Expanding Sensitivity Analysis and Stress Testing for CECL

Today's Speakers

Michael L. Gullette, Vice President, Accounting and Financial Management , American Bankers Association

Mike works with the FASB, the IASB, and the U.S. banking regulators in helping bankers understand and implement policies and regulations related to financial reporting, internal controls, and capital management. Mike was very active during the CECL and IFRS 9 standard-setting processes and has authored various ABA Papers, including CECL Implementation Challenges: The Life of Loan Concept.

A graduate of the University of Virginia, Mike brings to the ABA over thirty years of experience in the financial services industries. Mike started his career as a Senior Manager for Ernst & Young, where he concentrated on financial institutions. He has been controller of a life insurance company, CFO of an international charity, and was a director of accounting policy implementation at Freddie Mac.

Nihil Patel, Senior Director, Moody's Analytics

Nihil serves as the business lead driving our product and strategy related to credit portfolio analytics.

Nihil has broad experience in research, modelling, service delivery, and customer engagement. Nihil has led the Portfolio and Balance Sheet Modelling Services team within the Research organization and has 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. Nihil is a CFA charter holder.

Session Overview

1. **CECL is out – now what?**

2. **How sensitivity analysis can be used for CECL complaint impairments**

3. **How to adjust Q-factors to account for forward looking credit loss estimates**

4. **Measuring and managing period by period impairment volatility**

5. **Q&A**

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CECL is out – now what?

CECL: Current Expected Credit Loss

Impacts Allowance for Loan and Lease Losses (ALLL) and credit loss provision expense.

Generally applies to loans, loan commitments, and "Held To Maturity" securities

Effective 1/1/2020 for SEC registrants

» 1/1/2021 for non-SEC Public Business Entities (PBEs)

» 12/31/2021 for non-SEC non-PBEs

CECL Model: Expected credit losses over life of loan or portfolio

Life of Loan (LOL) loss expectation (pool basis) effectively recorded at origination

Forecast of the future to LOL required

Historic averages of "life of loan" losses

» Used as starting point for estimates
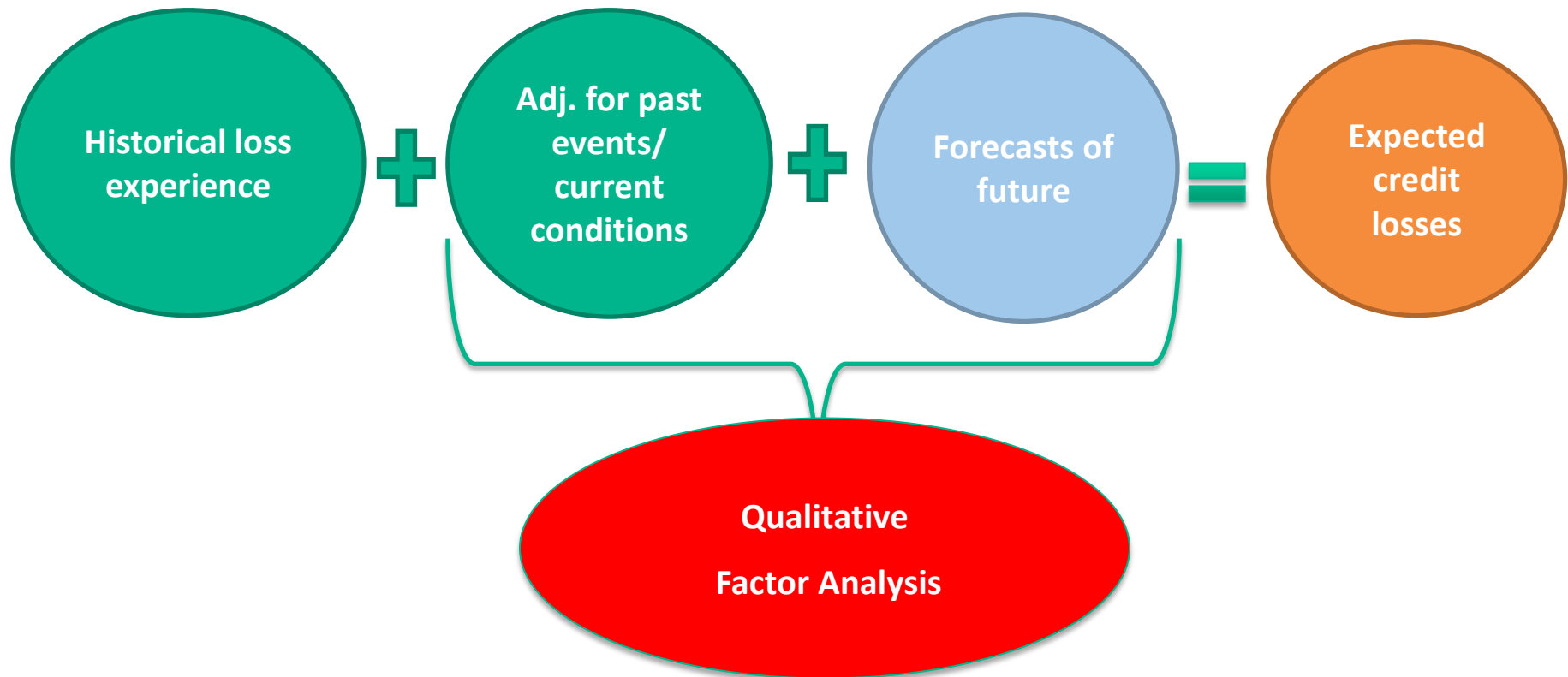
» Applied to periods beyond "forecastable future."

