level, resulting in a less sophisticated treatment. Model materiality would be measured per the bank's model risk management framework.

Criterion 2 – Data quality (Impaired to High)

Performance data – completeness, accuracy, depth, and breadth

Data fields may be well populated or not, depending on the maturity of the bank. Moving back in time, missing information often becomes more prominent. Data quality varies from field to field and across time, and benchmarks or trustworthy sources may not exist for many fields. For most banks, data management standards have changed over time, which is exacerbated over more extended periods. This long-period data is often required for robust macroeconomic response modelling (whether quantitative or expert-based). Data definitions also change over time, further complicating the establishment of homogenous data pools, i.e., representativeness.

Model sophistication and accuracy will be constrained by the availability of drivers (e.g., maturity, vintage, industry, product, jurisdiction, loan size, strategy, risk appetite, payment holidays, client behaviour, internal scorecards, external scorecards, bureaus, collateral valuations, expert input) and alternative data sources, e.g., transactional data, plus uniformity of data across multiple source systems and jurisdictions.

Macroeconomic data – completeness, accuracy, depth, and breadth

Macroeconomic data fields may not be well populated, and missing information often becomes more common. Developing and emerging markets are most severely impacted by this. Data quality varies from field to field, and data management (e.g., recording, aggregation, and maintenance) has changed over time. This is exacerbated

over extended periods and is impacted by local and global shocks such as pandemics, war, elections, political unrest, etc. Data definitions have and will continue to change over time, and new types of data are collected as economies' data management practices advance (say, climate risk-related information, property revaluation, auto emissions, and changes to transport). Global data may hold little relevance to specific portfolios or customers, while regional and provincial data may not be captured or be of adequate quality. The scope of available economic variables may be too narrow to support identifying key and robust macroeconomic relationships. For example, mining indicators may indicate improvement, but local or global GDP and inflation indicate the opposite.



Criterion 3 – Platform, Resources, and Processes (Basic to Advanced)

Where resources such as systems, software or skills are scarce, and an understanding of the modelling methodologies is limited, model sophistication may be constrained. Processes, subject matter experts, and platform/software are generally unequally distributed across jurisdictions and portfolios.

Criterion 4 – Portfolio characteristics (Favorable to Unfavorable)

Data volume (Scarce to Abundant): To produce and validate statistically robust estimates of relationships between performance data and macroeconomic data, sufficient data is required, i.e., relevant and acceptable quality. In industry, it is common for Retail and Retail SME portfolios to be data-rich, allowing for varieties of pooled data modelling techniques and CIB portfolios to be data-poor, lending itself more to expert-judgement approaches at granular (even counterparty) level. Generally, a bank may deviate from these norms, but industry-prevalent data-related concerns or themes should be investigated.

Number of accounts or customers

CIB: High-value, low-volume deals. Typically, there is low credit risk with low defaults under stress, but risk migration, i.e., SICR, is substantial.

Banks: Low or even no default business. Typically, very low volumes. Domestic Systemically Important Banks (D-SIBs) are pro-cyclical.

Significant single-name exposures and

Sovereigns: Low or no default business. Typically, it is very low volume. Sovereigns have no explicit dependency on macroeconomics and tend to be pro-cyclical. Large single exposures' relationships to the macro-economy may be complex and distinctive.

Consolidation: As companies combine data within or across industries, data volumes become scarcer, and the relationships with macroeconomics become more complex.

New business

Expansion into new customer segments, industries or jurisdictions means access to little or no relevant data (unless external data can be purchased, alternative data sources become available, or proxy business can be identified).

Data period/length

Acquisitions: Acquisition of exposures without supporting history or with supporting history but not relevant to a bank's operations and policies.

New business: There are little to no periods of economic change to measure potential relationships.

Data frequency (performance and macro-economic): Information may not be updated frequently (e.g., only yearly), resulting in lagged risk identification and risk muting (mainly seasonal effects).

Nature of portfolio

Considerations include the following: secured vs unsecured, loan size, maximum loan term, payment method, e.g., EFT vs salary deduction vs debit order.

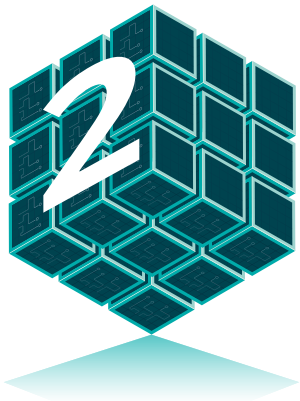
Special cases

Some portfolios do not yield any macroeconomic relationships or correlations, even with favourable portfolio characteristics.

