Moody's Analytics

Leveraging Basel and Stress Testing Models for CECL and IFRS 9

Nihil Patel, Senior Director

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Moody's Analytics CECL webinar series 2016

Getting Ready for CECL – Why Start Now?
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Leveraging Basel and Stress Testing Models for CECL
Tuesday, October 11, 2016 | 1PM EST | 11AM PST

The Value of Granular Risk Rating Models for CECL
Tuesday, November 15, 2016 | 1PM EST | 11AM PST

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Today’s Presenters

Presenter

Nihil Patel

Senior Director and Business Lead for product and strategy related to credit portfolio analytics

Nihil has broad experience in research, modeling, service delivery, and customer engagement. Prior to his current role, Nihil led the Portfolio and Balance Sheet Modeling Services team within the Research organization. Before that role, he led the correlation research team for over seven years.

Nihil holds a MSE in Operations Research and Financial Engineering from Princeton University and a BS in Industrial Engineering and Operations Research from UC Berkeley. Prior to joining Moody’s, Nihil worked at Cornerstone Research, a firm which specializes in litigation consulting. Nihil is a CFA charter holder.

Moderator

Emil Lopez

Director, Risk Measurement

Emil Lopez is a Director in the Moody’s Analytics Risk Measurement Group, where he leads risk modeling advisory engagements and manages the team’s data quality, risk reporting and IFRS 9/CECL research.

Emil has extensive experience in credit risk modeling and reporting, data sourcing and quality control.

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1 Overview of CECL and IFRS 9 Impairment Modeling

On June 16th the FASB Issued an Accounting Standards Update Commonly Known as "CECL"

Topic 326: Financial Instruments – Credit Losses:
Measurement of Credit Losses on Financial Instruments

Who does it apply to?

- » Entities holding financial assets and net investment in leases that are not accounted for at fair value through net income
- » Includes: Loans, (AFS) debt securities, trade receivables, net investments in leases, off-balance-sheet credit exposures, reinsurance receivables, etc.

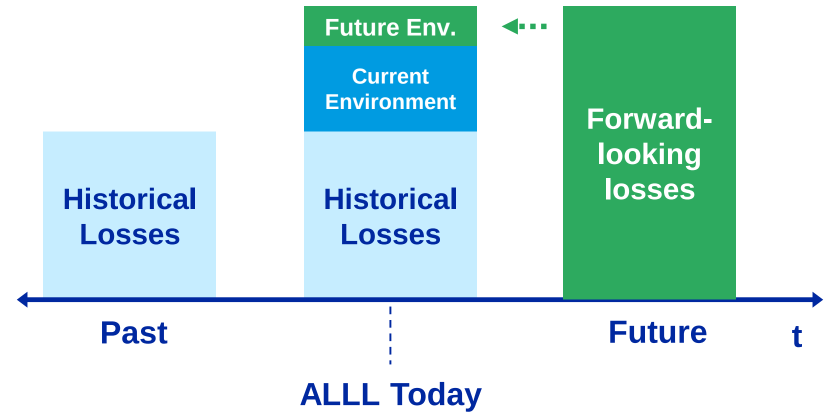
When does it go into effect?

- » FY 2019 (after 12/15/19) for public business entities that are SEC filers, including interim periods within those fiscal years
- » FY 2020 (after 12/15/20) for all other public business entities, including interim periods within those fiscal years
- » FY 2021 (after 12/15/21) for all other entities, and interim periods within fiscal years beginning after December 15, 2021
- » All entities may early adopt beginning after December 15, 2018, including interim periods within those fiscal years

CECL / IFRS 9 is Accounting's Response for "Too Little Too Late" Recognition of Losses

Incurred Loss Model

CECL Model



- Incurred Loss Model measures the current losses in the portfolio.
- Many incurred loss models are calibrated to historical annualized charge off rates.

