Introduction to CECL Quantification

Today's Speakers

» **Emil Lopez** is a Director in the Enterprise Risk Solutions Group, based in New York, focusing on the development of software and analytic solutions for impairment accounting (CECL/IFRS 9).

» Prior to joining the product strategy group, Mr. Lopez led risk rating and stress testing modeling projects for Basel and DFAST institutions.

» Mr. Lopez received his MBA from New York University and received his BS in finance and business administration from the University of Vermont.
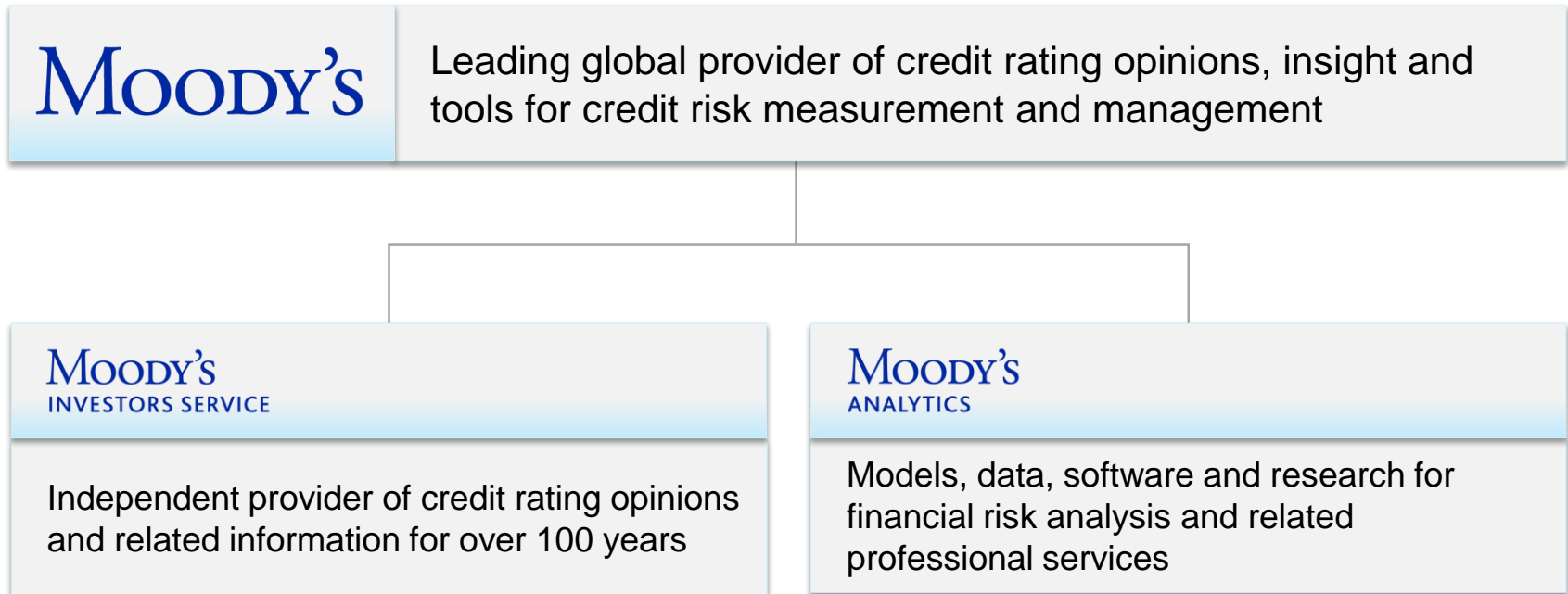
» **Dr. Jing Zhang** is Managing Director and the Global Head of Moody's Analytics Research and Modeling Group. His group is responsible for the quantitative modeling behind the EDF and LGD models for both public and private firms, commercial real estate, portfolio and balance sheet, and insurance analytics.

» PhD from the Wharton School of the University of Pennsylvania

» Editor of Risk Books *"CCAR and Beyond,"* and *"From Incurred Loss to Expected Loss"* (forthcoming)

Moderator

» **Ed Young** is a Senior Director at Moody's Analytics. He advises clients across the Americas on risk management and regulatory expectations issues around capital planning, liquidity, and credit stress testing, as well as allowance for credit loss processes.

» Prior to joining Moody's Analytics, Ed spent ten years working for the Federal Reserve. During his tenure, he participated on a multitude of Federal Reserve System initiatives related to capital planning, liquidity planning, stress testing, credit risk management, interest rate risk management, and model risk management.

About Moody's Analytics

MOODY'S	Leading global provider of credit rating opinions, insight and tools for credit risk measurement and management

MOODY'S INVESTORS SERVICE	**MOODY'S** ANALYTICS
Independent provider of credit rating opinions and related information for over 100 years	Models, data, software and research for financial risk analysis and related professional services

Welcome!