Management Objectives Under CECL

» Size of the ALLL/Available Capital

» Volatility/Predictability of the ALLL

» Communicability/Understandability of the ALLL

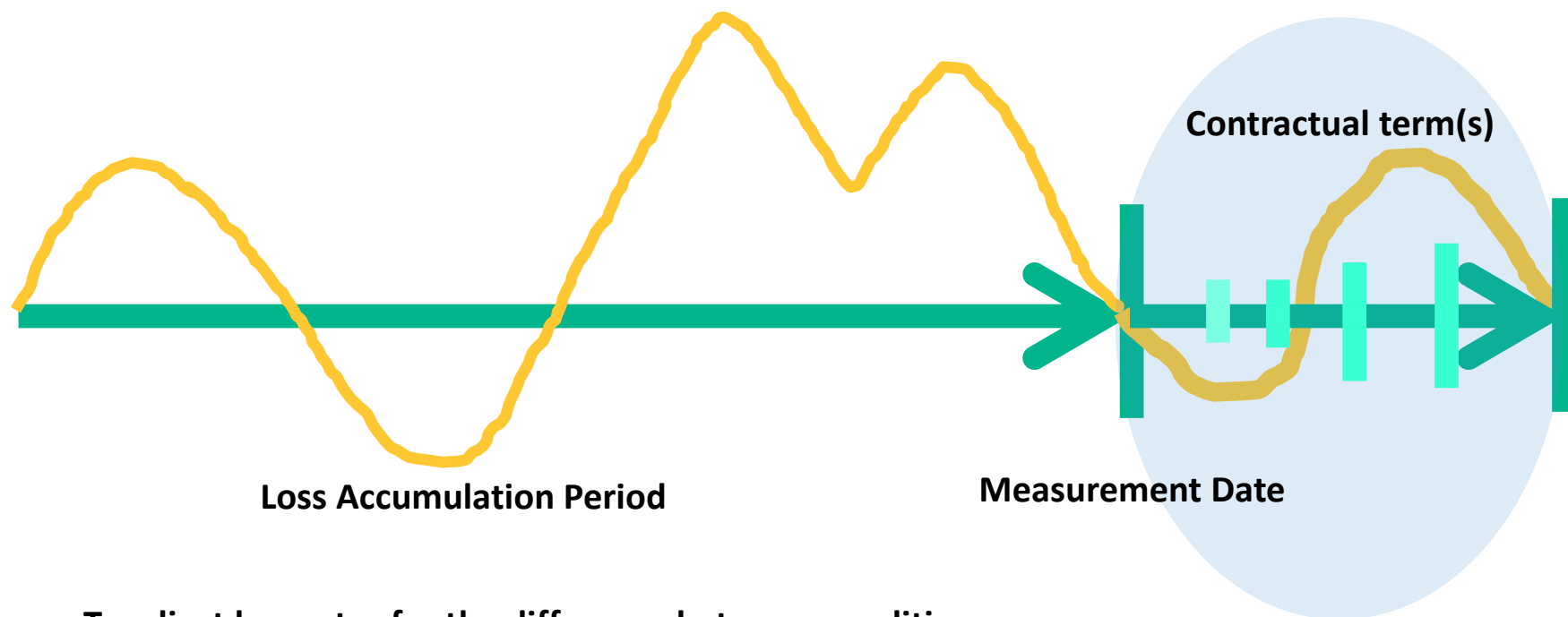# Forecasting Life of Loan Loss Rates

Included in current process

New

Historical loss experience **+** Adj. for past events/ current conditions **+** Forecasts of future **=** Expected credit losses

Qualitative Factor Analysis

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Q Factors Under CECL

Contractual term(s)

Loss Accumulation Period

Measurement Date

To adjust loss rates for the difference between conditions that existed over the Loss Accumulation Period to the ~~Measurement Date~~ end of the contractual term.

Q Factor Impact: 2015

If we adjust the ALLL by 10%...