Criterion 5 – Industry best practice (Diverging to Converging)

Both locally and globally, the banking industry has not converged on FLI modelling methodologies and the treatment of FLI-related overlays. However, the above themes are present at most banks. Hybrid approaches (use of models plus overlays) have become more prominent since the origination of COVID-19 and, in many cases, prompting lower sophistication modelling approaches with the balance of effort going into developing overlays.

Consensus has also not been reached concerning when these potentially significant overlays will be released (or moved within the model), but there is general agreement that they should not persist indefinitely. Generally, Retail and Retail SME portfolios continue to attract sophisticated modelling, primarily due to data abundance, while CIB portfolios attract less sophisticated modelling due to data scarcity.



Building block 2 | Calibration and structural design

Each portfolio is measured against the five calibration criteria, so they are effectively scored to assess their eligibility for different modelling approaches, ranging from sophisticated to less sophisticated. We first start with an example and then generalise the approach.

Example

Consider two fictitious portfolios at the opposite ends of a scale of sophistication. Suppose portfolio 1 falls in the best possible scenario and scores high on all criteria. This portfolio is eligible for a highly sophisticated modelling methodology. Data-rich Retail and Retail SME portfolios in South Africa typically have such a profile. Suppose portfolio 2 falls in the worst possible scenario, scoring low on all criteria. The modelling methodologies available will be limited to a low level of sophistication.

Many CIB, developing market and emerging market portfolios match the second profile. While the criteria provide a guide, there are idiosyncrasies specific to different banks, e.g., processes, culture, and strategy, to consider and exceptions to the guidance. For example, a portfolio eligible for a sophisticated modelling methodology can be modelled using less sophisticated approaches, which may lead to a loss of accuracy, performance, information, or agility.

While a sophisticated approach may yield better accuracy, it requires in-depth knowledge of the underlying theory and may be costly and time-consuming to maintain and refine. On the other hand, a less sophisticated approach that requires less theoretical underpinning can typically be easily updated or refined and requires less time. However, while a less sophisticated approach may make less of these demands, it still requires accurate model parameters typically obtained from credit risk experts with in-depth knowledge of the portfolio considered.

Regardless of the level of sophistication of the modelling methodology, there are various options to incorporate FLI into an ECL model that utilises PD, EAD and LGD estimates. Since banks can often leverage off existing counterparty-risk rating models, e.g., regulatory capital feeder models, it is essential to highlight the cross-dependencies some modelling options create for the FLI linkage and feeder models. Secondary effects like the impact on staging should be considered, whichever option is taken.



Generalisation: The diagram displays, from right to left, the following: (i) the Macroeconomic factors (incl. lags and leads), (ii) the Drivers, e.g., collateral, time to recovery, credit scores, expert input, etc., of an existing parameter, e.g., regulatory PD, EAD, LGD, (iii) supplementary drivers, (iv) the Existing parameter, and (v) the IFRS 9 parameter. The approaches may range from sophisticated, e.g., regression, Vasicek extension, Markov chains, GARCH, severity-threshold modelling, or machine learning, to less sophisticated, e.g., country risk framework or expert-driven simulation.

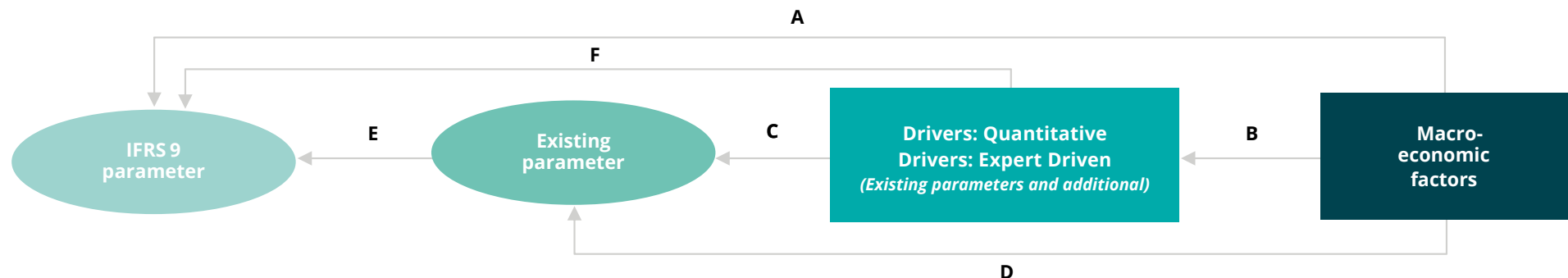
Option 1: Model the IFRS 9 parameter directly as a function of the Macroeconomic factors ("depicted via path A"). A clear benefit of this approach is no inheritance of feeder-driver or feeder-parameter concerns.

