

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

Today's Focus: CRE Loan Portfolios

# Today's Speakers



- » **Chris Henkel** is a Senior Director at Moody's Analytics. Based in New York City, he leads a global team of risk consultants who work closely with banks, insurers, and other financial institutions.
- » Has 20 years experience in the field of commercial banking – including expertise in areas such as risk modeling, allowance for credit loss quantification, stress testing, and portfolio management.
- » Has a BA and an MBA from the University of Texas at Dallas 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.



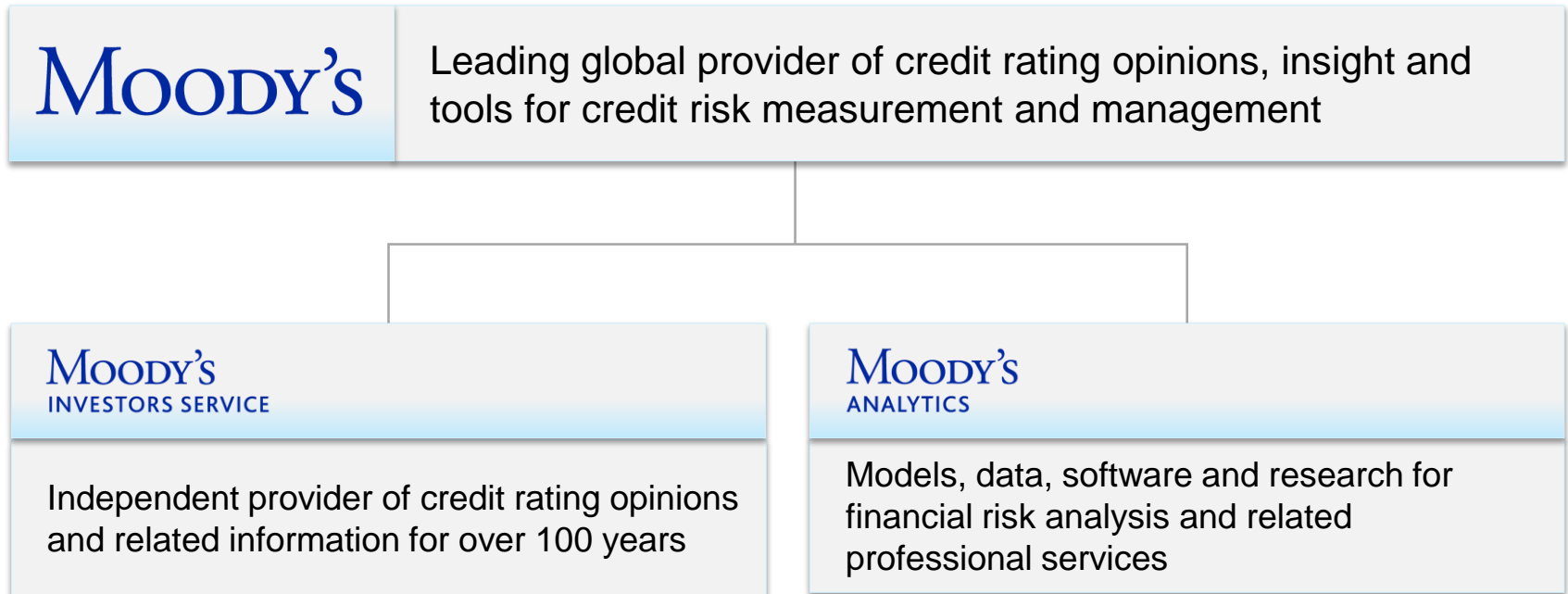
- » **Dr. Jun Chen** is a Senior Director and is the head of commercial real estate research team. His team conducts empirical research and develops quantitative models focused on CRE loan credit risk for Moody's Analytics product and service offerings.
- » He has many years of experience and is an established domain expert in the real estate finance industry. His expertise covers a wide range, including areas such as commercial real estate market analysis, credit risk modeling, stress testing and portfolio management.
- » PhD with a specialty in real estate finance and urban economics from the University of Southern California; Master's and Bachelor's degrees from Tongji University

## 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



Welcome!