ALLL — 10%

Pre-Tax Income — 95%

CAPITAL — .8%

2
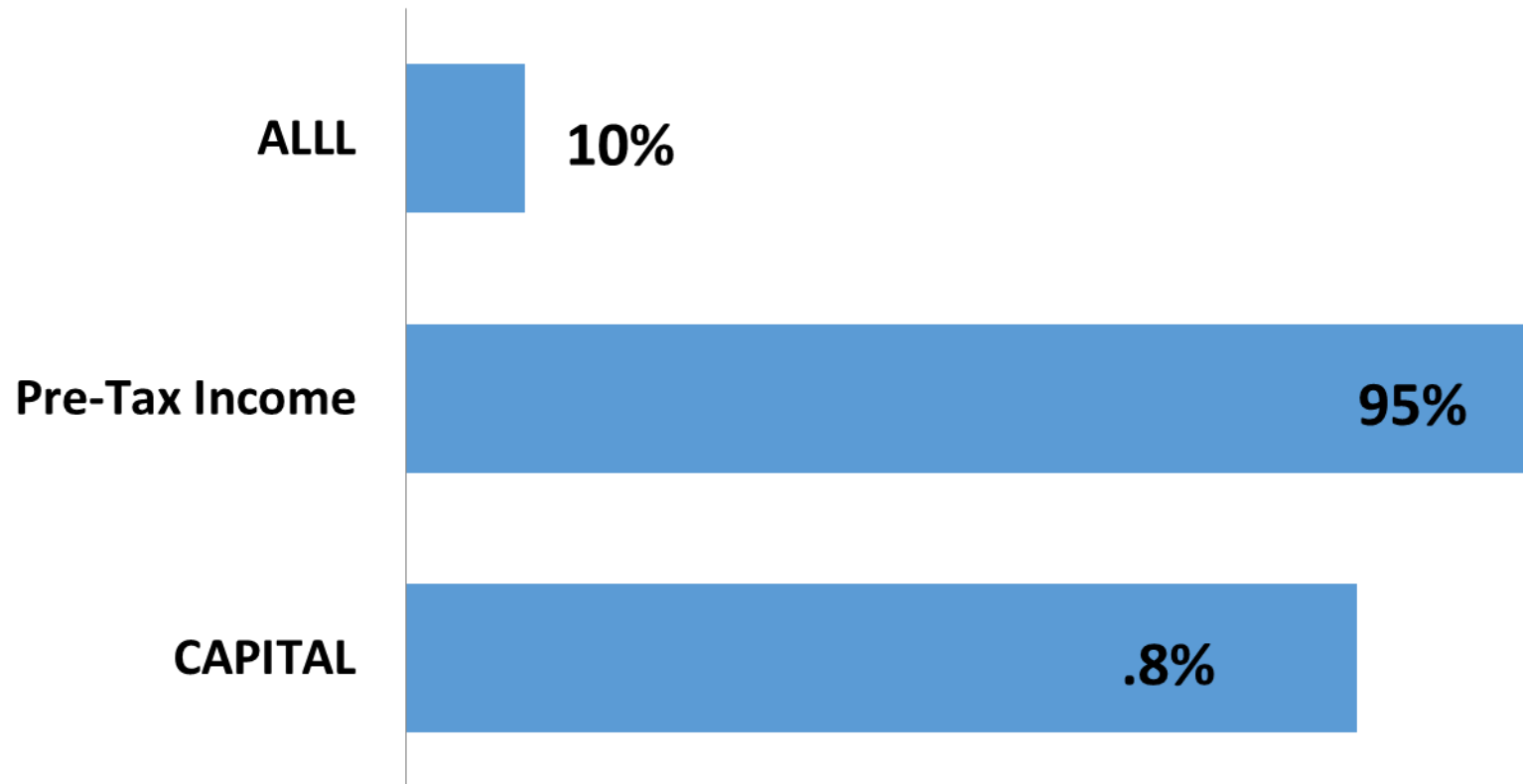
How sensitivity analysis can be used for CECL compliant impairments

Q Factors: 2006 Interagency Policy Statement

Portfolio Characteristics

- ✓ Lending Policies (Underwriting)
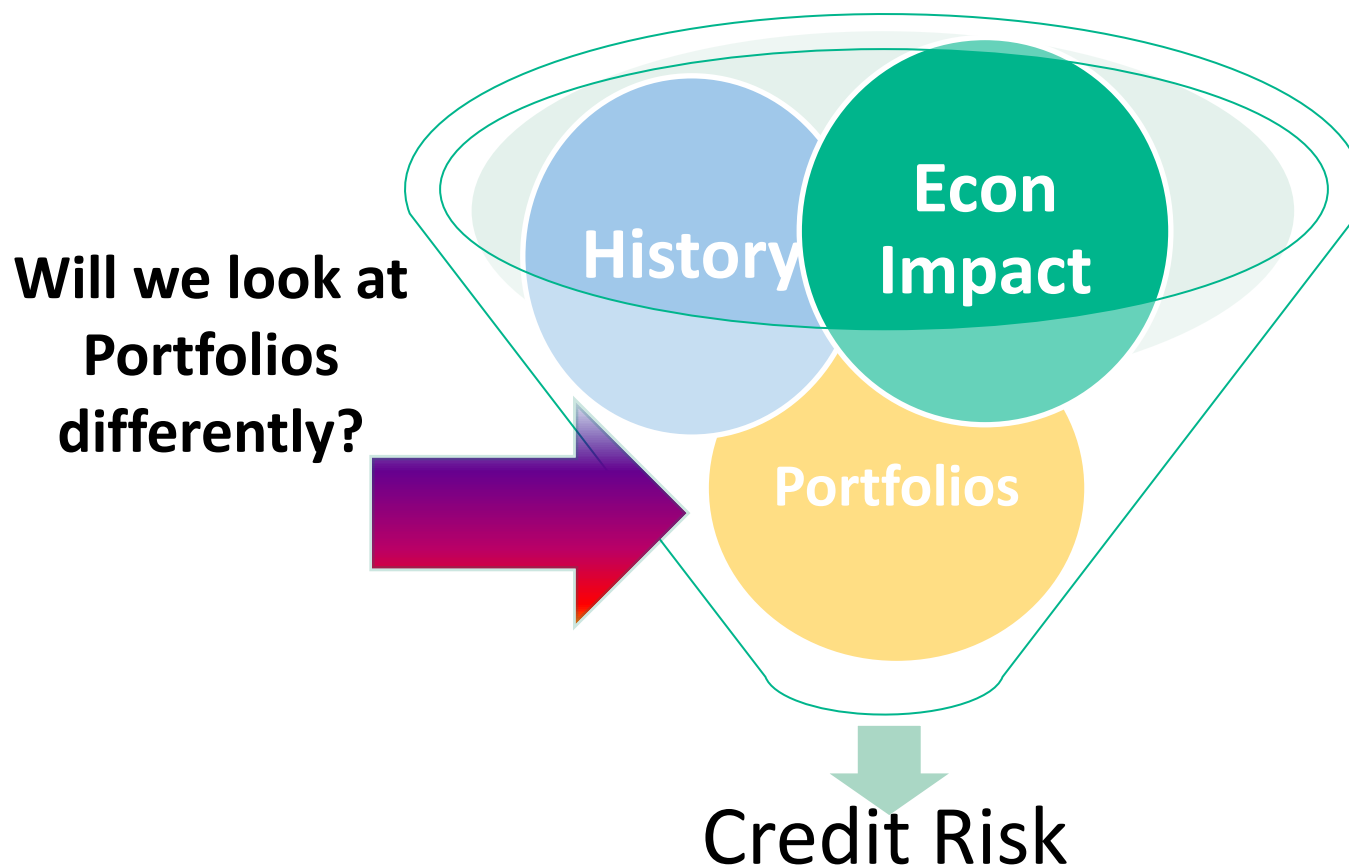- ✓ Nature/volume/terms of the portfolio
- ✓ Concentrations