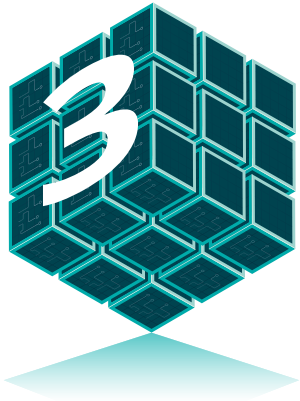
Option 2: Model the Drivers of the existing parameter in terms of the Macroeconomic factors ("B"). This, in turn, adjusts the Existing parameter ("C") for use as an IFRS 9 parameter with or without further adjustment ("E"). Hence, the IFRS 9 parameter is indirectly a function of the Macroeconomic factors. Understanding of the existing relationships can be relied on, i.e., reduced effort, but there may be limitations to the degree of adjustments that can be made before invalidating said relationships.

Option 3: Model the Existing parameter as a function of the Macroeconomic factors ("D"). Use the adjusted Existing parameter as an IFRS 9 parameter with or without further adjustment ("E"). Again, the IFRS 9 parameter is indirectly a function of the macroeconomic factors. The risks and benefits are like that of Option 2, but the effort is reduced due to less granular modelling. However, this also reduces agility because it does not influence the parameter on Driver level.

Option 4: Model the Drivers of the existing parameter and supplementary drivers as functions of the Macroeconomic factors ("B"). Then, model the IFRS 9 parameter as a function of the Drivers ("F"). Again, the IFRS 9 parameter is indirectly a function of the Macroeconomic factors. This approach provides excellent agility by affecting at a Drivers level and using supplementary drivers beyond those used in modelling the Existing parameter. However, the effort associated with this option is likely to be very high.

Option 5: Infer a relationship between the IFRS 9 parameter and the Macroeconomic factors ("A"). This relationship will be based on input from credit risk and subject matter experts, and the effort will depend on the complexity of the product, industry, and counterparty. For example, if a macroeconomic factor, e.g., oil price, changes by X%, the IFRS 9 parameter will change by Y%. This approach yields a set of conditions that must be solved, which may be pool-level-specific or counterparty-specific. The option provides a suitable FLI model without sufficient relevant data (or data of adequate quality). Still, appropriate justification (likely via credit committees) is required to support the resultant conditions. The approach can be varied by inferring the relationship between the Drivers and the Macroeconomic factors ("B"), which, in turn, adjust the Existing parameter ("C") for use as an IFRS 9 parameter ("E"). This approach risks not being sufficiently reactive to macroeconomic outlook changes, given its judgmental nature.





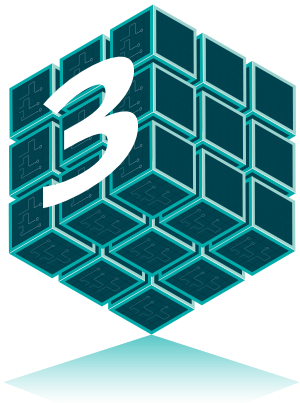
Building block 3 | Overlay framework

Once a calibration has been performed, residual uncertainty will remain (refer to the credit overlay framework). Options on how to approach mitigating these risks by way of overlay adjustments are set out in the table below. One or many may apply at a given time, and its application may be a group, industry, product, or counterparty level (or other cross-sections, if applicable).