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



Introduction to CECL Quantification  
Tuesday, February 14, 2017 | 1:00PM EST

### **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

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Analytics perspectives on CECL  
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[www.moodyanalytics.com/cecl](http://www.moodyanalytics.com/cecl)

# ASU 2016-13 (Topic 326) is about improving the measurement of and reporting on credit losses

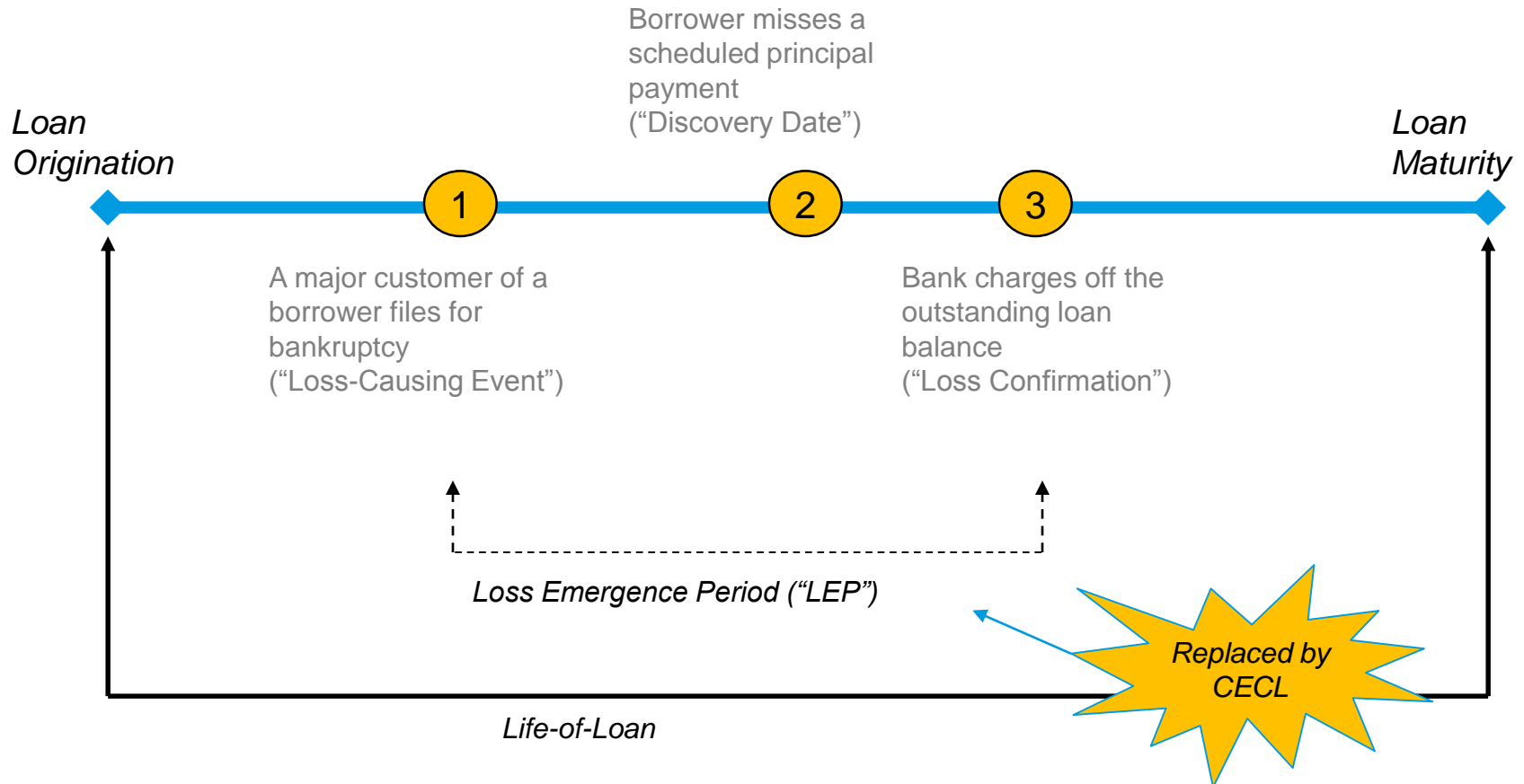
**Institutions will need to measure and record immediately all expected credit losses over the life of their financial assets based on:**