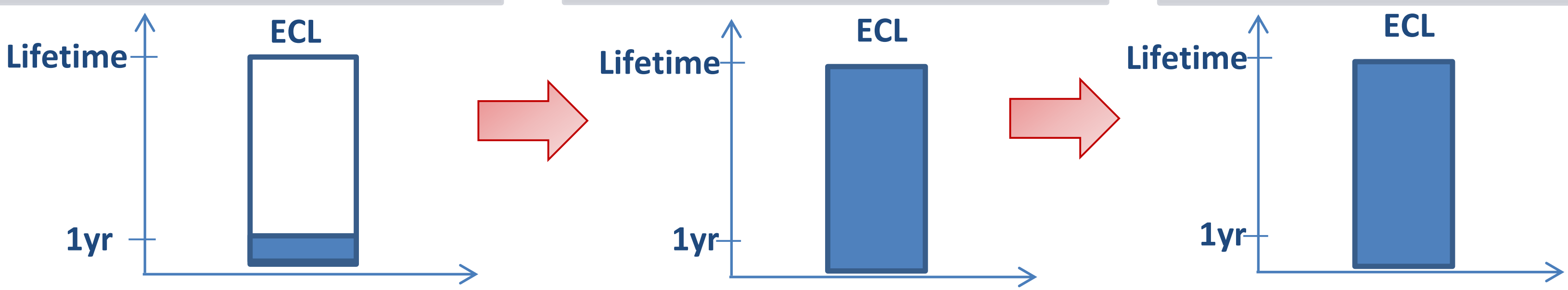
- Under CECL one needs to measure the current and expected losses on the portfolio.
- There is a need to incorporate forward looking information to project future losses.
- CECL impairments will need to reflect life of loan losses, not annual losses.

IFRS 9 Impairment Recognition: Forward-looking Expected Credit Loss (ECL) Model

» In July 2014, IASB finalized the impairment methodology for financial assets and commitments

» The mandatory effective date is January 1, 2018; however, the standard is available for early adoption. IASB proposed to defer to January 2021 for insurance companies.

STAGE 1: "PERFORMING"	STAGE 2: "UNDER-PERFORMING"	STAGE 3: "NON-PERFORMING"
• Borrower is current • As soon as a financial instrument is • originated or purchased, 12-month expected credit losses are recognized in profit or loss and a loss allowance is established.	• Credit risk is higher, though borrower could still be current. • Lifetime expected credit losses are only recognized if the credit risk increases significantly from when the entity originates or purchases the financial instrument.	• Borrower is in technical default.



CECL / IFRS 9 is a Profound Change in Accounting for Credit Losses

FASB's CECL

- "Life of loan" loss estimate upon initial recognition of asset
- Refinement of impairment model for AFS debt securities
- Implementation by 2020-2021

FASB's CECL and IASB's IFRS 9

- Credit loss estimates that reflect historical, current, and forward looking information
- Use reasonable and supportable forecasts
- Scalability based on size and complexity

IASB's IFRS 9

- 12-month forward look for performing loans
- Life of loan loss recognition upon significant deterioration
- Three bucket impairment model
- Unbiased, probability-weighted scenarios
- Implementation by 2018

In Essence, CECL / IFRS 9 is About Improving the Measurement and Reporting of Credit Losses

The measurement of expected credit losses is based on relevant information about:

1) Past events, including historical experience
2) Current conditions
3) Reasonable and supportable forecasts

- Although "reasonable and supportable forecasts" are required, an entity will not need to create an economic forecast over the entire contractual life of long-dated financial assets
  - An entity may revert to historical loss information that is reflective of the contractual term (considering the effect of prepayments) for periods that are beyond the time frame for which the entity is able to develop reasonable and supportable forecasts
- Similar to the existing guidance, banking agencies expect estimation methods to be well documented, applied consistently, and defensible

Standards Apply to All Size/Complexity of Institutions, But One Size Will Not Fit All

» FASB does not specify a method for measuring ECL; it allows an entity to apply methods that reasonably reflect its expectations of the credit loss estimates – including its current internal credit risk systems

» IFRS 9 is more specific on how to incorporate forward looking scenarios

» Different measurement methods can be applied to different groups of financial assets, for example:

- PDs and LGDs for commercial loan portfolios
- Aging schedules for trade receivables

Preparing for CECL: Practical Considerations

Expected Credit Loss Estimation

- Education and training (bank personnel, auditors, examiners) will be critical, effective immediately
- Different credit metrics will be required compared to current ALLL
  - Estimates of PD, LGD, EL, delinquencies, etc. potentially requiring more detailed data than now maintained
  - Establish a defined process for uploading risk measures into calculation engine (manual, batch, automatic feed into a system)
- Models, scorecards, and other credit risk tools may need to change
  - Many institutions lack the tools to align with the definition of ECL
  - Vended solutions should be evaluated thoroughly
- Quantifying forecasts of the future will require more sophistication
  - Loans react differently to individual economic forecasts, based on factors such as credit quality and sector
  - Where will forecasts come from?