Moody's Analytics CECL Webinar Series: Expected Credit Loss Quantification

Introduction to CECL Quantification
Today

CRE CECL Methodologies
Tuesday, February 28, 2017 | 1:00PM EST

C&I CECL Methodologies
Tuesday, March 14, 2017 | 1:00PM EST

Retail CECL Methodologies
Tuesday, March 28, 2017 | 1:00PM EST

Structured Assets CECL Methodologies
Thursday, April 20, 2017 | 1:00PM EST

To find out more about Moody's Analytics perspectives on CECL and register for our webinar series visit:

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Polling Instructions

1. Click on the icon located in the right hand corner of the WebEx platform, so that the icon is blue (as shown).

2. Select your answers in the Polling section that appears in the right hand panel of the platform.

3. Results will display after the poll has ended.
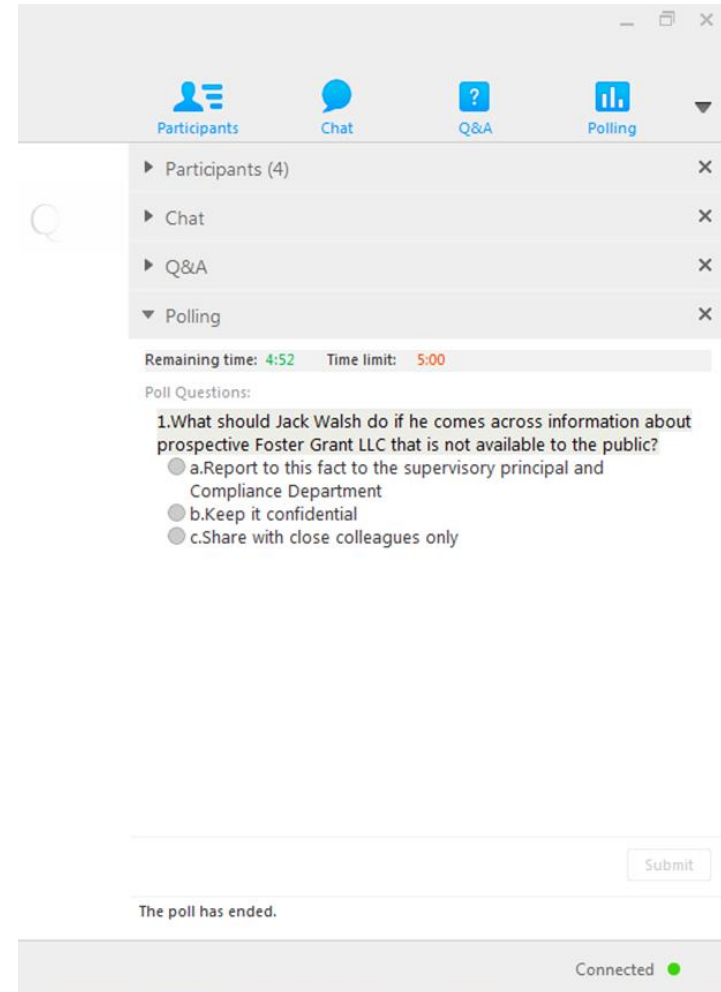
Topic 326: Measurement of Credit Losses on Financial Instruments; commonly known as "CECL"

Who/What does it apply to?

» All banks, savings associations, credit unions, and financial institution holding companies, regardless of asset size

» Entities holding financial assets and net investment in leases that are <u>not accounted</u> for at fair value through net income

» Includes: Loans, debt securities, trade receivables, net investments in leases, off-balance-sheet credit exposures, reinsurance receivables, etc.

» The standard requires organizations to immediately record the full amount of credit losses that are expected over the lifetime of the financial asset

When does it go into effect?

» FY 2019 (after 12/15/19) for public business entities that are SEC filers

» FY 2020 (after 12/15/20) for all other public business entities

» FY 2021 (after 12/15/21) for all other entities,

» Early adoption permitted December 15, 2018

Investment Strategy — **Impairment Model**

Loans/ Leases
- Held for Investment → CECL / PCD
- Held for Sale → Lower of Am. Cost Method/ Market

Debt Securities
- Held to Maturity → CECL / PCD
- Available for Sale → AFS Credit Loss / PCD
- Trading → FV-NI

New Impairment Method | Other FVOCI/ FVPL Methods

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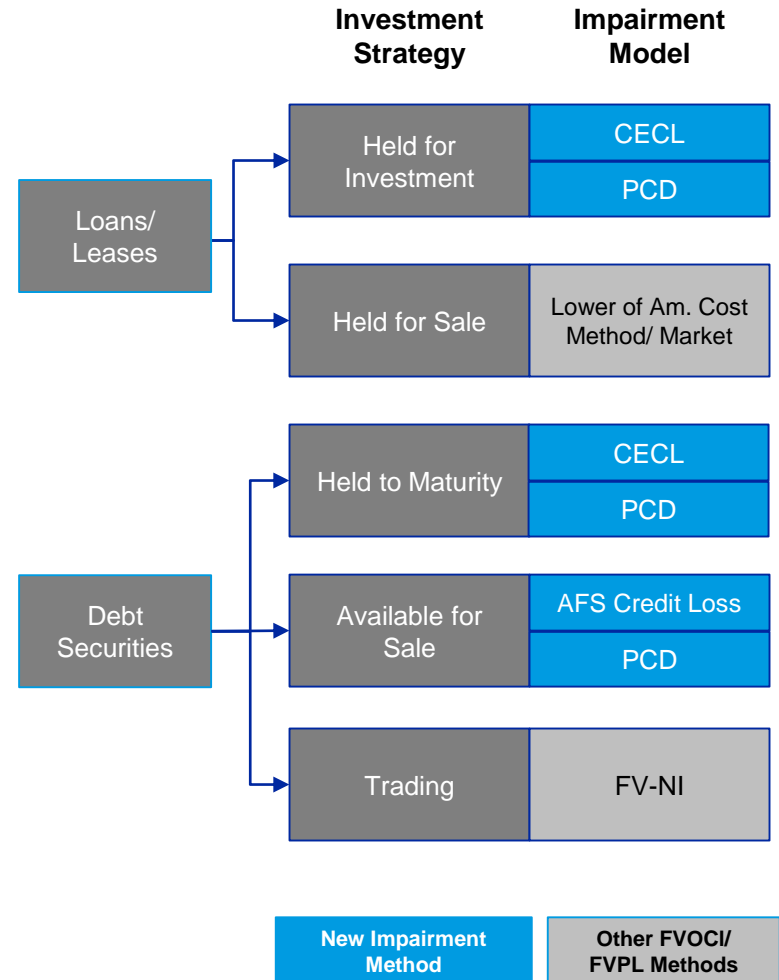
In essence, the new standard is about improving the measurement of and reporting on credit losses

Institutions will need to measure and record immediately all expected credit losses (ECL) over the life of their financial assets based on:

1) Past events, including historical experience

2) Current conditions

3) Reasonable and supportable forecasts

If it effects the collectability of the reported amount, it should be considered!