Economy and its impact

- ✓ Economic/business conditions
- ✓ Value of underlying collateral
- ✓ Vol/severity of past due loans, etc.

Intangibles

- ✓ Experience/ability of mgmt
- ✓ Quality of loan review
- ✓ Other

Q Factors Under CECL Forecasts

Will we look at Portfolios differently?

History

Econ Impact

Portfolios

Credit Risk

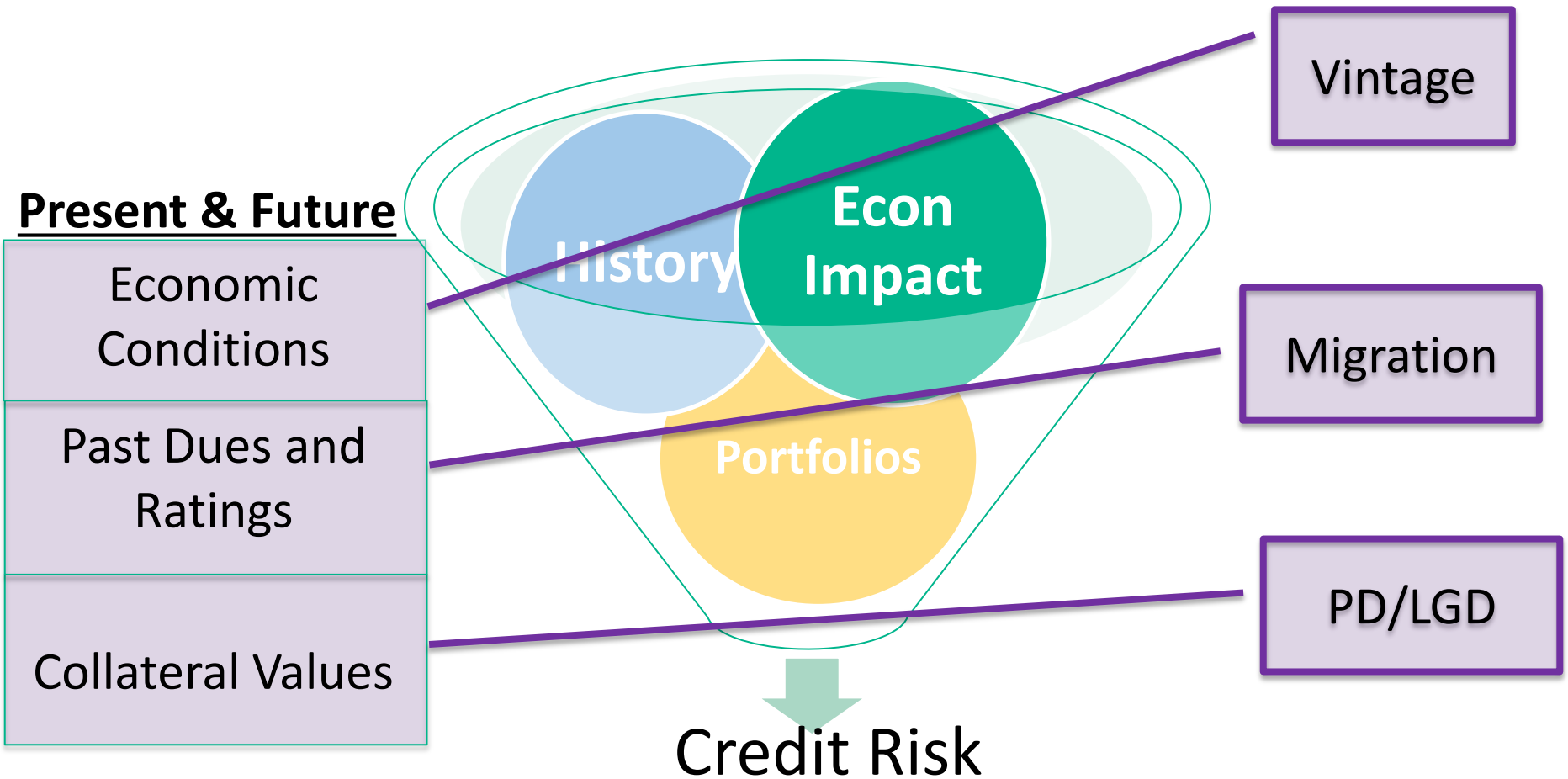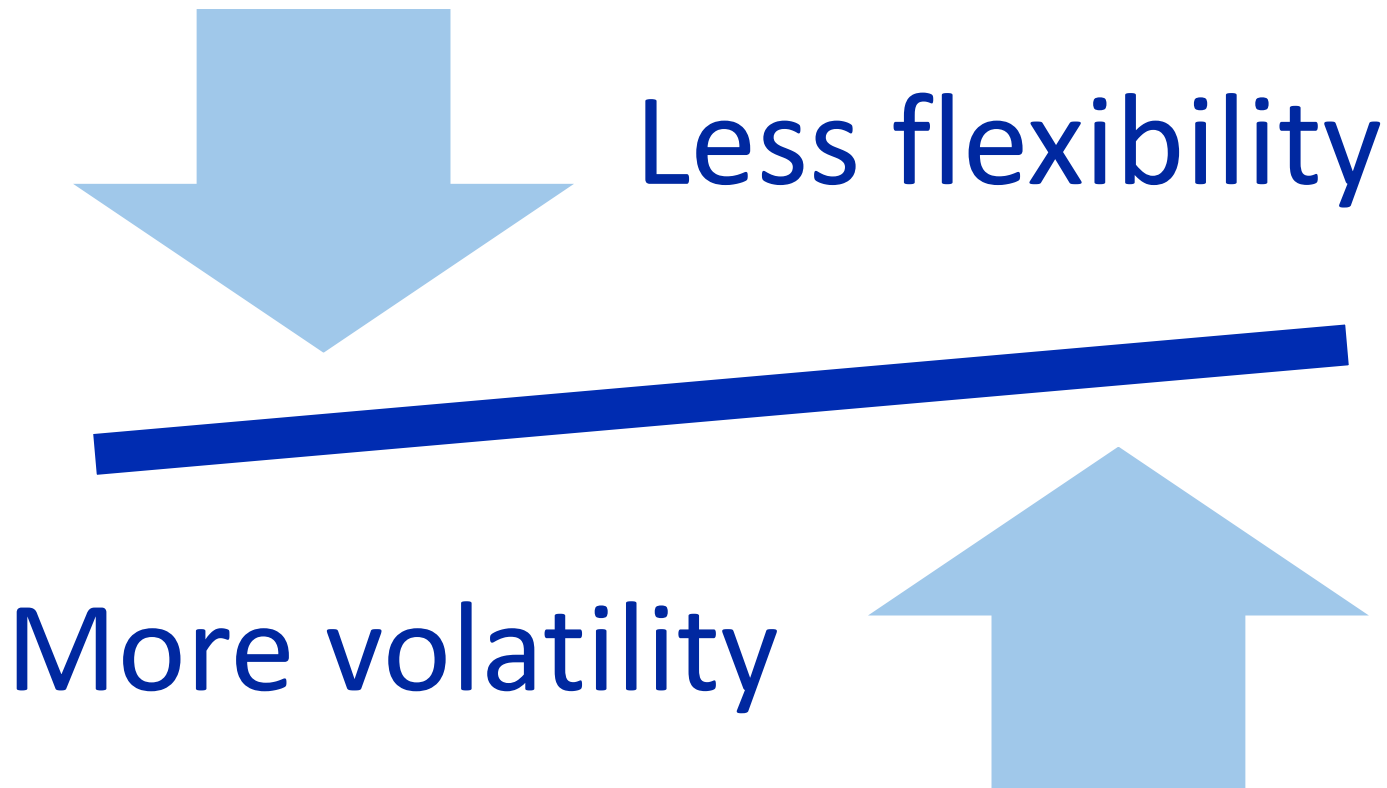# Portfolio Characteristics Under CECL

» Fixed rate loans vs. variable rate

» Length of term

» Maturity date

» Credit rating

What happens if interest rates increase?

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CECL Q Factors in Practice

Present & Future
- Economic Conditions
- Past Dues and Ratings
- Collateral Values

History

Econ Impact

Portfolios

Credit Risk

Vintage

Migration

PD/LGD

Q Factor Challenge: Less Detail

Less flexibility

More volatility

Management Objectives Under CECL

» Size of the ALLL/Available Capital

» Volatility/Predictability of the ALLL

» Communicability/Understandability of the ALLL

CECL (Q Factor) Governance

1. Appropriateness of Models/Methods
2. Appropriateness of the segments
3. Availability and sufficiency of quality data
4. Sensitivities and ranges of changes to forecast assumptions
5. Model Validation/Backtesting

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How to adjust Q-factors to account for forward looking credit loss estimates

CECL Modeling Solution

A robust CECL modeling solution requires:

» Loss rates and/or internal risk ratings as model inputs

» Lifetime calculation of expected losses until contractual maturity

» Using forecast of economic conditions consistent with assumptions used in other aspects of the business

