MOODY'S ANALYTICS

CECL: Adapting to Adopt

Chris Henkel, Senior Director, Advisory Services
Anna Krayn, Senior Director, Regulatory & Accounting Solutions

April 2018

Speakers

Christian Henkel

Senior Director

Advisory Services

- Based in New York City, Chris leads a global team of risk consultants who work closely with banks, insurers, and other financial institutions
- Has 20+ years experience in commercial banking – including expertise in risk modeling, allowance for credit loss quantification, stress testing, and portfolio management.
- Has a BA and an MBA from the University of Texas with concentrations in Finance and Accounting
- Graduated valedictorian from the Southwestern Graduate School of Banking at Southern Methodist University, where he also served as a credit risk management instructor

Anna Krayn

Senior Director

Risk & Accounting Solutions – Americas

- Leads team responsible for solution structuring across Moody's Analytics products and services focusing on impairment, stress testing, and capital planning solutions for financial institutions
- Advisory services experience as an engagement manager leading projects with financial institutions across the Americas in loss estimation, enhancements in internal risk rating capabilities, and counterparty credit risk management.
- Was a rating analyst with Moody's Investors Service before joining Moody's Analytics in 2008
- Holds Bachelor of Science degree in finance and international business and MBA from Stern School of Business at New York University (NYU)

Agenda

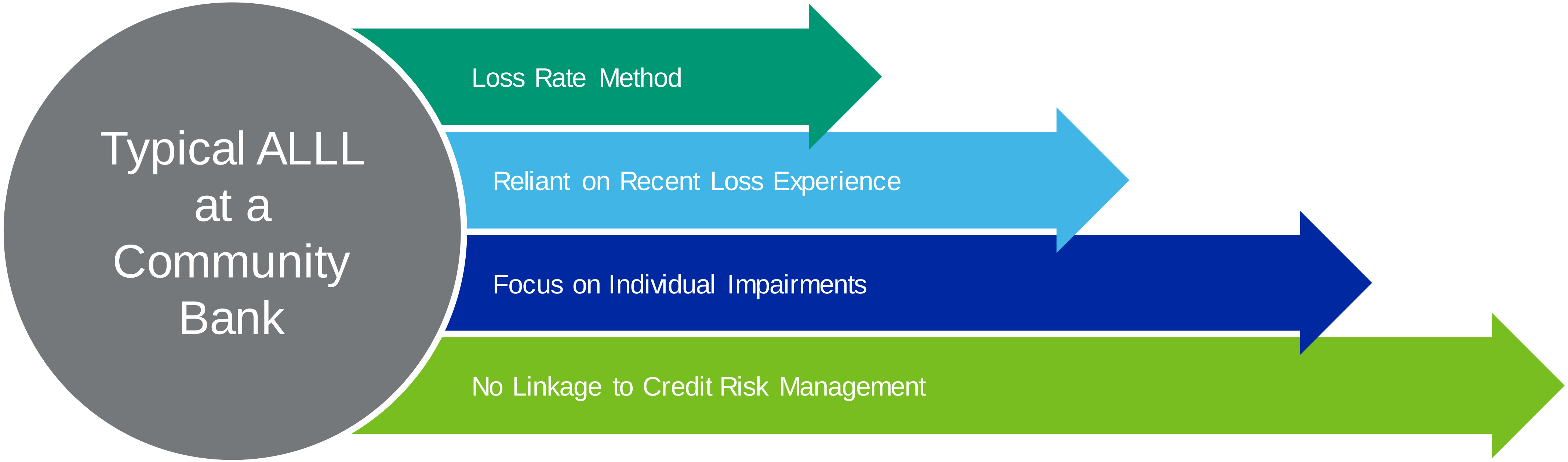
1. State of the Industry
2. Deriving ECL Measures for Community Banks
3. The Ultimate Test of the Approach

1

State of the Industry

Where are we starting from?

A Word on Incurred Loss Approach Today

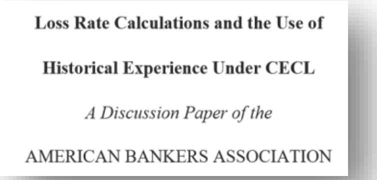


Complexity Scaled to Sophistication….

> “Simplicity is always great until it gives you the wrong answer or someone asks a simple question you can’t answer! When the “answer” drives decisions towards bonuses, dividends, and raising capital, the stakes can be high!”