Description	Pros	Cons
Stress the parameters, i.e., PD, EAD, LGD, by X%, Y% and Z%	<ul style="list-style-type: none"> • SICR reacts immediately • Allows for parameter specific adjustments 	<ul style="list-style-type: none"> • Complex and time consuming
Add some (stress) scenarios	<ul style="list-style-type: none"> • Leaves existing scenarios intact and unchanged • SICR reacts immediately 	<ul style="list-style-type: none"> • Brings into question the existing scenarios • Risks increasing the overlap between scenarios
Stress severity of the scenarios	<ul style="list-style-type: none"> • Limited to no adjustment to the ECL calculator • SICR reacts immediately 	<ul style="list-style-type: none"> • Leaves none (or only some) of the existing scenarios intact and unchanged • Brings into question the existing scenarios • Risks increasing the overlap between scenarios
Stress scenario weights	<ul style="list-style-type: none"> • Leaves existing scenarios intact and unchanged • SICR reacts immediately 	<ul style="list-style-type: none"> • Brings into question the existing weights • Risks increasing the overlap between scenarios
Out-of-model calculation	<ul style="list-style-type: none"> • Leaves existing scenarios and weights intact and unchanged 	<ul style="list-style-type: none"> • Risk of double counting • Interaction with other overlays is challenging to establish • Backtesting efforts and efficacy are dependent on the calculation structure • SICR does not react immediately

Notes to the above table:

01. In many cases, the quantification of the overlays occurs outside of the base model, and as a result, SICR is not automatically included or part of the overlay.
02. The granularity of the overlays, like the granularity of the calibration, is influenced by many factors. For example, overlays may be quantified at a portfolio level or for a particular segment; in some cases, the quantification occurs at a client level or exposure level (especially for large exposures).
03. Different clients use different methods for quantifying the overlays. This presentation provides an overlay framework, and considerations/factors influencing the choice of a suitable methodology (for quantifying a specific overlay) will be covered elsewhere.



Building block 3 | Overlay framework

Regardless of the overlay approach being followed, the following needs to be considered in concluding the overlay adjustment:

Double counting

The risk of double counting, i.e., having two components of the ECL model and overlays catering for the same forward-looking risk event, cannot be eliminated, e.g., the risk of South Africa being downgraded is linked to the country's ability to produce electricity, which in turn influences the macroeconomic factors.

Uncorrelated factors can minimise double counting, but this approach is often impractical. A measure of the extent of overlap between risk mitigations is required, and a balance should be maintained between double-counting and highly correlated factors.

Governance

Whilst overlays cannot be subjected to the same depth of validation as models, validation plays a more significant role than before (as is expected) when overlays comprise a material percentage of total ECL. An essential requirement is that any solution be subject to check and challenge to ensure key risks are identified and relevant controls are put in place. Responsibility and accountability must be assigned to ensure stakeholders (representatives from the group, relevant business units, credit risk specialists, economists, internal independent validation unit, and internal audit) play the appropriate roles.

Reporting level

Overlays are generally reported at a product or a group level. The application level will define the level at which ECL can be reported. Overlays are typically short- to medium-term, although longer-term overlays can exist. A suitable monitoring plan should be created to reassess the size of the overlay and provide guidance on whether and when to release it, whether in whole or in part.

Resilience (2020 vs 2021 and beyond)

The financial sector and broader industry have become more resilient to COVID-19-related risks due to (i) government intervention by way of vaccines and financial support, (ii) banks de-risking portfolios with more stringent lending criteria and quicker response, e.g., payment relief measures, (iii) more information availing itself as time

passes, and (iv) efficacy of prior management responses having been tested. This is expected to reduce the frequency and quantum of overlays, whether because of the unwinding of overlays or moving the effects within the models. Triggers like these must be monitored, and more will likely be identified over time.

Monitoring

Management should quantitatively monitor the emergence of the overlay risks and the development of the risk factors and gradually unwind the overlays as the risks crystallise and risk factors subside. Wherever and whenever feasible, the risks catered for through overlays should be adopted into the model through model recalibration or methodology adjustments.



Building block 4 | Validation

Model risk management (MRM) best practice demands an independent model validation process. The validation of an FLI approach consists of five broad categories of tests. For data-rich environments (such as Retail and Retail SME portfolios), validation is biased towards quantitative testing, whereas, for data-scarce environments (such as CIB), it is biased towards qualitative tests. However, it should be considered if quantitative testing can add value in a data-scarce environment. Similarly, in the case of qualitative testing within data-rich environments. Benchmarking, sensitivity analyses, data validation, and governance are standard practice regardless of the volume of data. The frequency and depth of validation are dictated by materiality and, to a lesser degree, the complexity of the model. Continual monitoring is put in place to support early model risk detection, thereby setting the need for monitoring thresholds.

Data quality

- **Accuracy:** Comparison to the source.
- **Completeness:** Comparison to the source and general ledger.
- **Relevance:** Testing the calibration and validation data period against the scope of use, breadth and depth of macroeconomic variables, inclusion, or exclusion of data (incl. subpopulations, variables, etc.).
- **Volume:** Assessing the overall and segment-level data adequacy.
- **Expert input:** Quality thereof and consistency.
- **External sources:** Reliance on third-party data reviews.