» Although "reasonable and supportable forecasts" are required, an entity <u>will not</u> need to create an economic forecast over the entire contractual life of long-dated financial assets

» Institutions will have significant discretion over how they measure expected credit losses

» ECL recorded at origination and updated at subsequent reporting dates

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Hypothetical illustration of the expected credit loss quantification process

Impact on Allowance for Credit Losses ("ACL")
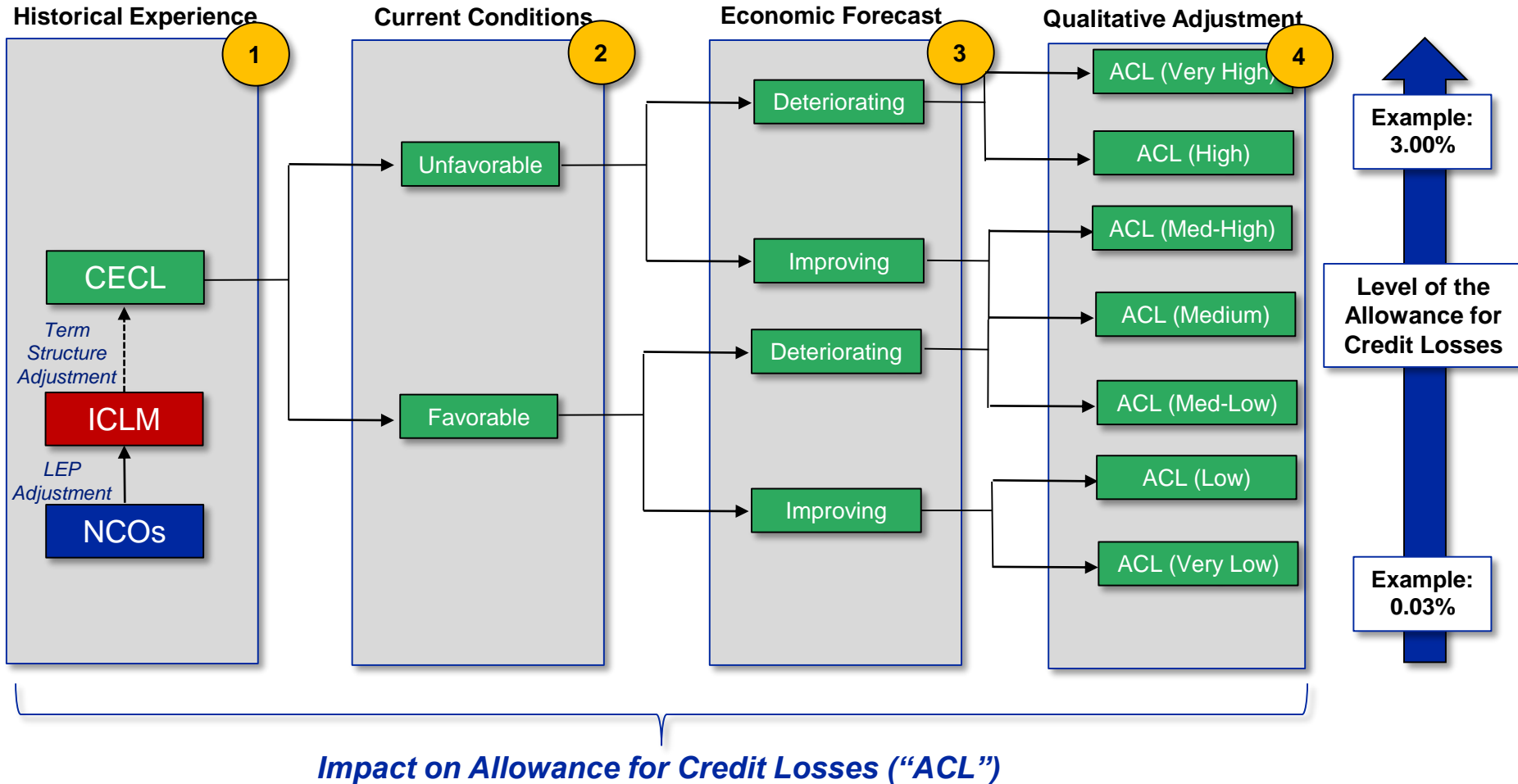
ICLM = Incurred Credit Loss Model (current GAAP) | CECL = Current Expected Credit Loss model (effective 2019-2021)

The ASU requires entities to apply one of two approaches to evaluate expected credit losses

Collective ("Pool") Evaluation

» Required for financial assets when similar risk characteristic(s) exists

Individual Evaluation

» Required when a financial asset does not share risk characteristics with its other financial assets

Examples of Shared Risk Characteristics

» Internal or external credit score

» Risk ratings or classification

» Financial asset type

» Collateral type

» Size

» Effective interest rate

» Term

» Geographical location

» Industry of the borrower

» Vintage

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Key Modeling Challenges for CECL

» Model **methodology**

– Loan-level versus cohort-level?

– Can we leverage existing stress testing, Basel or other models? How?