Michael Gullette
American Bankers Association

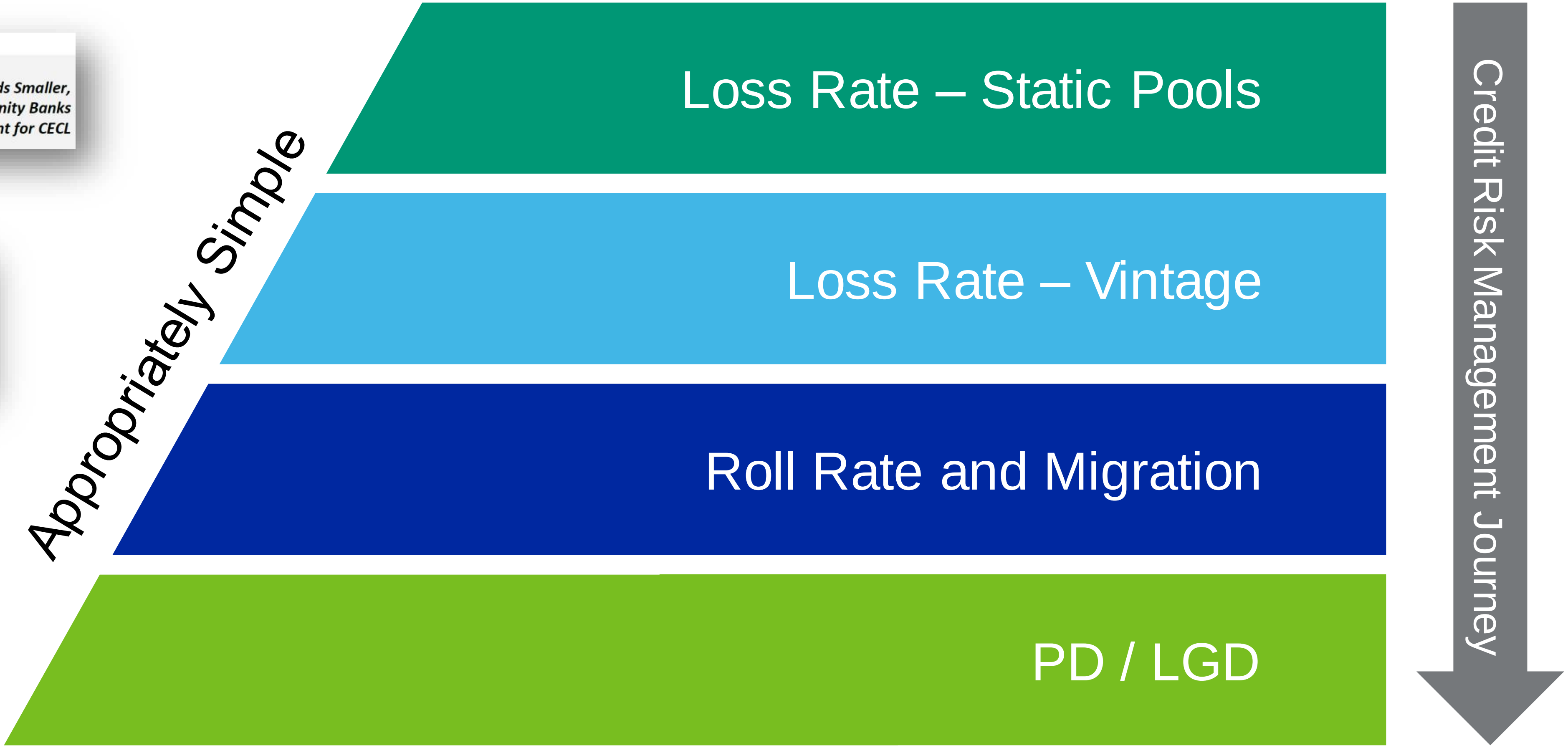
Emphasizing Simplicity


Loss Rate Calculations and the Use of

Historical Experience Under CECL

A Discussion Paper of the