Quantitative performance

- **Stability assessment:**
 - Population and characteristic stability indices (PSI and CSI).
 - Seasonality assessment and cyclicity of the base (i.e., Pre-FLI) models.
- **Driver selection:**
 - Correlation analyses plus multi-collinearity and co-integration tests.
 - Leads and lags assessment.
 - Statistical and practical significance tests.
 - Segmentation and bucketing optimisation.
- **Accuracy and rank quality:**
 - Performance measures such as the Mean Squared Error (MSE), Sum of Squared Error (SSE), R-squared, and adjusted R-squared can be used.
 - Parameter backtesting using out-of-time and out-of-sample data at a portfolio and segment level.
 - Assessing the accuracy of a model at a portfolio, segment, and customer level.
- **Feeder model:** Accounting for prediction error inherited from feeder models, e.g., the macroeconomic scenario model, which inherently has a degree of misestimation.
- **External sources:** Reliance on third-party performance.
- **Reperformance:** For calculation of error identification.

Qualitative performance

- **Methodology review:**
 - Detailed and systematic review of the model documentation (incl. supporting documents such as meeting minutes) and accompanying code.
- **Expert correlation analysis and risk ranking:**
 - Assessing the correlation between different subject matter experts (SMEs) when ranking a sample of deals; this includes the correlation between the experts (individually and collectively) and the model.
 - Assessing the accuracy of a model at a portfolio, segment, and customer level.
- **Stale ratings:**
 - Assessing the ideal frequency to update ratings, e.g., annual re-ratings are common in CIB, whilst monthly re-ratings are more prevalent in Retail and Retail SME.
 - Determining which events will prompt re-rating.



Sensitivities

- Conducted to understand each factor and parameter's impact on the ECL and FLI output. Analysis can be used to focus the validation and model remediation efforts.
- **Parsimonious approach:** One factor should not dominate a model, but unnecessary factors should be excluded.
- The effect of parameter caps and floors should be well understood and not negate the accuracy and performance of the FLI model.

Governance

- **MRM:** Assessing the documentation quality and approval by the model owner, data and implementation teams.
- **Independence** of owners, users, and independent or external experts.
- Ensure IFRS 9 compliance.
- **Use tests:** Evidence that macroeconomic scenarios and weights are used in (i) strategy and planning processes, (ii) credit exposure management, and (iii) reporting.
- **Model scope matching model use.**
- **Judgement controls:** Document risk identified, rationale, quantification approach, allocation approach, conditions for unwind, and three layers of defense.

Benchmarking

- **Model results:** Compare ECL coverages and SICR distribution (incl. differences) against peers by jurisdiction, product, or sub-portfolio.
- **Modelling approach:**
 - Benchmark, e.g., the level of sophistication, against industry and best practice methodologies.
 - Use of challenger models based on different modelling approaches.
 - Avoid pitfalls associated with over-generalisation, e.g., using GDP to forecast risk for commodity-driven counterparties.
- **Forward-looking macro-economic data:**
 - Benchmark macroeconomic outlooks (incl. the scenario weights, levels and forecasting horizons) against peers or alternate reputable sources.
 - Compare the inclusion or exclusion of other emerging risks, e.g., climate risk, against peers.
- **Data:** Alternate external performance data sources such as grouped data or proxies. Relevance to be tested.