» Forward looking analysis using scenario forecasts

Forward Looking Impairments Depends Where One is in the Credit Cycle
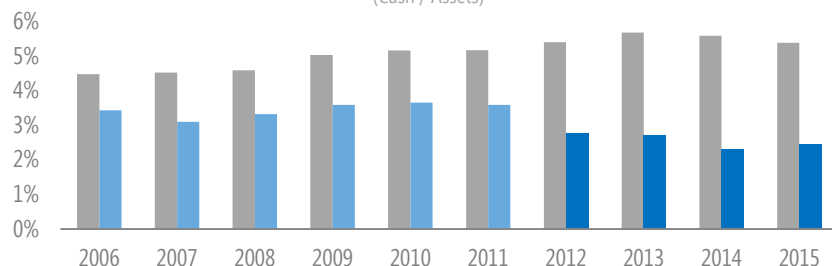

Average Overall EDF | Average Energy Sector EDF
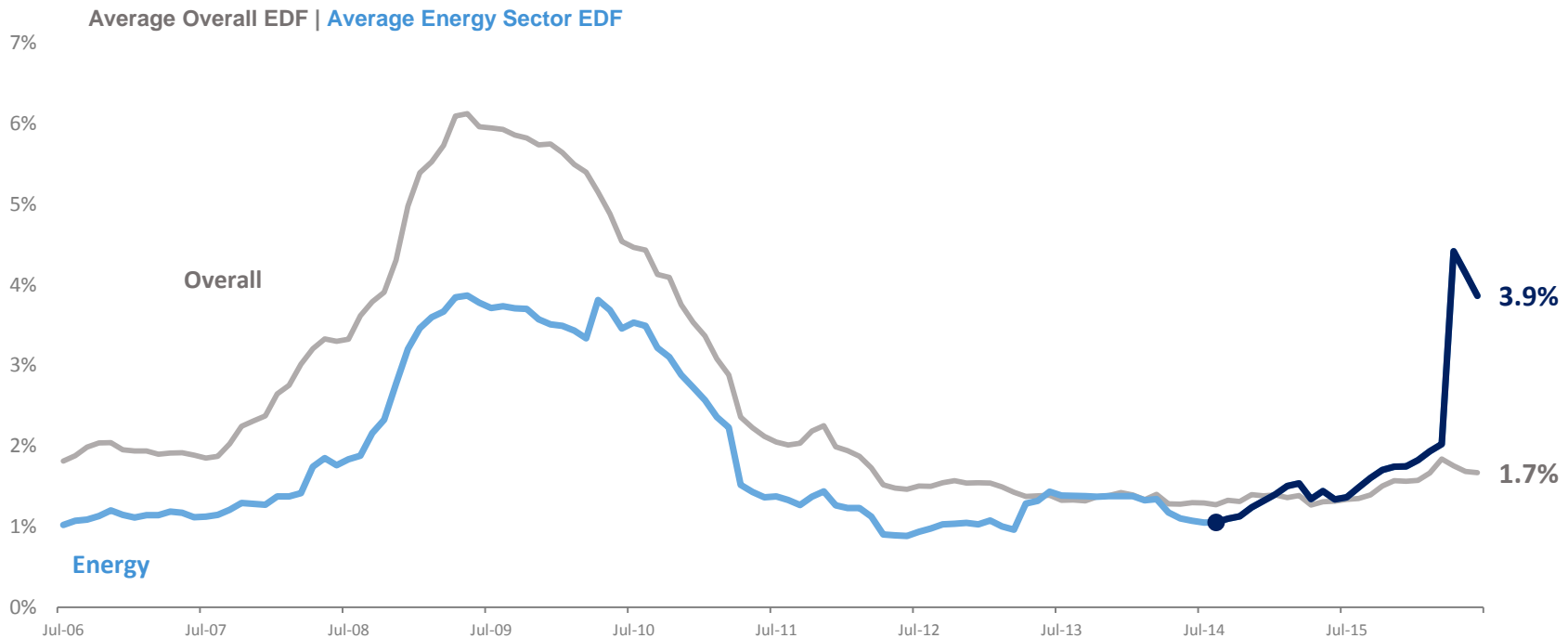
» When incorporating forward looking projections for impairment analysis one needs to account where in the credit cycle we are starting from.

» This requires ability to convert from internal ratings/TTC PD to a point in time estimate.

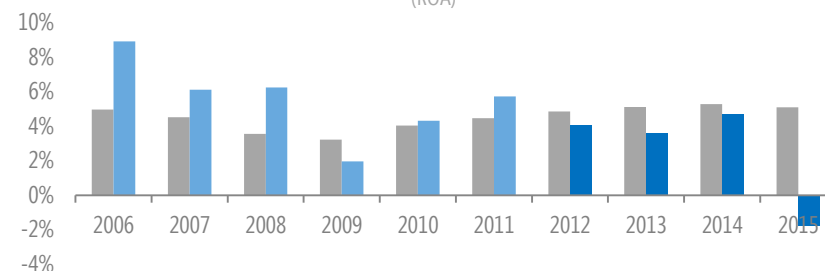» Both industry and regional effects should be accounted for forward looking impairments.