» Incorporating **macroeconomic drivers** in accounting:

– Which economic scenario? How many?

– Demonstrating relationship to credit losses

– Sensitivity analysis and scenario spreads

» **Lifetime length determination**: particularly for revolving products

– ECL for off balance sheet exposures to be reported separately

» **Benchmarking** to industry performance and previous crisis

– Support forecasts for audit

» **Disclosures**: models, production processes and reporting platforms need to support required reporting

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1. What is the most significant challenge you anticipate in CECL implementation?

A. Data availability for ECL modeling

B. ECL quantification

C. Scenario design

D. Qualitative/Management Overlay methodology

E. Performance (i.e., speed of execution)

F. Data and processes governance/controls

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What is the most significant challenge you anticipate in CECL implementation?
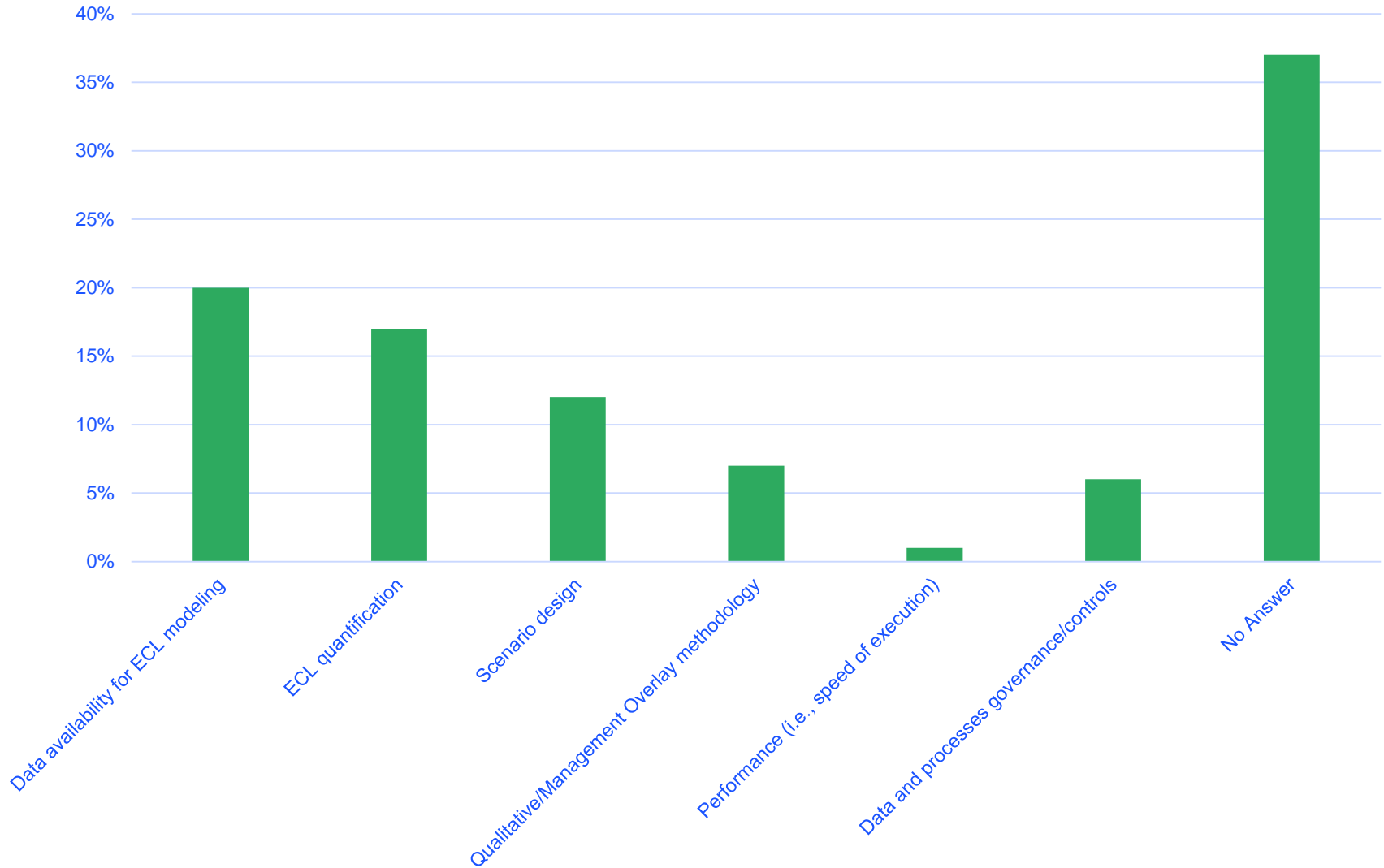
CECL Calculation: Strategic and Tactical Considerations

Criteria

- » Incorporate historical experience
- » Incorporate current conditions
- » Incorporate forward-looking information
- » Forecast life of loan ECL
- » Segment and granularity appropriate

Technical Considerations

- » Portfolio materiality
- » Data availability: historical and reporting-date data
- » Development costs: short-term vs. long-term investments
- » Timing

Strategic Considerations

- » Invest in data, measurement and system capabilities for both CECL and other applications
- » Consider the impact of less granular quantification on competitiveness
- » Consider the impacts on lending and other business decisions
- » Coordination and alignment with other processes
- » Interactions with various internal and external stakeholders

One Size Does Not Fit All!