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

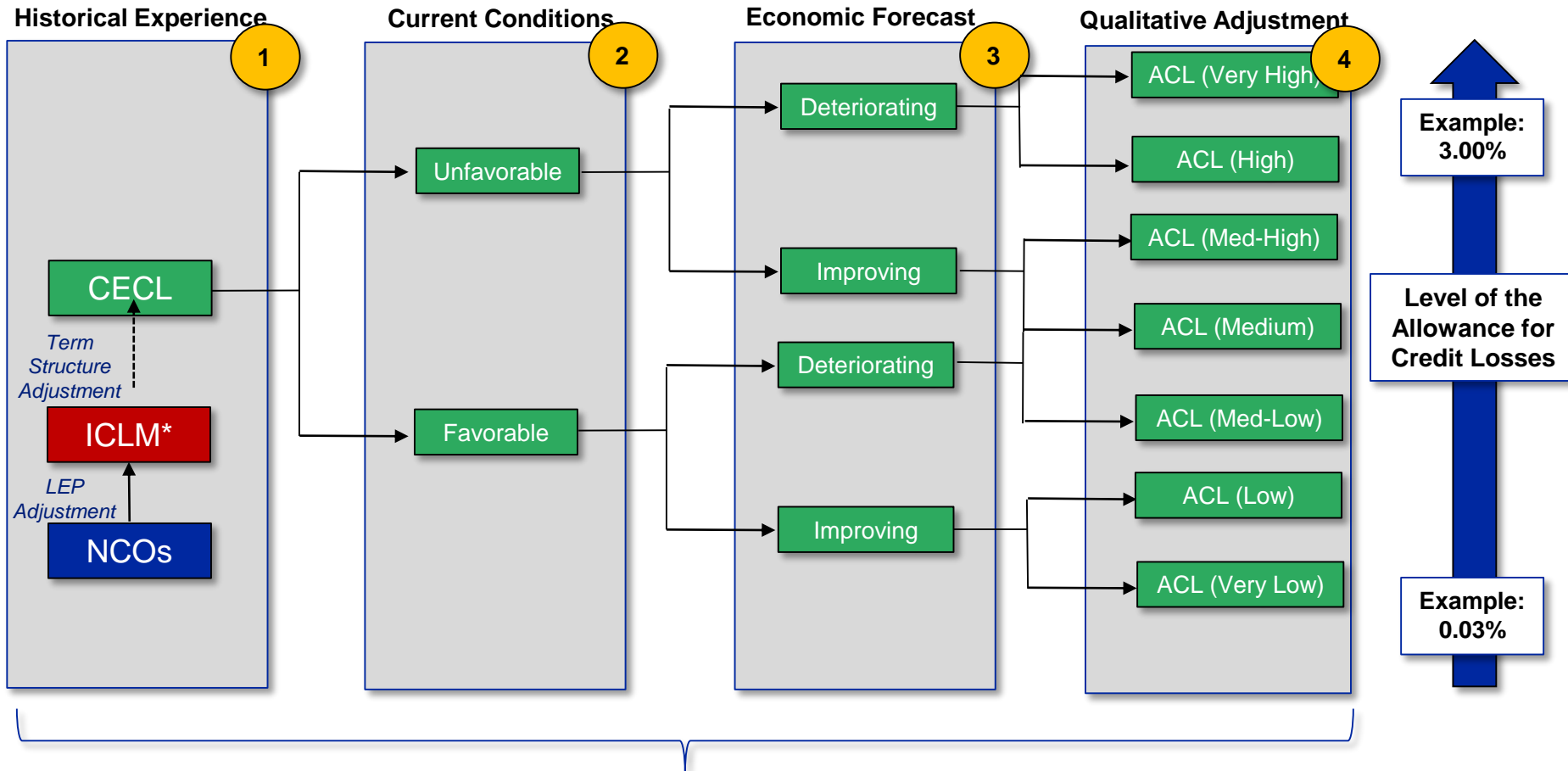
***If it effects the collectability of the reported amount, it should be considered!***