IFRS 9 Expected Credit Loss Calculation is Prescriptive

- Point-in-Time PD required
- PDs needs to be extrapolated over the remaining expected lifetime of the asset
- Must consider reasonable and supportable forward-looking information

- Discount factor calculated through current market rate or Effective interest rate (EIR) method

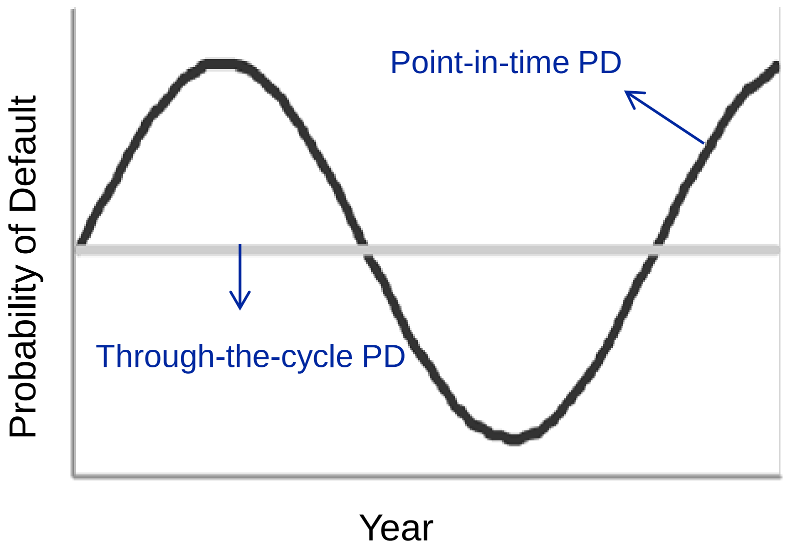
$$ECL = \sum PD \times LGD \times EAD \times DF$$

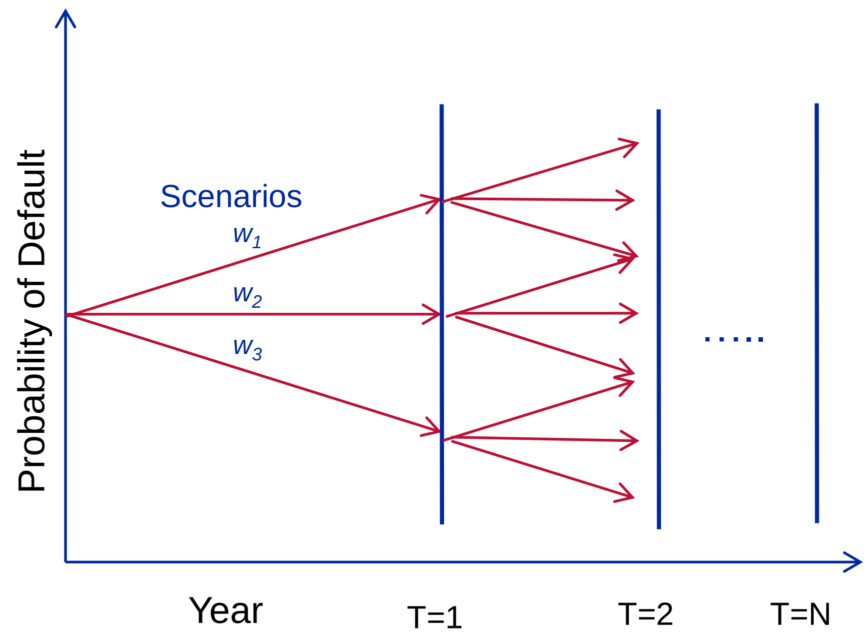
- Lifetime: present value of all cash shortfalls expected over the remaining life of instrument
- 12-month: portion of lifetime ECL associated with probability of a default occurring in next 12 months

- Point-in-time LGD required; not downturn LGD
- Only costs directly attributable to the collection of recoveries (remove the collective cost in BASEL LGD)
- Must consider reasonable and supportable forward-looking information

- Cash-flows through the lifetime of the asset
- Consider all contractual terms (e.g. prepayment, usage, call and similar options) over the lifetime

What is a Point-in-Time PD?