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Coordination and Alignment With Other Processes
---And Considering the interactions with various stakeholders

Origination, relationship management, Portfolio management

Customers

Auditor and external market

Loan Pricing

Finance and Treasury ALM

CECL

Risk Management CCAR/DFAST

Scenario Forecast

Planning and Budgeting

Bank Regulators

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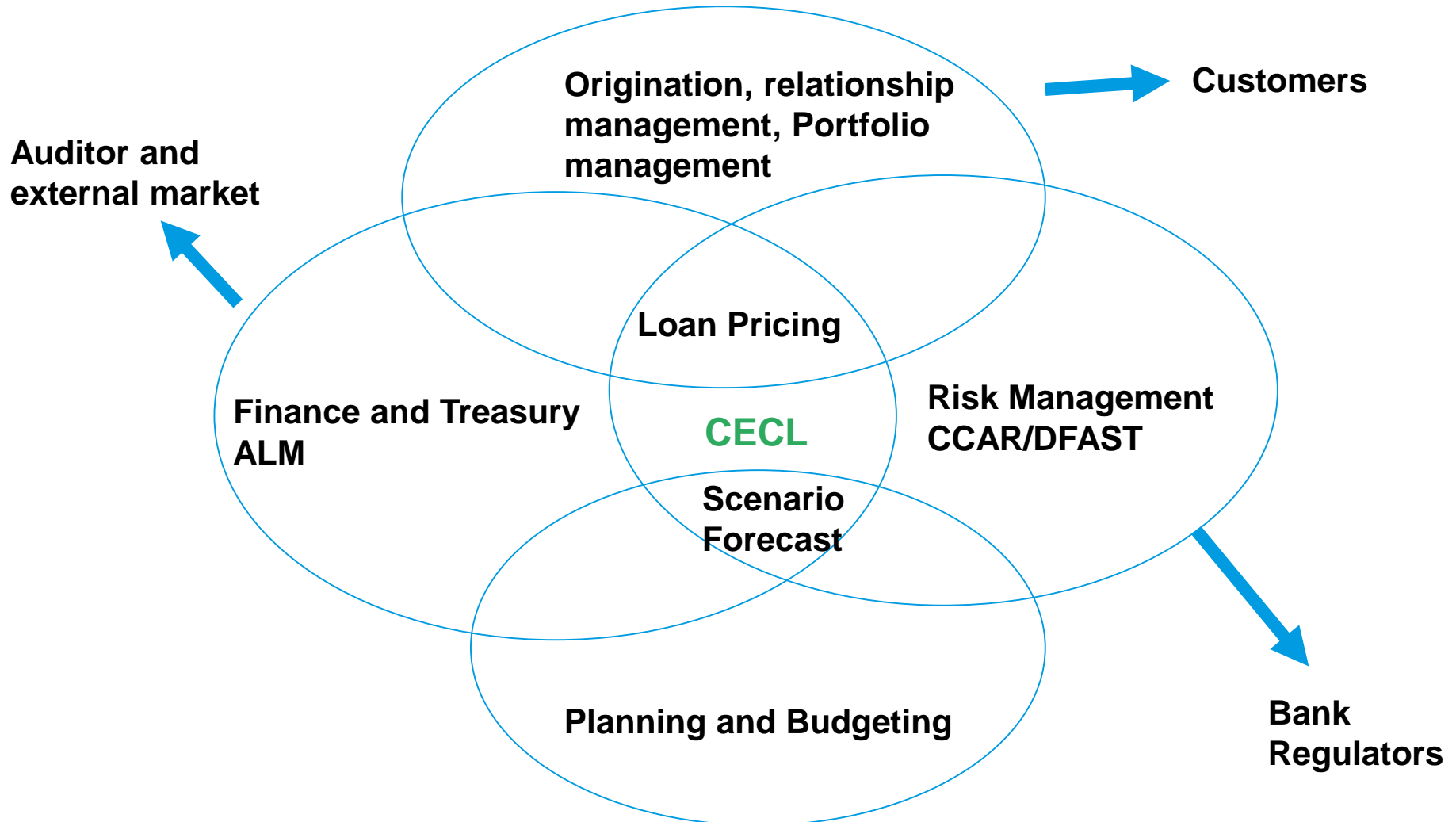
Possible Methodologies

» Loss rate methods

– Average charge-off method

– Static pool analysis

– Vintage analysis

» PD/LGD rating method

– Basel models

– Internal rating models

– Granular stress testing models

» Roll-rate method (migration analysis)

» Discounted cash flow analysis

For most banks, the typical approach is to leverage or build on top of existing approaches

Both statistical and qualitative analysis can be applied to any method to

» Incorporate forward-looking assessment (e.g. linking loss rate to forecast)

» Account for life-time loss

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2. What is/are the approach(es) you use in ALLL estimation today for your <u>commercial</u> portfolios?