- » ECL is recorded at origination and updated at subsequent reporting dates
- » When it comes to measurement, there is no “one-size-fits-all”
- » There will be gaps between current practices and CECL

# One of the major changes with the new accounting standard is the need to calculate lifetime credit losses



# The level of the allowance depends largely on the ability to accurately quantify credit risk



## Impact on Allowance for Credit Losses (“ACL”)

ICLM = Incurred Credit Loss Model (current GAAP) | CECL = Current Expected Credit Loss model (effective 2019-2021)

\*ICLM often includes current conditions through qualitative adjustments

# The ASU requires a “pool” evaluation of ECL when similar risk characteristics exist

## 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

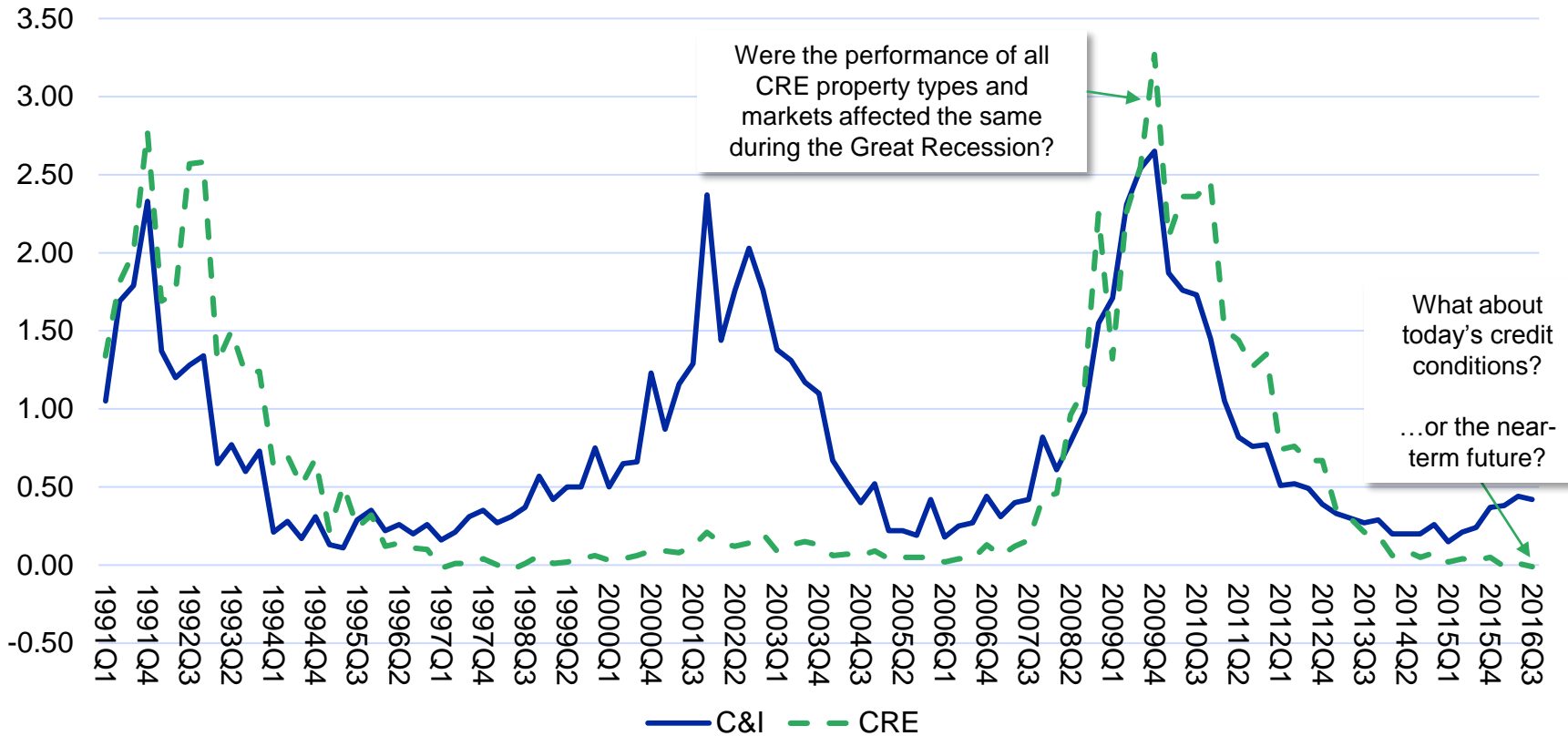
## Examples of Shared Risk Characteristics