» Point-in-time estimates are forward looking credit risk parameters which assess the current level of risk. While a borrowers' rating may not change its PD does vary through the credit cycle.

» The parameters could be constructed by calculating PD estimates using multiple forward looking scenarios and aggregating them using a weighted average approach.

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Guidance On Using Forward Looking Information for Impairments

American Bankers Association Recommendations on CECL

- **Key questions answered in ABA publication - FASB's Current Expected Credit Loss Model for Credit Loss Accounting (CECL): Background and FAQ's for Bankers June 2016.**
- ***Question:* I currently perform stress testing for DFAST. Can I just use my DFAST models?**
- ***Answer:*** CECL could be viewed as a good basis for both DFAST and CCAR testing by banking regulators, and banking regulators might supervise these banks to integrate the models. But while CECL may be a good basis for DFAST and CCAR testing, **some current DFAST and CCAR models may not necessarily comply with CECL.** This is because **DFAST and CCAR testing are based on open books of business in which new loans are being made and existing loans payoff throughout the stress testing period. In contrast, CECL is an estimate of one specific set of loans at a specific date**. Therefore, loss forecasting methods maintained by some banks used for DFAST and CCAR purposes may apply annualized loss assumptions used today instead of life of loan assumptions required for CECL.

American Bankers Association Recommendations on CECL

- **Key questions answered in ABA publication - FASB's Current Expected Credit Loss Model for Credit Loss Accounting (CECL): Background and FAQ's for Bankers June 2016.**
- ***Question:*** **My bank already performs forward-looking credit loss estimates. Can I just do what I've been doing?**
- ***Answer:*** **Currently, historical experience used as a basis for the starting point of an estimate of incurred loss is almost always based on annual charge-off rates. Under CECL, life of loan, or life of portfolio loss experience will be required**…Additionally, the application and measurement of adjustments made to historical experience related to qualitative ("Q") factors will change profoundly under CECL…Q factors are analyzed and quantified in order to adjust historical loss rates for the difference between conditions that existed over the period that historical credit loss rates are accumulated during the process up to the reporting date. With CECL, no longer does that time period stop at the measurement date, but it continues to the end of the contractual term of the loans in the portfolio.

IFRS 9 Staff Paper Guidelines on ECL

- **Key questions answered in "Incorporation of Forward Looking Scenarios: IFRS 9 Staff Paper" - Transition Resource Group for Impairment of Financial Instruments, Dec 2015.**
- ***Question: When measuring expected credit losses can entities use one single forward-looking economic scenario, or do they need to incorporate more than one forward-looking economic scenario and, if so, how?***
- ***Answer:*** ***Using a single sc*****enario is not sufficient (even the most likely one) – one needs to consider multiple scenarios.** The probability of default and the credit loss for a range of different forward-looking scenarios is ***non-linear***, the expected credit losses derived from using a single scenario will not be the same as the expected credit losses determined by taking into account a range of different forward-looking scenarios.