A. Loss rates based on peer institution data (e.g. call report data)

B. Loss rates based on internal experience (e.g. static pool analysis)

C. Rating migration / roll rate

D. Vintage analysis

E. Dual risk ratings (i.e., PD / LGD)

F. Other

What is the approach you use in ALLL estimation today for your commercial portfolios?
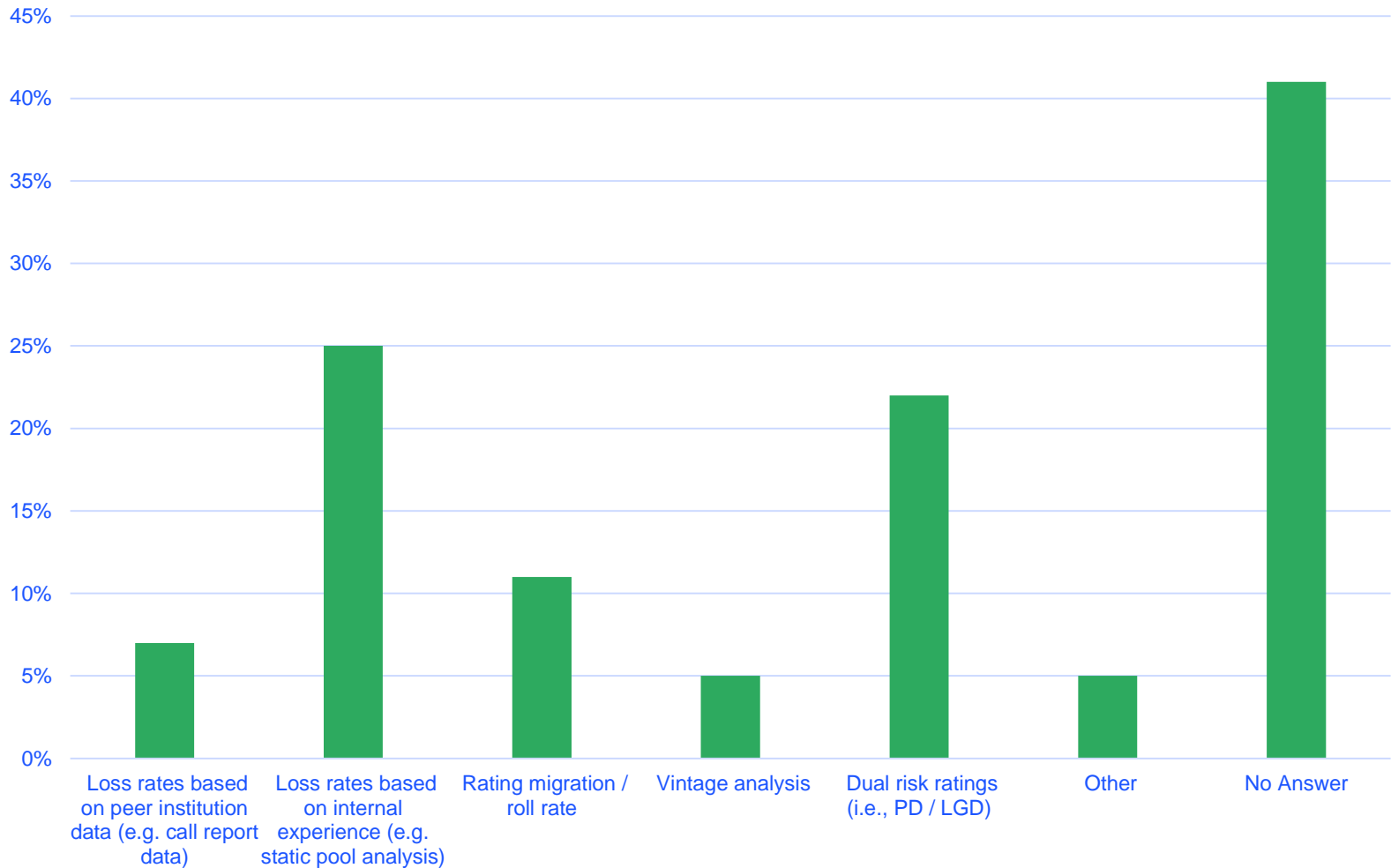
3. What is/are the approach(es) you use in ALLL estimation today for your <u>retail</u> portfolios?

A. Loss rates based on peer institution data (e.g. call report data)

B. Loss rates based on internal experience (e.g. static pool analysis)

C. Rating migration / roll rate

D. Vintage analysis

E. Dual risk ratings (i.e., PD / LGD)

F. Other

What is the approach you use in ALLL estimation today for your retail portfolios?

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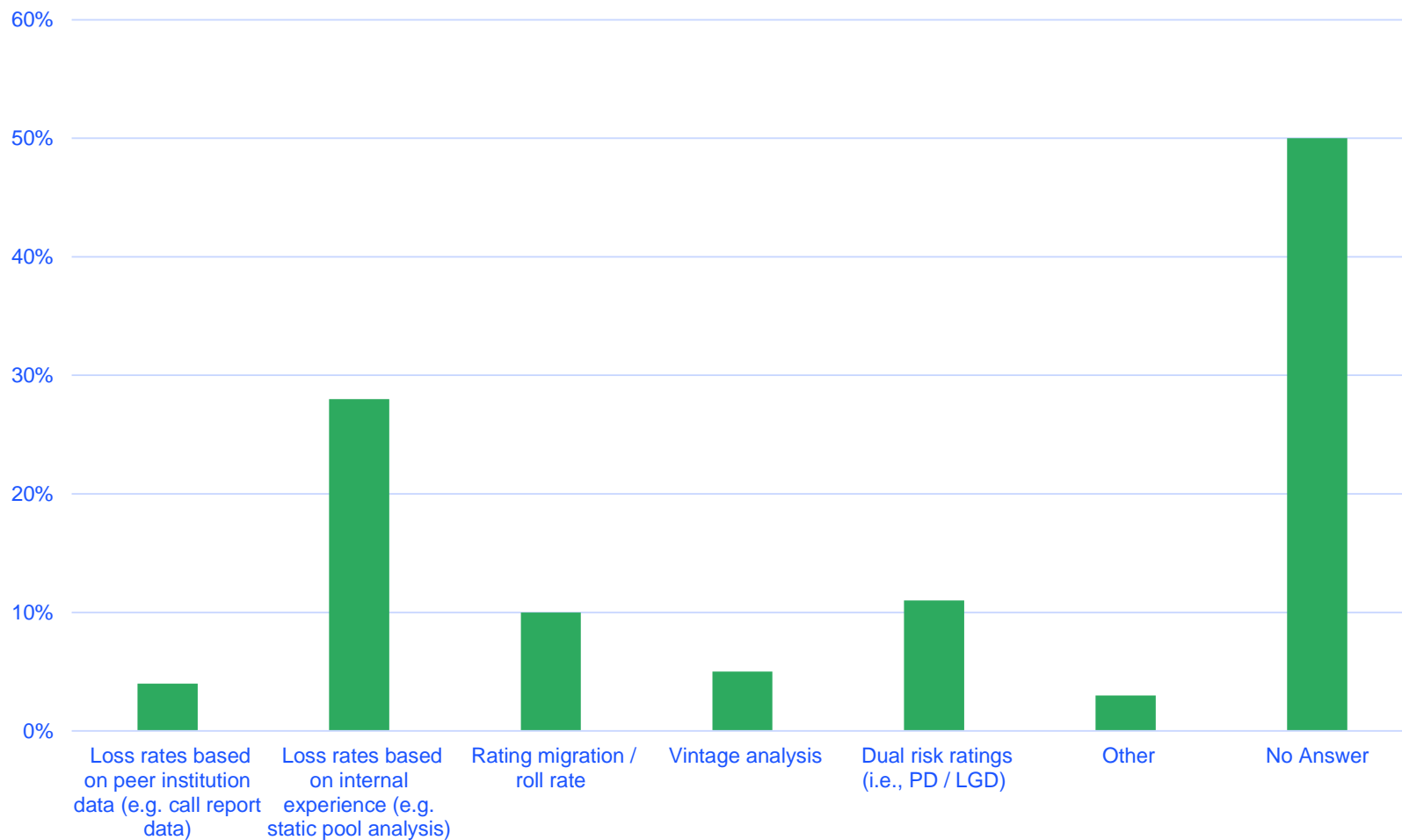
Building Upon the Loss Rate Approach