AMERICAN BANKERS ASSOCIATION



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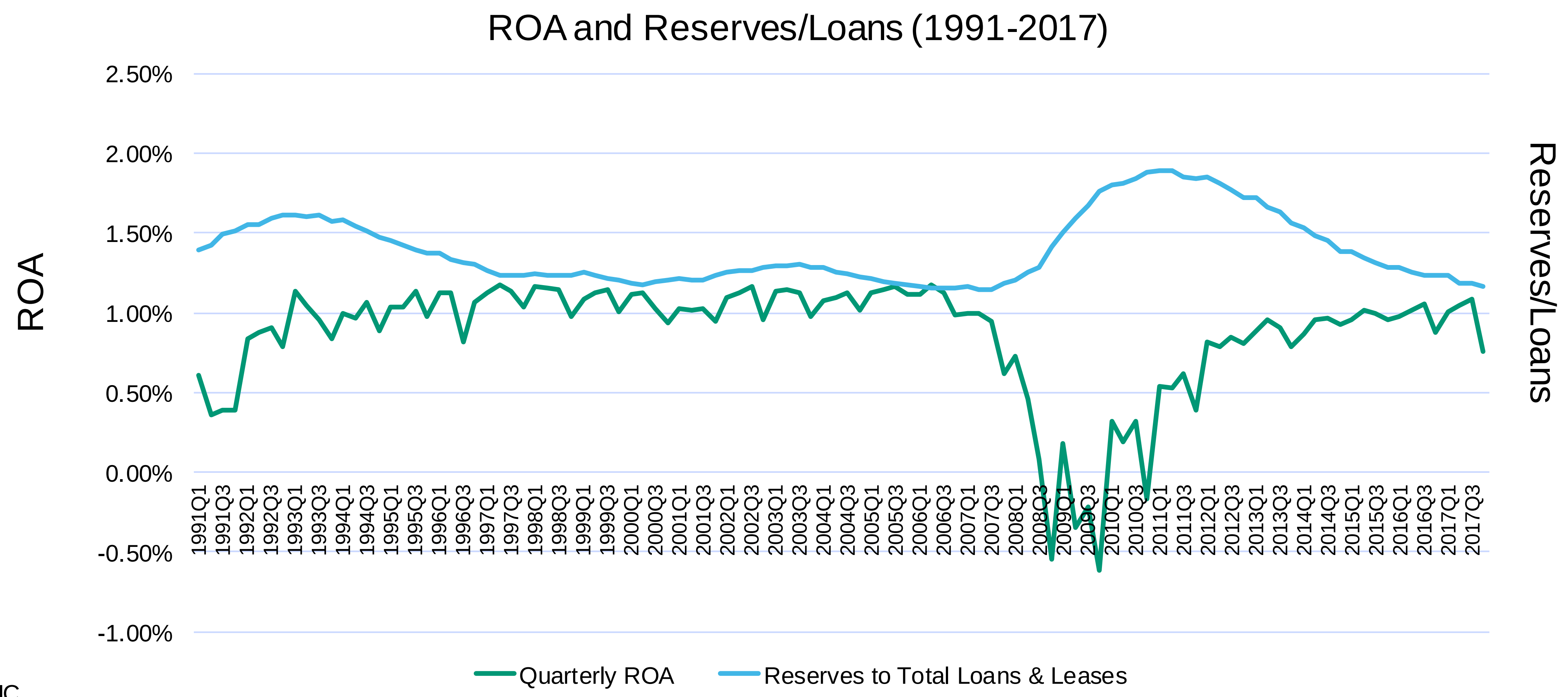
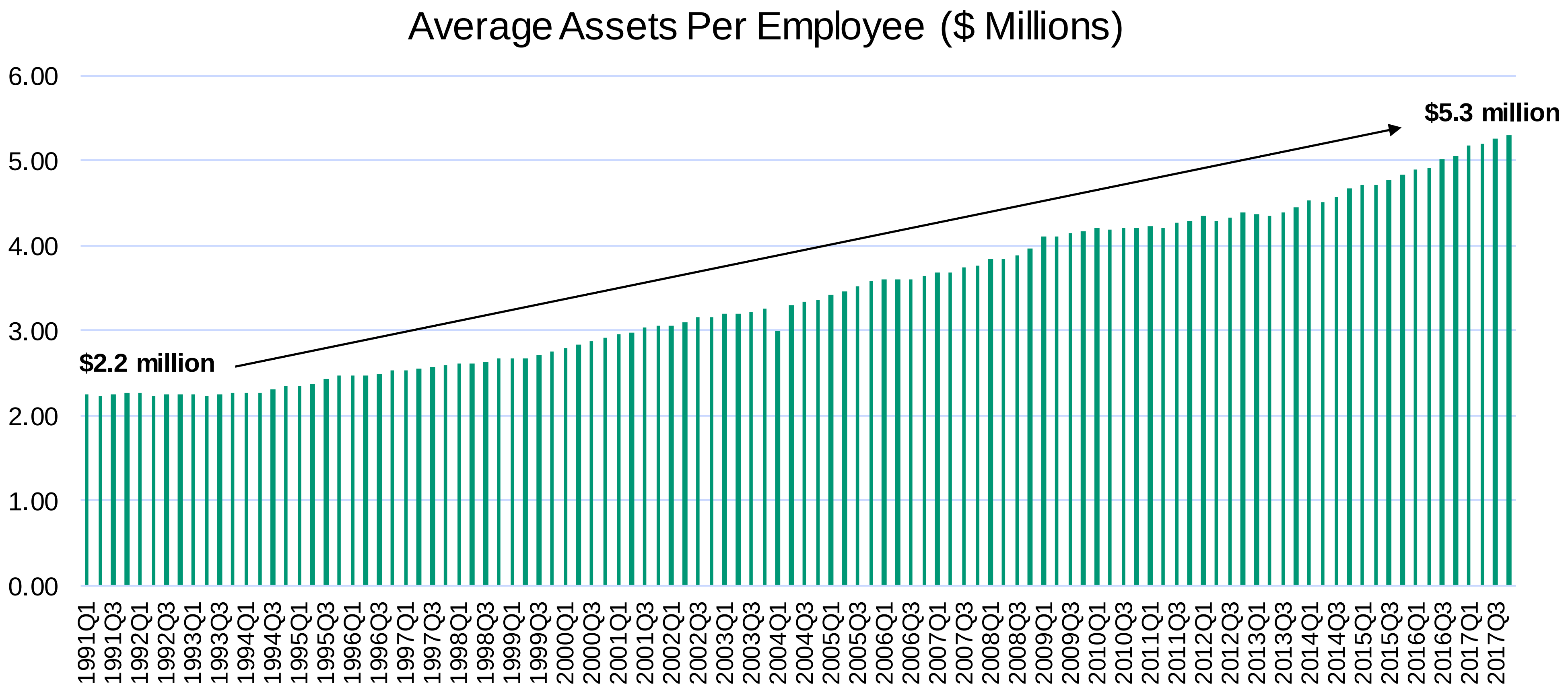
Deriving ECL Measures for Community Banks