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Understanding the Risk Drivers of Impairments is Imperative

Overall CRD | Energy

Liquidity (Cash / Assets) — bar chart by year 2006–2015

Profitability (ROA) — bar chart by year 2006–2015

Growth (Sales Growth) — bar chart by year 2006–2015

Debt Coverage (Cash Flow / Interest Expense) — bar chart by year 2006–2015
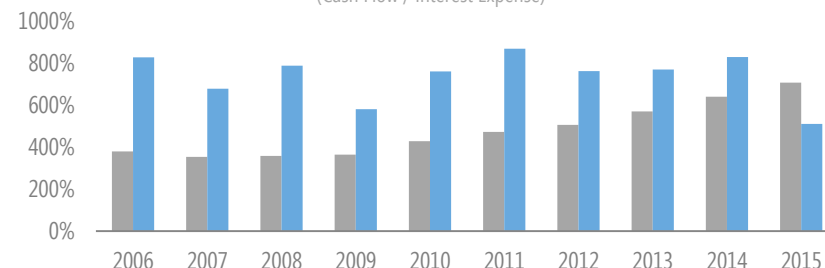
Leverage (LTD / (LTD + Net Worth)) — bar chart by year 2006–2015
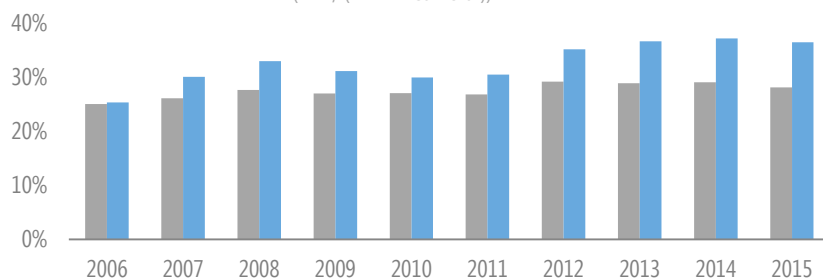
Leverage (RE / Current Liabilities) — bar chart by year 2006–2014

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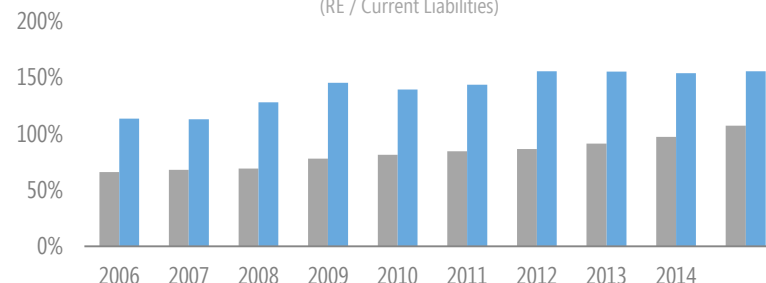
Moody's Approach to Model CECL Impairments

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

» Moody's Analytics has data/models covering C&I, CRE, Sovereign, Muni, Project Finance and Retail.

» Design to work with internal ratings or PD/LGD.

PD Models	» TTC rating/PD to PIT PD conversion » Lifetime PD/PD Term Structure » Scenario based PD modelling
LGD Models	» Lifetime LGD/LGD Term Structure » Scenario based LGD modelling
EAD Models	» Lifetime EAD/EAD Term Structure » Discounting (EIR) » Prepayment

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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.
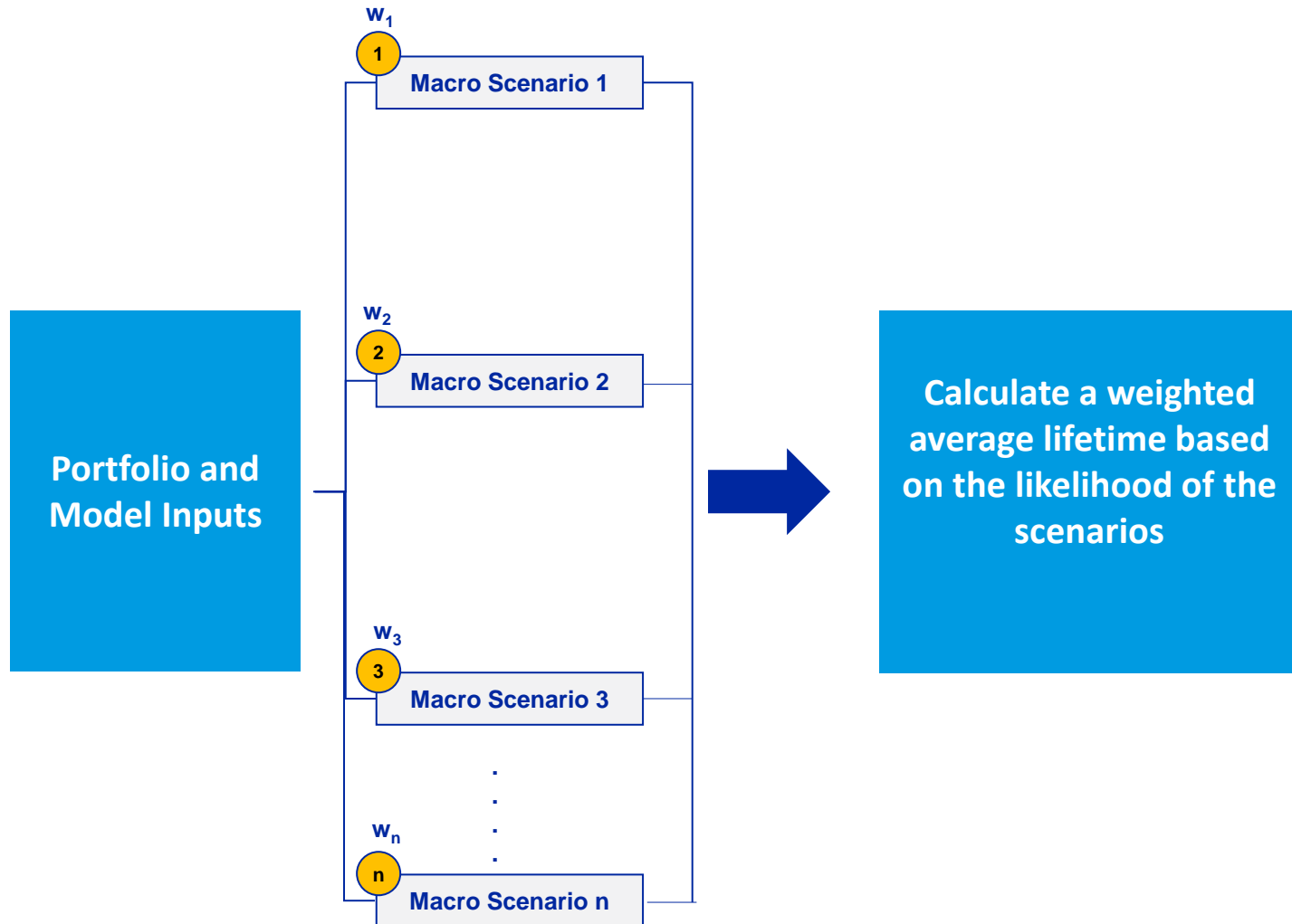
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American Bankers Association Recommendations on CECL