Starting Point

» Apply a historic loss rate percentage, either collective or individual evaluation

» Average charge-off method

» Static pool analysis

» Vintage analysis

Enhancement

† Incorporate forward-looking assessment

† Link loss rate directly or indirectly to macro forecast

† Extend annual loss to life-time loss

† Leverage external data if appropriate

Considerations

✓ Easy to implement

✓ Close to the current practice

✓ "Q" factor can be used to incorporate forward-looking assessment

✓ Proper segmentation and granularity is important

✓ Considering the linkage with business decisions such as loan underwriting

Leveraging the Roll Rate Approach

Starting Point

» Compute percentages of assets that will "roll" or "migrate" to a more severe risk rating or delinquency status.

» Roll-rate <u>percentages</u> are applied to the <u>balance</u> in each category to estimate the amount that will migrate to the next category.

» Aggregate total migration for each category to determine the allowance.

+

Enhancement

† Incorporate forward-looking assessment

† Linking the "roll" or "migration" to macroeconomic forecast

† Incorporate life-time loss

Considerations

✓ Linking credit migration to macroeconomic forecast: statistically or qualitatively?

✓ Consider the linkage with business decisions such as setting loan terms

Leveraging the Dual Rating Framework

Starting Point

» The PD/LGD/EAD framework for Basel IRB PD

» The dual rating framework currently used in business decision such as loan pricing, limit setting, risk monitoring and setting reserve

+

Enhancement

† Adjust "regulatory" definition to "accounting" definition

† TTC to PIT conversion to incorporate forward looking assessment

† Extend term structure of PD and LGD

Considerations

✓ Easier to implement for Basel IRB banks (this is the most popular approach for IFRS 9 implementation)

✓ There is a wealth of data and expertise in place as a result of IRB compliance

✓ Easier to assess impact on business decisions such as setting loan term pricing and terms

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PD, LGD, EAD Modeling Under Basel and CECL

	BASEL	CECL
PD	1. 1-year TTC (through-the-cycle) PD based on historical long run average default rate; 2. Subject to prescribed regulatory floors (e.g. 3.b.p for some portfolio) 3. Estimated based on minimum five years of historical data	1. Term structure of PDs 2. Point-in-time (PIT) PD measures; 3. Include historical, current and forward looking elements at reporting date for all possible outcomes; 4. No prescribed regulatory floors
LGD	1. "Downturn" LGD to reflect adverse economic scenarios. 2. Consider both direct and indirect costs associated with collection of the exposure; 3. Regulatory prescribed floors; 4. Discount rate based on weighted average cost of capital or risk-free rate; 5. Min. 5 year data for retail and 7 year for sovereign, corporate and bank exposures	1. "Current" or "forward looking" to reflect impact of economic scenarios; 2. Only costs directly attributable to the collection of recoveries (remove the collective cost in BASEL LGD); 3. Discount rate based effective interest rate; 4. Timely evaluations of collateral value and consideration of future value changes
EAD	1. "Downturn" EAD to reflect what would be expected during a period of economic downturn conditions; 2. Estimates take into consideration of on/off balance sheet exposures adjusted for estimated future draw downs over the lifetime.	1. Consider all contractual terms (e.g. prepayment, usage, call and similar options) over the lifetime; 2. Adjust for firm's estimates for the undrawn commitments

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Leveraging the CCAR/DFAST Stress Testing Framework

Starting Point

» CCAR/DFAST or other stress testing models

» These models have gone through extensive and rigorous validation and benchmark

» Resource and expertise built for CCAR/DFAST

Enhancement

† Calibrate the models to both "adverse/stress" and "normal" scenarios

† Extend term structure of PD and LGD

† Enhance segmentation and granularity

Considerations

✓ More seamless integration with CCAR/DFAST process

✓ There is a wealth of data and expertise already in place as a result of CCAR implementation

✓ Consider the linkage with other business applications such as underwriting, pricing of loans etc.