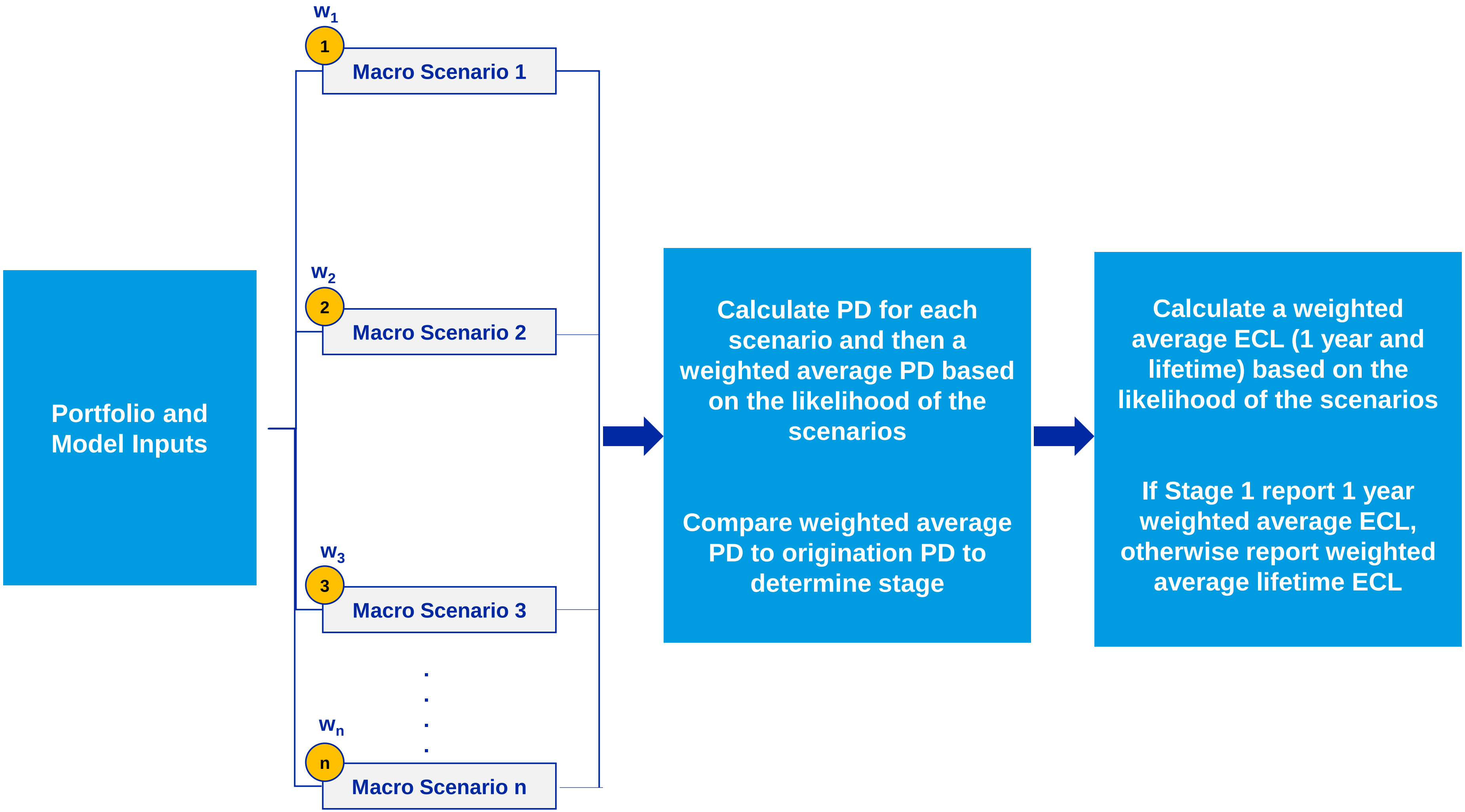
IFRS 9 Staff Paper Guidelines on ECL

- **Key questions answered in "Incorporation of Forward Looking Scenarios: IFRS 9 Staff Paper" - Transition Resource Group for Impairment of Financial Instruments, Dec 2015.**
- ***Question: How should an entity take into account forward-looking economic scenarios when determining whether there has been a significant increase in credit risk?***
- ***Answer:*** **For each scenario a probability of default should be calculated and then weighted by the likelihood of the scenario.** In order to assess whether there has been a significant increase in credit risk for the portfolio, **the weighted probability of default is compared with the probability of default at initial recognition** (similarly probability-weighted if relevant) to assess whether there has been a significant increase in credit risk.

Basel Guidelines on Use of Forward Looking Information for ECL

- **Principle 6: A bank's use of experienced credit judgment, especially in the robust consideration of forward-looking information that is reasonably available and macroeconomic factors, is essential to the assessment and measurement of expected credit losses.**
- 61. **Banks must demonstrate that the forward-looking (as well as past and current) information selected has a link to the credit risk of particular loans or portfolios.** For a variety of reasons, it may not always be possible to demonstrate a strong link in formal statistical terms…Particularly in such circumstances, a bank's experienced credit judgment will be crucial in establishing an appropriate level for the individual or collective allowance.
- 62. **Macroeconomic forecasts and other relevant information should be applied consistently across portfolios, where the credit risk drivers of the portfolios are affected by these forecasts/assumptions in the same way.** Furthermore, when developing ECL estimates, a bank should apply its experienced credit judgment to **consider its point in the credit cycle**, which may differ between jurisdictions, and how this should affect allowances.