» **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 scenario 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.*

Impairment Calculation using Scenario Analysis

Portfolio and Model Inputs

w_1 — 1 — Macro Scenario 1

w_2 — 2 — Macro Scenario 2

w_3 — 3 — Macro Scenario 3

...

w_n — n — Macro Scenario n

Calculate a weighted average lifetime based on the likelihood of the scenarios

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Measure and managing impairment variability

Impacts of New Accounting Standards Will Be Significant and Profound

IFRS 9 packs bigger punch than Basel changes, say bankers

Capital hit from new loan loss accounting rules to rival incoming Basel regulations

Source: Risk Magazine, June 15, 2016.

» Provision levels expected to increase significantly - up to 50%

» Impact on earnings and capital will be very meaningful (both the level and the volatility)

» Pricing and availability of credit will be affected

Earnings Volatility Can Be Consistently Higher

» The earnings volatility under new accounting standards is generally **higher.**

» **Increased likelihood of lower earnings** due to correlated defaults and downgrades.

» Accurately accounting for diversification will dampen period over period volatility.

Distribution of Earnings in One Year
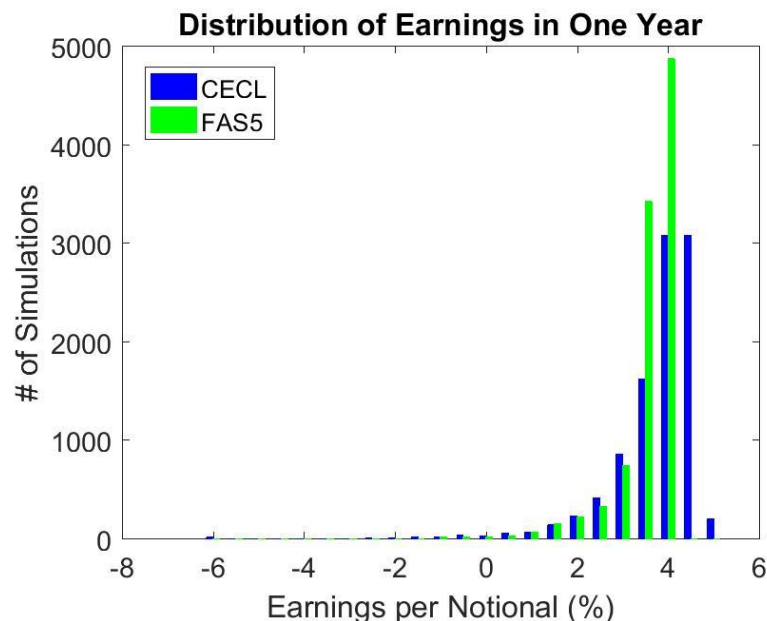
What Drives The Availability of Capital?

Change in Future Required Capital

» Future Risk Weighted Assets will require additional capital as the credit quality and composition of the portfolio changes

Capital Consumed Due to Credit Risk

» The available capital will be impacted by

– Changes in CECL/IFRS 9 impairments

– Charge-offs

| **Available Capital** | = | **Current Capital** | + | Change in Future Required Capital | − | Capital Consumed Due to Credit Risk |

Credit Quality Impacts Both

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Capital Management **is** Evolving

Availability of Capital

» Additional capital needs to be set aside as a buffer

» The amount of buffer needed is **portfolio specific** and dependent on factors such as **geographic, sector, asset class, and name concentration**

» To efficiently manage the portfolio, institutions need to determine the capital buffer **in an economically meaningful way**

Earnings Variability

» Stakeholders pay close attention to earnings as it has large impacts on stock prices

» Organizations can:

– **Minimize the portfolio's earnings variability given a certain level of expected earnings**

– **Minimize the chance of a large loss in portfolio earnings**

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Q&A