

## WHITEPAPER

JULY 2016

---

### Author

**Pierre Gaudin**  
Senior Director, Enterprise Risk Solutions  
Tel: +65.6511.4486  
pierre.gaudin@moodys.com

---

### Acknowledgements

Thanks to Nihil Patel, Antony Wilson, and Cayetano Gea-Carrasco for their comments and review.

---

### Contact Us

**Americas**  
+1.212.553.1653  
clientservices@moodys.com

**Europe**  
+44.20.7772.5454  
clientservices.emea@moodys.com

**Asia (Excluding Japan)**  
+852.3551.3077  
clientservices.asia@moodys.com

**Japan**  
+81.3.5408.4100  
clientservices.japan@moodys.com

---

# Anticipating and benchmarking variance in IFRS9 expected credit losses

As institutions start reporting provisions and allowances under IFRS9, the forward looking, point-in-time measurement of expected credit losses they publish will likely be more sensitive to the surrounding economic environment than the through-the-cycle measurements used as a basis for the capital adequacy ratio. As the next economic cycle unfolds, the quality of the institution's models calibration, and the presence of observable downturn in historical data are bound to have immediate implications for provisions, especially in cases the economic scenario deteriorates to levels that have not been seen before in available historical portfolio data.

In this context, many institutions are designing their model overlay with a view to manage macroeconomic forecast uncertainty and model risks. For this purpose, aside from the expected credit losses, risk management teams can provide the finance department with more measurements to anticipate variability and uncertainty levels around expected credit losses. This document discusses risk measurements that can be leveraged to achieve these objectives.

## Alignment of macroeconomic outlook with risk appetite statement

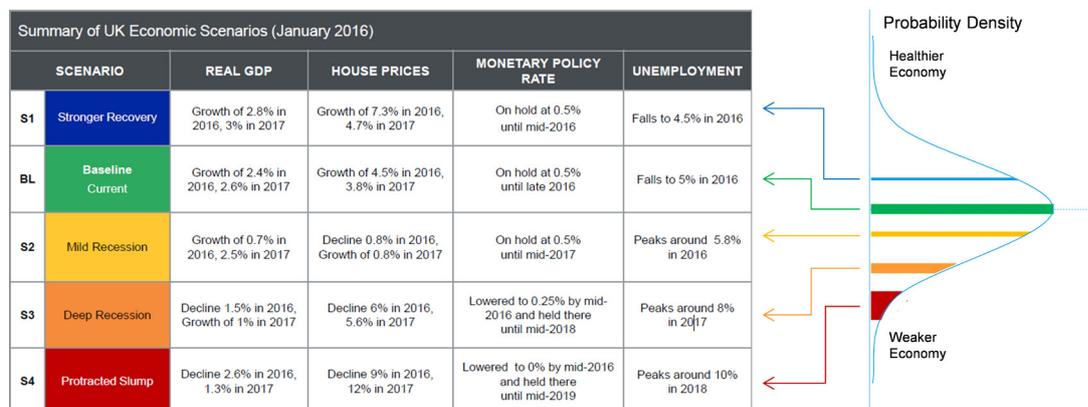
In terms of financial reporting, a primary consequence of the IFRS 9 forward-looking approach is the necessity for each institution to define its own macroeconomic outlook and provide clarity on the associated provision levels. To prepare for questions from financial analysts, financial reports should present macroeconomic scenarios that articulate a fair representation of the institution's risk appetite. At the same time, the reported provision levels should vary in reasonable proportions compared to the economic trends and systemic risk characterized in the scenario assumptions.

To help prepare the financial report, the governance team should assist with selecting scenario assumptions in a way that is relevant to the portfolio risk exposure in terms of geographies, industries, and customer segments for each sub-portfolio and asset class. The quality of that practice will help financial analysts formulate an opinion about the institution's governance process through the level of details provided about the economic outlook, the alternative forecast scenarios in use, their relative weight, and their alignment with the institution's portfolio characteristics.

Best practices in designing macroeconomic scenarios consist in revisiting the consensus view among economists on a monthly or quarterly basis, so as to formulate a baseline assumption. Following this, alternative macroeconomic scenarios can be built through the application of stress onto the baseline forecast, leveraging a global macroeconomic model. Each alternative scenario narrative selected for the IFRS 9 exercise can then be identified within the distribution of economic cycles (historic or simulated) and, in turn, its probability evaluated and then updated regularly (Figure 1).