IFRS 9 Impairment Calculation using Scenario Analysis



3

Best Practices Leveraging Basel and Stress Testing Models for CECL / IFRS 9 Impairments

Leveraging Basel III Models for CECL / IFRS 9

Probability of Default (PD)

- Basel III uses through-the-cycle PDs while CECL / IFRS 9 requires point-in-time PDs to calculate expected losses
- Forward looking information would need to be considered in assessing lifetime expected losses

Loss Given Default (LGD)

- Similarly, LGD as defined by CECL / IFRS 9 and Basel III are different; Point-in-time is required by CECL / IFRS 9 while downturn LGD is required by Basel.
- Generally speaking, Basel parameters for LGD are often significantly more conservative than required for a "true and fair view" underlying CECL / IFRS 9.

- Basel models require significant modifications to be used for CECL / IFRS 9 impairments.
- Main challenges include
  - having models reflect current and future information
  - removing any built in conservatism

Leveraging Stress Testing Models vs CECL / IFRS 9

Probability of Default (PD)

- CECL / IFRS 9 and stress testing frameworks both require use of point-in-time PD's which are adjusted with the credit cycle.
- PD for stress testing often has built in conservatism which needs to be removed.

Loss Given Default (LGD)

- LGD as defined by CECL / IFRS 9 and stress testing usually use point-in-time estimates.
- LGD for stress testing often has built in conservatism which needs to be removed.

- For stress testing, firms perform forward looking analysis to forecast expected losses. In case of CECL / IFRS 9, there is a need to use forward looking parameters to produce expected losses as of the reporting date.
- In case of stress testing models, the PD and LGD to quantify expected credit losses are often calibrated to periods between 1-3 years. For CECL / IFRS 9, the point-in-time parameters need to be extrapolated in order to calculate lifetime expected losses (using the expected life of the exposure).

5 Summary

Key Takeaways

- Stress Testing models can serve a good starting point for building CECL / IFRS 9 compliant impairment models
  - Already incorporate forward looking information
  - Need to be augmented to measure lifetime losses
  - Built in conservatism needs to be adjusted
- Basel models can be used but more modifications are needed
  - Need to be made “point-in-time”
  - Downturn LGD needs to be altered
- Many organizations will leverage existing stress testing models and data infrastructure for IFRS 9/CECL. Consistency between both can lead to synergies.

Impairment Modeling Challenges

The modeling challenges are many, the main problem is how to ensure consistency with Stress Testing, Basel and Pricing models.

PD Models

» TTC rating/PD to PIT PD conversion
» Lifetime PD/PD Term Structure
» Scenario based PD modeling

LGD Models

» Lifetime LGD/LGD Term Structure
» Scenario based LGD modeling

EAD Models

» Lifetime EAD/EAD Term Structure
» Discounting (EIR)
» Prepayment

Transferring Criteria

» Threshold definition
» Intra-stage movements

Moody's Analytics CECL Webinar Series 2016

Don't miss the next in the series:

The Value of Granular Risk Rating Models for CECL

Tuesday, November 15, 2016
10AM PT | 1PM ET

Cristian deRitis

Christian Henkel

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Moody's CECL Councils: Collaborating with the Industry

Activities

» Discuss key implementation challenges

» Share best practices regarding implementation timelines, governance structure, and modeling methodologies

» Deep dives into current provision calculation practices and gaps relative to CECL requirements

Benefits for Participants

» Network with leading impairment accounting practitioners

» Define specific impairment calculation methods for different asset classes and different-sized institutions

» Help shape design of your and our loss estimation tools

Three Groups to "Right" Size CECL Implementation

Community Banks	Regional Banks	Large Banks

High-Level Timelines

Form Councils	Meeting #1	Other Meetings
Current point	Q4 2016-Q1 2017	TBD

If you would like to participate, please email us at Events@moodys.com

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