Reserves for credit losses impact profitability



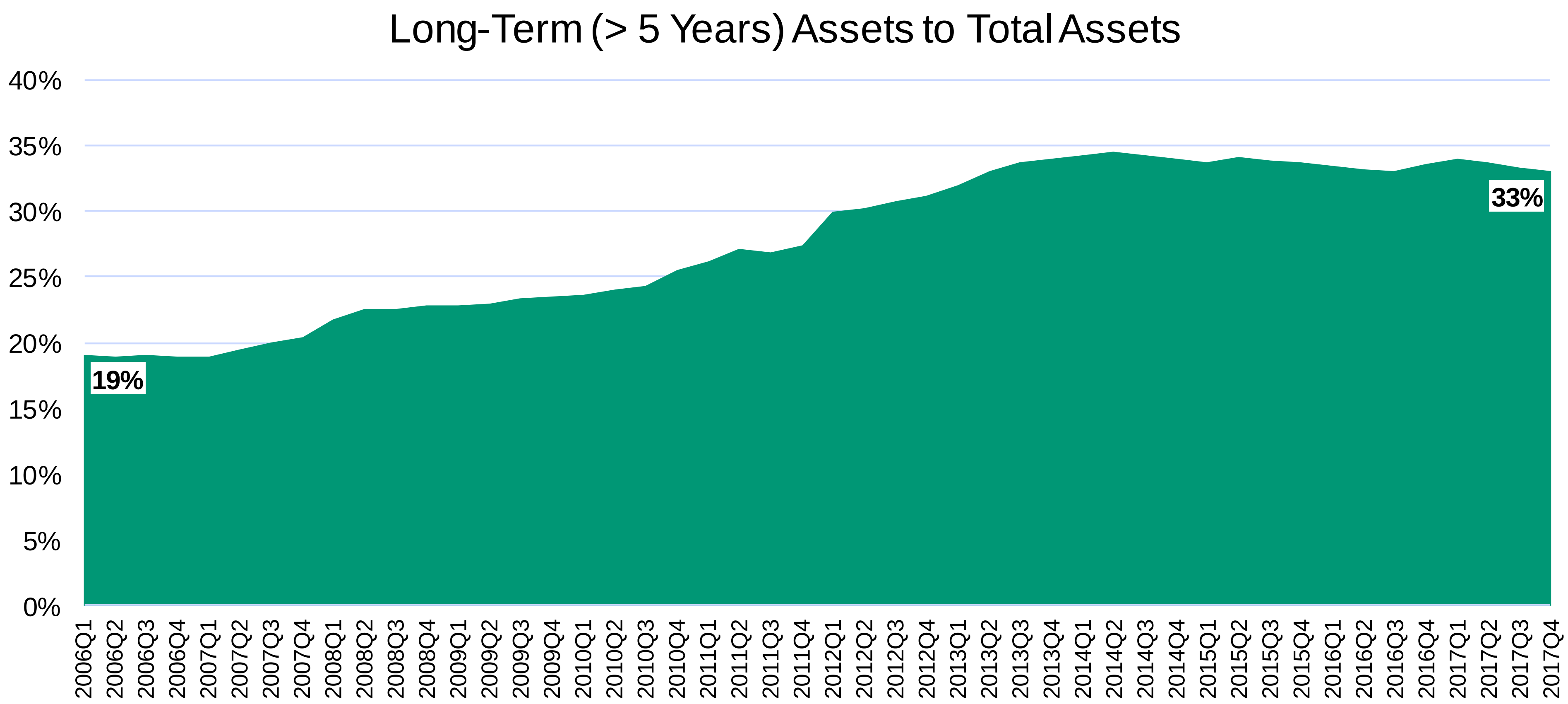
Source: FDIC

There is a greater need for operational efficiencies to improve profitability



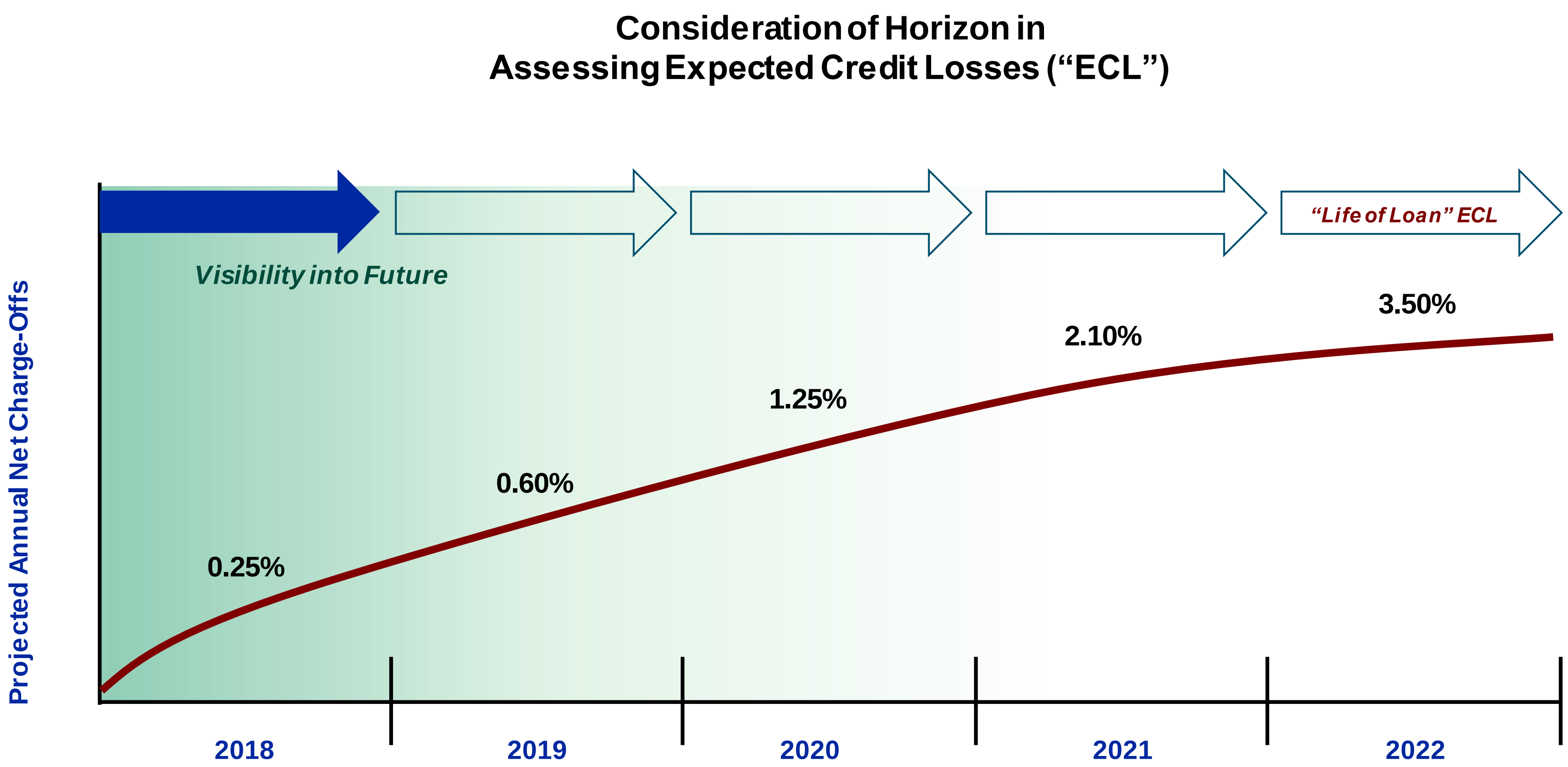
Source: FDIC

One-third of community bank assets have maturities greater than five years…



Source: FDIC

…and you need hold reserves over the remaining contractual life of each loan/segment



How you get there can take a variety of paths, and it will likely vary by asset class/segment

For most community banks, using a loss rate approach is the most sensible option

Segment-Level ECL Illustration

ECL	= ∑	Historical Segment-level Loss Experience **NCO Rate**	+/-	Current Conditions and Forecast Variables **Qualitative Adjustment**	x	Outstanding Loan Balance / Amortized Cost **Exposure**
Expected Credit Loss ($)		*Net Charge Offs (%)*		*Add / Subt.(%)*		*Exposure Amount ($)*

Calculating Lifetime NCOs, methods:

» Annual NCO x Remaining Life

» Cumulative NCO / Portfolio Balance
(total NCO from of a "snapshot" of the portfolio until disposition)

» Cumulative NCO / Portfolio Balance
(total NCO from loans originated in each year)

Qualitative Adjustment Factors, examples

» "Predictive" economic variables (e.g., commodity prices, rents, unemployment rate)

» Use past experience and judgment to quantify the impact

» Basis points (%) are added or subtracted to reflect current conditions and forecasts

» A comprehensive narrative is essential for disclosure requirements

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Segment-Level ECL Illustration

ECL = ∑ **NCOs** +/- **Qualitative Adjustment** x **Exposure**

ECL		Historical Segment-level Loss Experience		Current Conditions and Forecast Variables		Outstanding Loan Balance / Amortized Cost
ECL	= ∑	NCOs	+/-	Qualitative Adjustment	x	Exposure
Expected Credit Loss ($)		*Net Charge Offs (%)*		*Add / Subt.(%)*		*Exposure Amount ($)*