- » 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



# Segmentation into pools that are too broad can lead to unreliable estimates of future credit losses

## Net Charge Off Rate for C&I and CRE Loans 1991 -2016



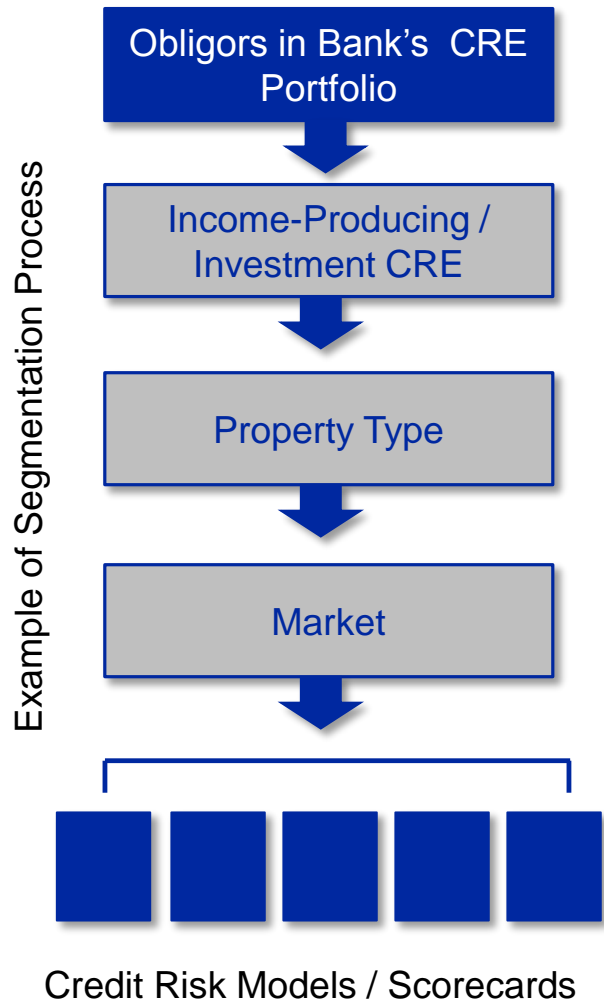
NCO %, NSAAR for all Commercial Banks; Source: FRB via Moody's Analytics Data Buffet