Expected credit losses are computed for each scenario and aggregated according to each respective probability. The economic narrative typically identifies the trigger of the scenario taking place in any geography and articulates its impact on the local economy, associated market forecasts, and macroeconomic time series. All time-series are then drilled down geographically to allow meaningful analysis of the impact on the portfolio counterparties, associated expected credit losses, and provision levels.

FIGURE 1. SCENARIO DESIGN AND PROBABILITY



### Managing the evolution of macroeconomic assumptions

In communicating their views on the macroeconomic outlook, the governance team needs to anticipate and clarify how the evolution of assumptions, quarter-on-quarter, are translated into adequate trends in provision levels. If these trends do not align, a review of the financial reports can lead to either of two situations: unexpected movements in provision amounts, which would raise questions about the nature of the risks held in the portfolio, and conversely, inadequate stagnation of provision levels, which would raise questions about the institution's governance practice.

For this purpose, the ability of an institution to evaluate and update the probability of their macroeconomic assumptions on a regular and timely basis represents a key driver of the quality of its reporting. It demonstrates responsiveness to the evolution of the current macroeconomic conditions, but more importantly, the evolution of the assumptions probability can actually provide a solid basis to justify the evolution of provision levels as the economic cycle unfolds.

### Anticipating variance in IFRS 9 expected credit losses

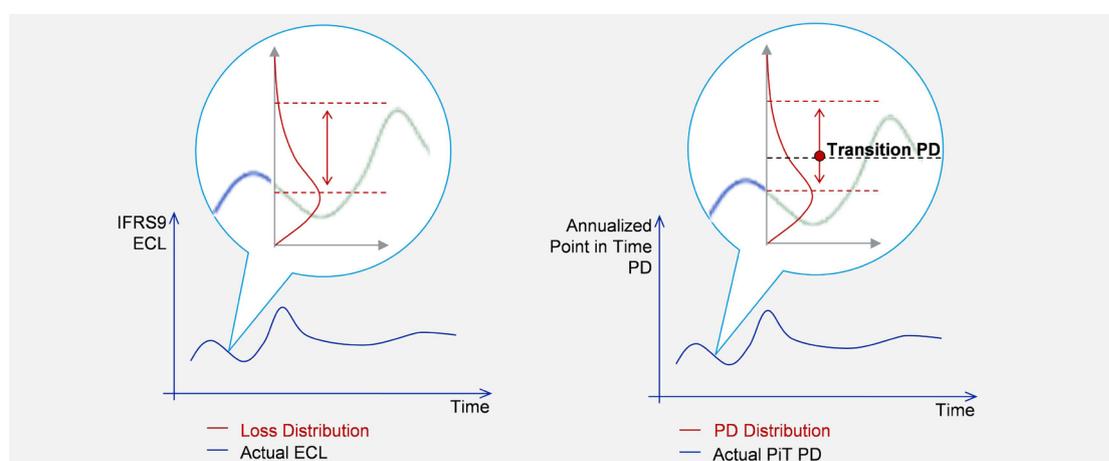
To provide time for governance decisions and pre-emptive portfolio management actions, the expected credit losses and related communication between the risk management team and the finance department might benefit from additional measurements quantifying the uncertainty in the expected credit losses forecast.

One approach is to define a time horizon and a confidence level to characterize the expected credit loss variance. For this purpose, measuring the standard deviation in the forecast loss distribution, over the given time horizon, seems a logical answer. This measurement is similar to economic capital, but addresses a lower percentile in the distribution, and is therefore a less computationally intensive requirement.

An important difference though, is that economic capital is a through-the-cycle measurement, whereas IFRS 9 measurement is point-in-time. As a result, the loss distribution should be computed for multiple scenario assumptions. An adequate measurement of expected credit loss volatility might therefore include a weighted average of each conditional standard deviation of losses computed under different scenarios, while each scenario weight can be derived from the macroeconomic distribution illustrated in Figure 1.