Current Conditions: - 0.25%

Forecast Conditions: - 0.25%

Qual. Adjustment: - 0.50%

Annual: 0.75%

Lifetime: 3.50%

ECL %: 3.00%

$1 million

$30 thousand

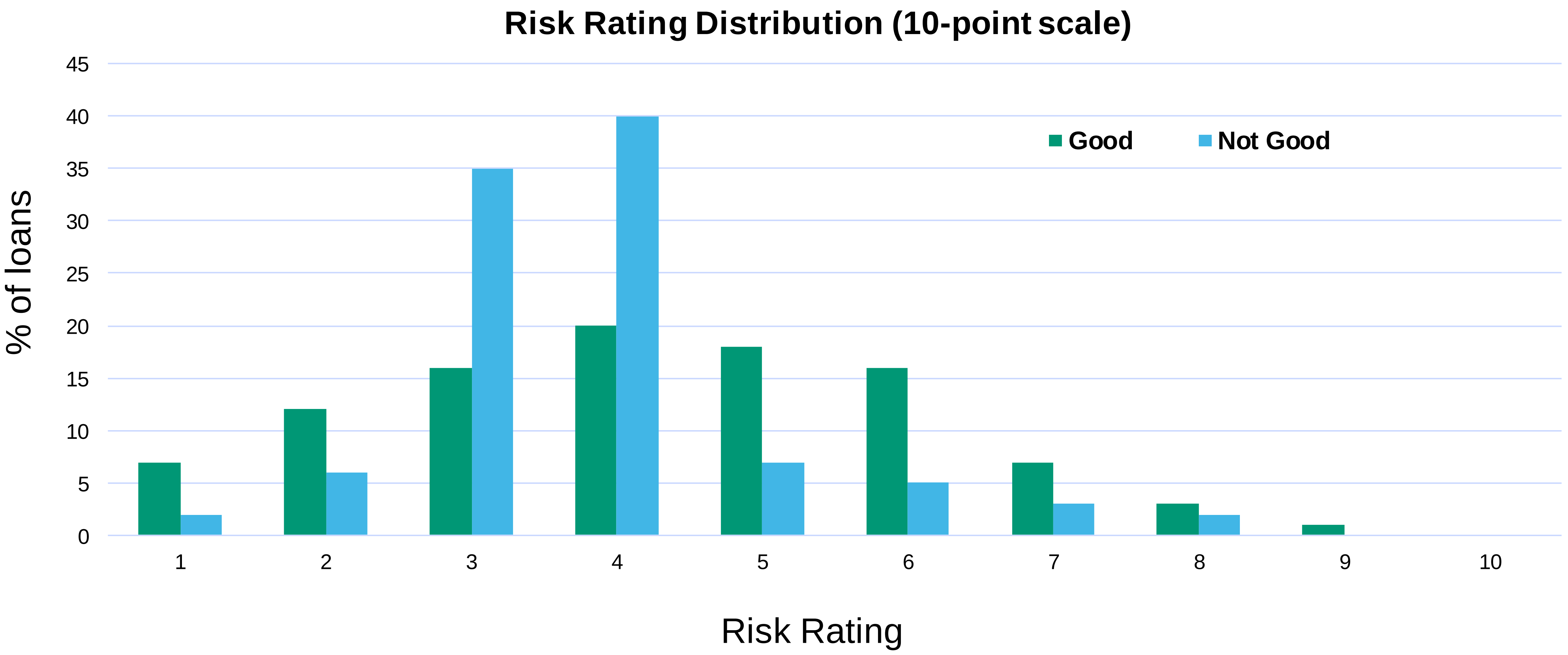
($1MM x 3.00%)

Data requirements depend upon segmentation and ECL methodology; will vary by segment

EXAMPLES

- Segmentation criteria/identifier (e.g., borrower NAICS code, Call Report code)
- Segment-level historical losses (own, peer, 3rd party)
- Origination date and maturity
- Exposure amount for each loan/segment (including paydowns and pre-payment assumptions)
- Loan product type (e.g., RLOC for ABL facilities)
- Collateral/asset type
- Credit risk metrics (usually scorecard/risk rating factors)
- Economic variables (segment-specific) and forecasts
- Risk ratings (if and accurate and providing risk differentiation)