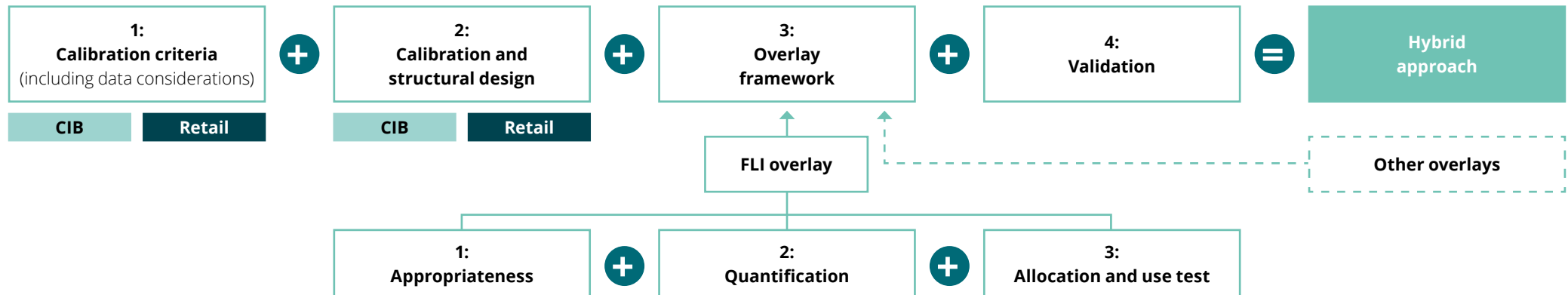


Credit overlay adjustments





1. Appropriateness



Considerations when evaluating the appropriateness of credit FLI overlay adjustments

- IFRS 9 paragraph 5.5.17 requires the estimate of expected credit losses to reflect an unbiased and probability-weighted amount determined by evaluating a range of outcomes with reasonable and supportable information at the reporting date about past events, current conditions, and forecasts of future economic conditions.
- The Transition Resource Group for Impairment of Financial Instruments (ITG) states in paragraph 49 of the 15 December 2015 meeting summary that when there is a non-linear relationship between the different forward-looking scenarios and their associated credit losses, more than one forward-looking scenario would need to be incorporated into the measurement of expected credit losses to meet the above objective of reflecting an unbiased outcome.
- IFRS 9 paragraph B5.5.52 states that historical information is a critical anchor or base for measuring expected credit losses. However, an entity shall adjust historical data, such as credit loss experience, based on current observable data to reflect the effects of the current conditions and its forecasts of future conditions that did not affect the period on which the historical data is based and to remove the effects of the conditions in the historical period that are not relevant to the future contractual cash flows. Estimates of changes in expected credit losses should reflect and be directionally consistent with changes in related observable data from period to period (such as changes in unemployment rates, property prices, commodity prices, payment status or other factors that are indicative of credit losses on the financial instrument or in the group of financial instruments and the magnitude of those changes). An entity shall regularly review the methodology and assumptions for estimating expected credit losses to reduce any differences between estimates and actual credit loss experience.

Conclusion and recommendation

- The appropriateness and valuation of the credit overlay adjustment are dependent on whether the correlations in the macroeconomic forward-looking linkage model still held as at the date under consideration as well as the extent to which the three scenarios, their severity and their probability weightings already captured the impact of COVID-19.
- The credit overlay adjustment needs to cater for events or scenarios not already considered by the base ECL model and the macroeconomic forward-looking linkage model.
- Due to the nature of the pandemic, the base ECL model or the macroeconomic forward-looking linkage model is not expected to be able to cater for all the possible outcomes, especially given the unpredictability of COVID-19 at the reporting date. It is also unlikely that three scenarios can fully capture the more extreme or idiosyncratic events.
- COVID-19 presents an unprecedented challenge in that limited historical data can be applied in projecting losses under the current environment. The macroeconomic forecasts generated during COVID-19 come with an elevated level of uncertainty and have structurally changed the sensitivity of portfolios to macroeconomic factors. Furthermore, the COVID-19 impact varied across industries, with some being affected more than others, e.g., travel, restaurants, hotels, etc. The macroeconomic forecasts may not capture the impact at this level of granularity.



2. Quantification

Option 1 – Using the current macro-economic forward-looking linkage model

Scenario 1

One of the assumptions of using the macroeconomic forward-looking linkage model is that the correlation structure between the parameters and the macroeconomic factors will remain unchanged. In this case, adjusting the weights, the scenario severity, or adding additional scenarios are all options where an additional overlay is justified. The correlation structure is an area that will be assessed as part of FLI audit procedures, and the scenario severities and probability weights will be benchmarked against peer banks and economic research organisations.

- The benefit of using the macroeconomic forward-looking linkage model is that it automatically allows for the significant increase in credit risk (SICR) to be triggered if a stress in PD is observed, i.e., higher FLI adjusted reporting date PDs.
- Where overlays are calculated out-of-model (at an account or portfolio level), SICR needs to be assessed using expert judgment by comparing the credit risk at origination with the credit risk at the reporting date. Incorporating forward-looking information in the SICR assessment is crucial in the credit audit process.
- The decision to adjust the scenario weightings and severity or add additional scenarios must be based on whether the adjustment captures the non-linearity and results in an unbiased outcome – **see note 1**.
- For more extreme or idiosyncratic events (like COVID-19), it is likely that adding additional scenarios, e.g., a severe scenario, will more accurately capture the non-linearity compared to just changing the weightings. With the introduction of one or more new scenarios, the probability weighting will inherently require adjustments. From an audit perspective, the procedures will challenge the bank on whether the number of scenarios captures the non-linearity of probable outcomes. Globally, banks have, or are, moving towards more than three scenarios.