4. How do you plan to incorporate forward-looking information to expected credit loss estimates?

A. Modeled: Linking macroeconomic variables to loss estimates quantitatively

B. Overlay: adding impact of macroeconomic forecast to the expected credit loss through more qualitative measures

C. Mix of quantitative models and qualitative overlays

D. Have not decided

How do you plan to incorporate forward-looking information to expected credit loss estimates?
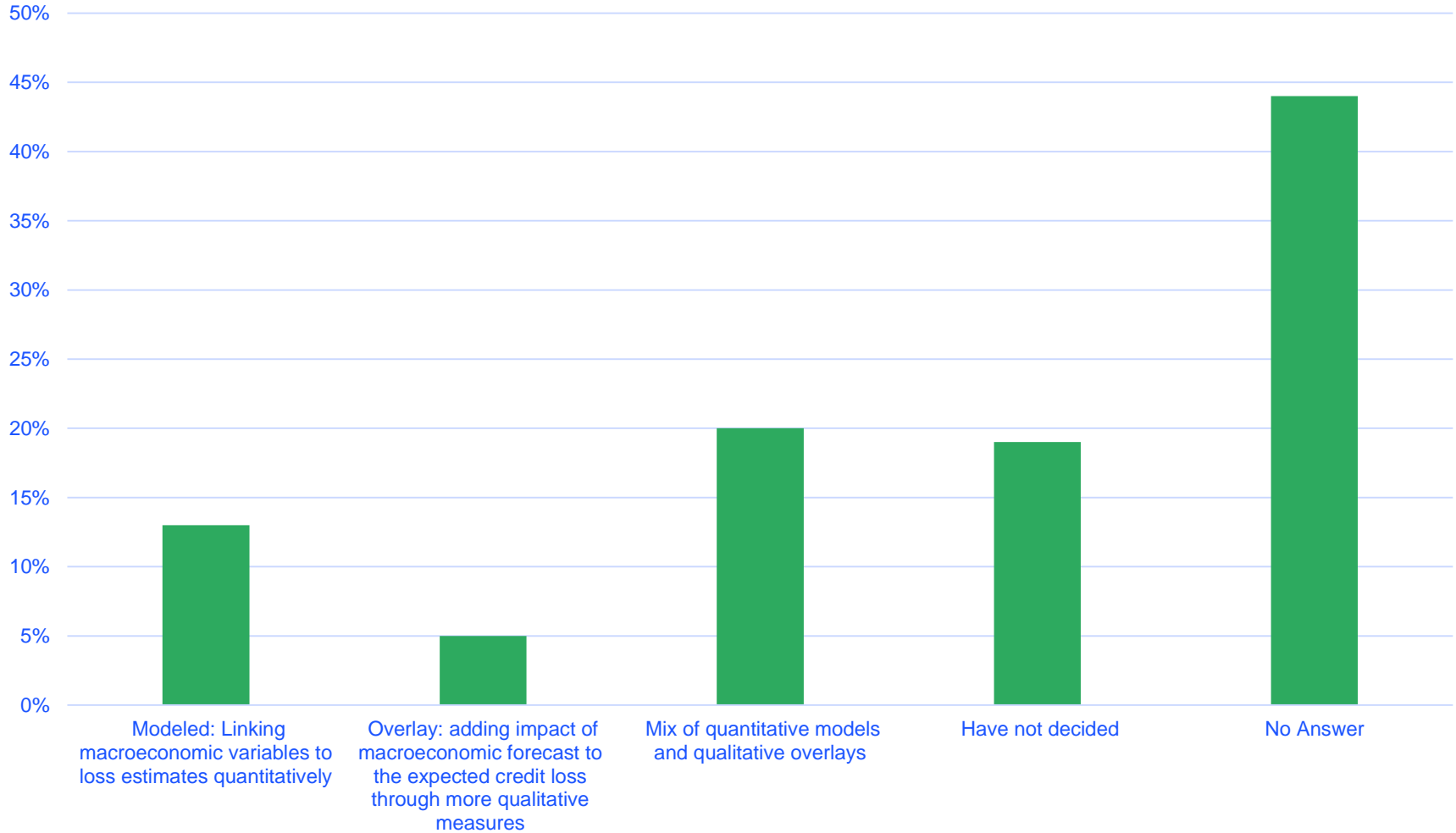
Business Impacts of CECL can be Significant and Profound

IFRS 9 packs bigger punch than Basel changes, say bankers

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

Loss allowance under CECL and FAS 5&114 can differ materially due to differences
- » between PIT and TTC PDs
- » lifetime expected loss and the assumed loss emergence period

CECL may affect
- » Fluctuation / volatility in provision and earnings,
- » Available capital

These impacts on earnings and capital may be significant with consequences for
- » Loan origination---loan product term and pricing
- » Customer relationship
- » Hedging and other credit portfolio decisions

Will my approaches to estimating CECL help track and monitor these impacts? Will they help design metrics to reduce potential volatility—e.g. by diversifying loans within portfolios to reduce concentrations of credit risk or adjusting maturities of loans?

Key Takeaways

» Modeling expected credit losses represents one of they key challenges of the CECL accounting standard

» Existing risk measurement tools used for regulatory capital, internal ratings, and stress testing can serve as good starting points. However, necessary enhancements may include:

    — Segmentation granularity

    — Adjustment for current conditions

    — Linkage to forward-looking scenarios

    — Extension to life of loan

    — Adjustment for built-in bias (i.e. conservatism)

» The appropriate approach ultimately depends on portfolio- and organization-specific considerations, including data availability and interconnectedness of banking functions

» The rest of the webinar series will focus on modeling considerations for specific asset classes

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