A quick word on risk ratings…

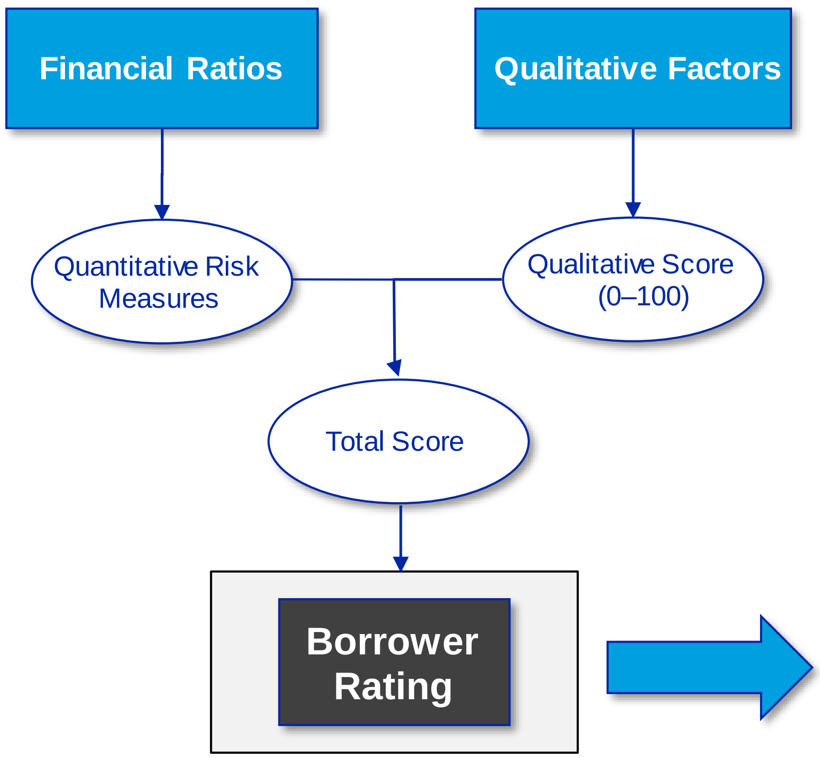


Thinking about dual risk ratings…?

…Then a PD/LGD approach might be right for you

Illustration of a PD Scorecard

Risk Rating Scorecard



Internal PD Rating Scale

Rating	Year 1	Year 2	Year 3	Year 4	Year 5
1	0.15	0.49	0.91	1.32	1.75
2	0.43	1.11	1.95	2.81	3.56
3	0.89	2.49	4.39	6.45	8.17
4	1.54	4.12	6.93	9.59	12.28
5	2.67	6.78	10.88	14.66	17[illegible]
6	4.10	8.90	13.67	17.70	[illegible]
7	6.85	15.87	24.26	31.37	[illegible]
8	10.84	19.53	27.03	33.74	[illegible]
9	35.00	54.98	68.30	76.69	84.5[illegible]
10	100.00	100.00	100.00	100.00	100.00

In this example, a “5” rated loan has a ~15% cumulative probability of default (“PD”)

On average, the amount we could potentially lose depends on four things …

ECL

Expected Credit Loss ($)

$$ECL = \sum PD \times LGD \times Exposure \times Discount\ Factor$$

… how likely the borrower is to go into default

PD

Probability of Default (%)

… the estimate of loss (1-recovery) should default occur

LGD

Loss Given Default (%)

… the exposure amount at the time of default

Exposure

Exposure Amount ($)

…rate used to discount future cash flows

Discount Factor

Discount Rate (%)

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

On average, the amount we could potentially lose depends on four things … **ECL**	= Σ	… how likely the borrower is to go into default **PD**	X	… the estimate of loss (1-recovery) should default occur **LGD**	X	… the exposure amount at the time of default **Exposure**	X	…rate used to discount future cash flows **Discount Factor**
Expected Credit Loss ($)		*Probability of Default (%)*		*Loss Given Default (%)*		*Exposure Amount ($)*		*Discount Rate (%)*

On average, the amount we could potentially lose depends on four things …

ECL = ∑ **PD** X **LGD** X **Exposure** X **Discount Factor**

ECL		PD	LGD	Exposure	Discount Factor
On average, the amount we could potentially lose depends on four things …	= ∑	… how likely the borrower is to go into default	… the estimate of loss (1-recovery) should default occur	… the exposure amount at the time of default	…rate used to discount future cash flows
Expected Credit Loss ($)		*Probability of Default (%)*	*Loss Given Default (%)*	*Exposure Amount ($)*	*Discount Rate (%)*

- **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

On average, the amount we could potentially lose depends on four things …			… how likely the borrower is to go into default		… the estimate of loss (1-recovery) should default occur		… the exposure amount at the time of default		…rate used to discount future cash flows
ECL	=	∑	**PD**	X	**LGD**	X	**Exposure**	X	**Discount Factor**
Expected Credit Loss ($)			*Probability of Default (%)*		*Loss Given Default (%)*		*Exposure Amount ($)*		*Discount Rate (%)*