Scenario 2

Where the correlation structure breaks or becomes counterintuitive, less dependence should be placed on the macroeconomic forward-looking linkage model to calculate the overlay adjustment.

- Example: Between June 2020 and December 2020, it was widespread practice by banks to modify the macroeconomic forward-looking linkage models by either “switching them off” completely or removing the macroeconomic factors that resulted in counterintuitive results, e.g., neutralising the effects of Prime – **see note 2**.
- It is common for the Prime lending rate to be one of the key macroeconomic drivers of default, especially within the Retail space. Prime has shown a strong correlation with default rates historically and, in some instances, was the only macroeconomic factor used in some Retail portfolios, i.e., single-factor linkage models.
- The link between Prime and default rates broke when the South African Reserve Bank (SARB) decreased the repurchase (repo) rate by 300 basis points to ease financial conditions and improve the resilience of households and firms to the economic complications of COVID-19.
- Where these modifications were made, it reduced the contribution of the macroeconomic forward-looking linkage models to the overall forward-looking ECL estimate. It necessitated credit overlay adjustments that were calculated outside of the linkage models.
- Where no modifications were made, even more significant credit overlay adjustments were required outside the linkage models. This is so that the dependency on Prime does not result in predicted releases in ECL, which could be deemed inappropriate.
- Based on the above, purely adjusting the probability weightings would not be appropriate as it would not address the structural breaks in the linkage model. From an audit perspective, evidence would be required from the bank that any adjustment corrects for both the structural breaks and the non-linearity of outcomes.

Notes:

01. The scenarios' weightings are often deliberately set so that the weighted ECL is not very different from the base scenario ECL. This implies the mode and expected value of the distribution of potential outcomes are equal, i.e., the distribution is symmetric; this is unlikely to be the case. Although weightings are subjective, they should be set based on the likelihood of occurrence of the various scenarios given prevalent conditions, which will be a function of the severity of the scenarios.
02. This typically happens to some extent with inflation, and recently, we observed the recovery in GDP from a low base, resulting in higher than “normal” year-on-year GDP growth rates. This resulted in unduly low predicted PDs. Where possible, management should build FLI models that have limited reliance on these variables that break down during unfavorable conditions.



Option 2 – Calculating overlay adjustments outside of the macro-economic forward-looking linkage model

Technical guidance supporting the response on overlay adjustments outside of the linkage model:

- The ITG stated in paragraph 49 of the 16 September 2015 meeting summary that the impact of scenarios for uncertain future events for which there is reasonable and supportable information may need to be incorporated into the assessment of significant increases in credit risk and measurement of expected credit losses using overlays to the base model, on a collective basis. However, in doing so, care needs to be taken to avoid double counting the impact of events (in both the base model and the overlay) and to consider the implications of significant correlations, e.g., if the effect of a specific uncertain future event had already been captured through the macroeconomic forecasts included in the base model.
- The paper issued by the Global Public Policy Committee (GPPC) on the implementation of IFRS 9 impairment requirements by banks stated in paragraph 2.8.2.3 that the calculation of a separate modelled adjustment to reflect the impact of less likely scenarios and the resulting non-linear impacts should be performed at an appropriately low level of granularity which takes account of qualitatively different risk characteristics and sensitivities. Additionally, this separately modelled adjustment is calculated using specific portfolio-level sensitivities and minimises the use of qualitative expert credit judgment unsupported by quantitative analysis.
- The GPPC paper states in paragraph 2.8.2.3 that a list of significant scenarios or events not explicitly incorporated within the modelling of ECL but which are nevertheless considered possible future outcomes and could have a substantial effect on ECLs should be compiled and evaluated. The bank must assess whether any adjustment to recognised ECLs should be made with respect to these “additional” factors at the reporting date. The bank must adjust recognised ECLs to reflect an additional factor if the bank can do so based on reasonable and supportable information that is available without undue cost and effort, even if the adjustment demonstrates a relatively high level of measurement uncertainty.
- IFRS 9 and the ITG allow overlays outside the base ECL or linkage models.
- Where overlay adjustments are calculated outside of the macroeconomic forward-looking linkage model, the overlay should be based on reasonable and supportable information and be calculated at the appropriate level of granularity.
- Example: Given the nature of the pandemic and its impact on industries and households as of 31 December 2020, incorporating this information into the overlay adjustment was essential to get to a granular enough adjustment. In the business banking and CIB spaces, industries at risk needed to be identified and classified into different risk categories (e.g., low, medium, and high), which in turn determined the downgrading of individual customer ratings and increasing PDs. SICR was automatically triggered based on a relative PD threshold or expert judgment. Collateral valuation haircuts were adjusted depending on the nature of the collateral at the time, e.g., commercial property. In the Retail and Retail SME space, the key drivers that needed to be considered were unemployment forecasts and movements in customer income levels. This information is readily available to banks, especially for banked customers. In some instances, unemployment forecasts per industry were used to get an even more granular outcome. Customer income levels at the reporting date were tracked against pre-COVID-19 levels to identify at-risk individuals.
- When calculating out-of-model adjustments, the overlay framework discussed on pages 12 and 13 and the considerations mentioned (e.g., double-counting) should be considered.
- From an audit perspective, the assumptions would be tested, and judgement applied in determining the overlay adjustment. Additionally, focus will be placed on the effect of any overlay on stage migration to ensure that an appropriate SICR level is triggered. The governance around the overlay adjustment should be tested to determine its robustness and if there are controls around the identification, evaluation, inclusion, and approval of additional factors.