This calibration would operate adequately for a portfolio consisting of only stage 2 assets. However, aside from the calibration of the intrinsic volatility of expected credit losses, another source of provision volatility is the transition of assets from stage 1 to stage 2. An appropriate measurement for stage transition-related variance can then be defined as the additional expected credit loss requirement incurred for each stage 1 loan, upon potential future transition, weighted by the loan probability of transition over the given time horizon. To estimate the probability for a stage 1 asset to transition to stage 2, one can first determine the PD threshold at which a stage transition would occur in relation to the asset original PD and the stage attribution rules. Then one can locate the threshold within the statistical distribution of forecasted PD, over the required time horizon (Figure 2). This way, the resulting measurement provides a forward-looking anticipation of the “cliff” between one-year and lifetime expected credit losses, which can gradually unfold over the given time horizon. The resulting amount can be used as part of an overlay framework as a stage transition becomes increasingly probable.

FIGURE 2. MEASUREMENT OF ECL VARIANCE AND STAGE TRANSITION PROBABILITY

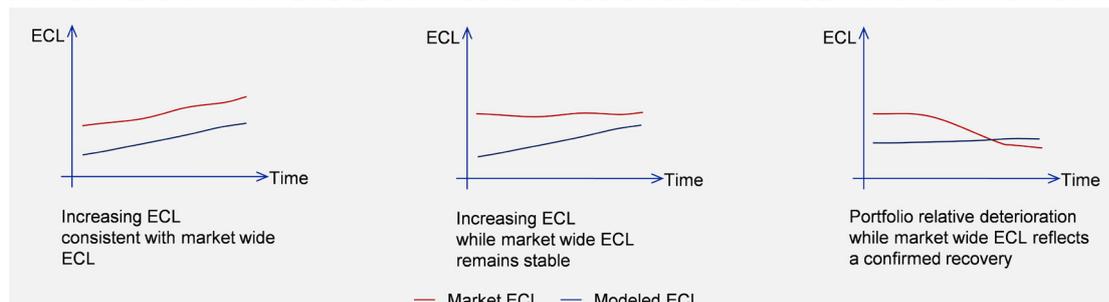


Overall, this methodology provides the institution with additional information about anticipated provision trends and variance, allowing for sufficient time to manage volatility, within a defined time horizon and level of confidence.

### Benchmarking the variance of IFRS 9 Expected Credit Losses

Aside from this framework - IFRS 9 measurements being disclosed to the market and bound to be compared across institutions - the risk management committee might also want to analyze each portfolio segment in relation to comparable market-wide observations. A practical solution for this framework is to establish benchmarks of market-wide and industry-wide credit forecasts under the same IFRS 9 scenarios as the ones applied to the institution's portfolio.

FIGURE 3. TREND IN PORTFOLIO ECL VERSUS MARKET-WIDE ECL CALCULATED UNDER CONSISTENT SCENARIOS



As illustrated in Figure 3, an increasing level of expected credit loss in a portfolio segment might be consistent with a market-wide observation for the same industry and geography. This observation indicates that the

change in provision might be relevant to an overall economic deterioration. Conversely, stable levels of expected losses can actually be interpreted as a relatively negative pattern compared to a market-wide measurement, indicating that the institution's specific exposure is lagging in leveraging a confirmed economic recovery. If implemented for each portfolio segment, trends can be identified in comparison to reasonable expectations, based on market-observation, and assist portfolio managers in their decision-making process.

## Conclusion

Aside from the challenges involved in producing IFRS 9-compliant expected credit losses, monitoring and managing provision levels alone are important aspects of a disclosure framework that need to be considered. Financial reports must provide clarity on how risk measurements feed into the overarching governance process. They also need to provide clarity on the impact of changes in provisions on their alignment with the evolution of systemic risk represented in the economic outlook, in accordance to the stated risk appetite of the institution. To manage this communication, a transparent, auditable, and consistent monitoring framework can be put in place. In doing so, risk management and finance teams can leverage additional measurements to anticipate portfolio management actions, accounting for the economic outlook such as credit loss distributions, stage transition probability and market-wide reference points.

© 2016 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND ITS RATINGS AFFILIATES ("MIS") ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND CREDIT RATINGS AND RESEARCH PUBLICATIONS PUBLISHED BY MOODY'S ("MOODY'S PUBLICATIONS") MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL, FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS OR MOODY'S PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing the Moody's Publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any rating, agreed to pay to Moody's Investors Service, Inc. for appraisal and rating services rendered by it fees ranging from \$1,500 to approximately \$2,500,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at [www.moody's.com](http://www.moody's.com) under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."