On average, the amount we could potentially lose depends on four things …

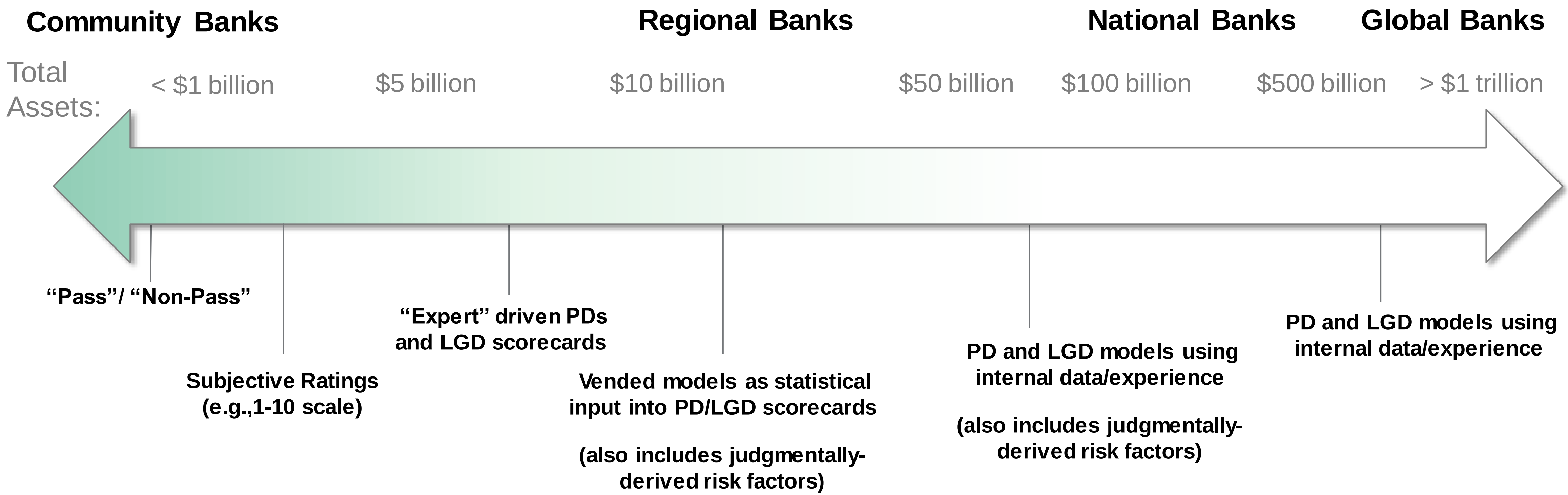
ECL = ∑ **PD** X **LGD** X **Exposure** X **Discount Factor**

ECL		PD	LGD	Exposure	Discount Factor
On average, the amount we could potentially lose depends on four things …	= ∑	… how likely the borrower is to go into default	… the estimate of loss (1-recovery) should default occur	… the exposure amount at the time of default	…rate used to discount future cash flows
Expected Credit Loss ($)		*Probability of Default (%)*	*Loss Given Default (%)*	*Exposure Amount ($)*	*Discount Rate (%)*

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

Spectrum of risk rating methodologies (for the ACL)

General observations of commercial credit practices at US banks



3

The Ultimate Test

Can You Explain Your Results?

Questions CECL Solution Needs to Answer

Initial Implementation

How?

- » Data Management
- » Estimation Methodology
- » Critical Assumptions
- » Reporting
- » Controls and Governance
- » Execution

Ongoing Process

What?

- » Qtr over Qtr Change
- » Impact on Reserves
- » Drivers of ECL

Why?

- » Market Conditions
- » Portfolio Composition
- » Underwriting Changes
- » Forecasts
- » Volume
- » Activity
- » Originations
- » Migrations

Banker's CECL Implementation Modus Operandi

1. **Improve already lean operations.** Adopt a holistic approach to implementation. Comply, communicate, compete
2. **Identify and institutionalize factors that drive risk in your portfolio.** CECL helps to manage and communicate credit risk inherent in the portfolio
3. **Apply modern technology.** Analyze the various aspects of lifetime credit risks within the current reporting timeframes

How to Get Compliant Now…

- Get an estimate of “an Estimate” now
- Wrap an estimate into ICFR framework
- Compare different approaches
- Produce disclosures
- Execute multiple period parallel runs

Allowance Calculation as an Advantage

"Banks that can demonstrate how certain borrowers present lower credit risk will record less ALLL at origination, increasing the relative amount of deployable capital.

Banks that are able to better monitor loss expectations by credit rating and term may be able to better price these factors into their products over time."

American Bankers Association Backgrounder: CECL
June 2016

Globally and locally acknowledged for award-winning tools to measure and manage risk.

Innovation in Customer Service - Financial Services Industries

Best ESG Solution

Best Solvency II Solution

Best Solvency II Tech Solutions Category Winner

Technology Vendor of the Year

Stress Testing Product of the Year Category Winner

Economic Scenario Generation Product of the Year Category Winner

Solvency II Product of the Year Category Winner

Regulatory Reporting Product of the Year Category Winner

Best Buy-Side Market Surveillance Tool Category Winner – Structured Finance Portal

Ranked 5 out of 100

Credit Risk Category Winner

Enterprise Stress Testing Solution Category Winner

#1 IFRS 9

#1 Asset and Liability Management

#1 Regulatory Capital Calculation and Management

Ranked 19th in the Overall Top 100 Rankings

Best Credit Risk Solution Provider – RiskCalc™

Compliance Risk, Liquidity Risk, Enterprise Risk and Risk Technology Implementations of the Year

CLO Data Provider of the Year

Crystal Ball Award Winner, 2012 Expectations category (2- and 3-Year Horizon)

#1 Enterprise-Wide Stress Testing

#1 Risk Capital Calculation

Moody's Analytics

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