3. Allocation and use test

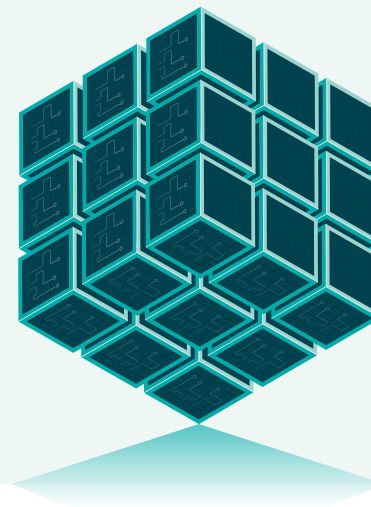
Allocation of the credit overlay adjustment

The following technical guidance is available:

- IFRS 9 paragraph 5.5.1 states that an entity shall recognise a loss allowance for expected credit losses on a financial asset that is measured in accordance with paragraphs 4.1.2 or 4.1.2A, a lease receivable, a contract asset or a loan commitment and a financial guarantee contract to which the impairment requirements apply in accordance with paragraphs 2.1(g), 4.2.1(c) or 4.2.1(d).
- IFRS 9 Appendix C highlights amendments to other Standards. As part of the amendment to IFRS 7 Financial Instruments: Disclosures (IFRS 7), paragraph 35H requires that in order to explain the changes in the loss allowance and the reasons for those changes, an entity shall provide, by class of financial instrument, a reconciliation from the opening balance to the closing balance of the loss allowance. This granular level of disclosure holds for other paragraphs in the Standard.
- Based on the above requirements, credit overlay adjustments should be allocated at a minimum to the class of financial instrument to which it belongs. Many banks aimed to allocate credit overlay adjustments to an account level to support credit risk management. Where this is not possible, credit overlay adjustments are typically allocated at a portfolio level. A further consideration is the staging impact and allocation of the overlay depending on its nature. The size of the adjustment in comparison to audit materiality would be considered. If not automated, the determination of SICR needs to be based on expert judgment.
- The point at which the disclosure deficiency will impact the economic decisions of users relying on the financial statements will be considered. This becomes more important where specific portfolios (i.e., classes of financial instruments) are affected differently across the bank. If it is material, then a central overlay without the required level of disclosures would not be appropriate in terms of IFRS 9.

Use test principle

- The use test pertains to the internal employment by a bank of the borrower or facility ratings, retail segmentation and estimates of PD, EAD and LGD that the South African Banking Regulations require banks to use for the calculation of regulatory capital. Regulators require assurance that internal risk estimates are employed for internal risk management.
- The same applies to IFRS 9 in that information that feeds the ECL estimate needs to be consistent with that used elsewhere in the bank. Where credit overlay adjustments are made, e.g., by adjusting the scenarios or weights, it is essential to consider the materiality and its impact on the use test. The assumptions and inputs that feed the ECL estimate must be consistent with those used in budgets, pricing, strategic and capital plans, or other management reporting. The use test principle will not be met where there are inconsistencies across the bank.





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