# Are Call Reports the best way to segment a portfolio for estimating credit losses?

## Schedule RC-C—Loans and Lease Financing Receivables

1. Loans secured by real estate:
  - 1.a. Construction, land development, and other land loans:
    - 1.a.(1) 1–4 family residential construction loans
    - 1.a.(2) Other construction loans and land development and other land loans**
  - 1.b Secured by farmland (including farm residential and other improvements)
  - 1.c. Secured by 1–4 family residential properties:
    - 1.c.(1) Revolving, open-end loans secured by 1–4 family residential properties and extended under lines of credit
    - 1.c.(2) Closed-end loans secured by 1–4 family residential properties:
      - 1.c.(2)(a) Secured by first liens
      - 1.c.(2)(b) Secured by junior liens
  - 1.d Secured by multifamily (5 or more) residential properties**
  - 1.e Secured by nonfarm nonresidential properties:
    - 1.e.(1) Loans secured by owner-occupied nonfarm nonresidential properties
    - 1.e.(2) Loans secured by other nonfarm nonresidential properties**

# Reliable measures of ECL must start with risk-based segmentation



## How granular should segments be?

### Key Segmentations Decisions

- » Portfolio Materiality
  - Total exposure (\$) and count of observations
  - Part of near-term strategy?
- » Core Recommendations
  - Intuitive to credit officers and lenders
  - Should be supported empirically (i.e., statistically linked to credit risk behavior)
- » Proxy Recommendations
  - Model assignment cannot be justified empirically
  - Reasonably intuitive relative to alternatives
  - Test the performance on a sample of obligors
- » Missing Information
  - Significance to segmentation or model input
  - Ability to collect going forward

# Acceptable Methodologies

- » Loss rate methods
  - Average charge-off method
  - Static pool analysis
  - Vintage analysis
- » Probability-of-default method
- » Roll-rate method (migration analysis)
- » Discounted cash flow analysis

Regression analysis can be applied to any method

- » Estimate correlations between economic factors and outcomes.
- » Allows projections to be sensitive to economic forecasts.

# Example of a traditional loss rate approach

## Hypothetical \$21B Loan Portfolio Stratified by Risk Rating

Loan Type	Pass				Watch
	Risk Rating 1	Risk Rating 2	Risk Rating 3	Risk Rating 4	Risk Rating 5
Commercial & Industrial	\$ 256,631	\$ 684,349	\$ 1,539,785	\$ 4,875,986	\$ 855,436
Commercial RE	\$ 99,566	\$ 199,131	\$ 298,697	\$ 3,136,313	\$ 746,741
Multifamily	\$ 83,610	\$ 133,775	\$ 919,706	\$ 418,048	\$ 83,610
1-4 SFR RE	\$ 258,071	\$ 322,589	\$ 2,161,346	\$ 387,107	\$ 64,518
ADC Loans	\$ -	\$ 65,253	\$ 315,389	\$ 489,396	\$ 130,506
Ag Loans	\$ 17,619	\$ 35,239	\$ 158,575	\$ 458,106	\$ 158,575
Other	\$ -	\$ 16,033	\$ 235,156	\$ 192,401	\$ 53,445
<b>Total</b>	<b>\$ 715,497</b>	<b>\$ 1,456,369</b>	<b>\$ 5,628,654</b>	<b>\$ 9,957,357</b>	<b>\$ 2,092,830</b>

» \$17.8 B (85%)  
"Pass"  
» \$2.1B (10%)  
"Watch"  
» 75% rated 3 or 4

Loan Type	OAEM	Substandard	Doubtful	Loss	Total
	Risk Rating 6	Risk Rating 7	Risk Rating 8	Risk Rating 9	
Commercial & Industrial	\$ 256,631	\$ 85,544	\$ -	\$ -	\$ 8,554,361
Commercial RE	\$ 348,479	\$ 99,566	\$ 49,783	\$ -	\$ 4,978,275
Multifamily	\$ 16,722	\$ 16,722	\$ -	\$ -	\$ 1,672,193
1-4 SFR RE	\$ 32,259	\$ -	\$ -	\$ -	\$ 3,225,890
ADC Loans	\$ 54,377	\$ 21,751	\$ 10,875	\$ -	\$ 1,087,547
Ag Loans	\$ 44,049	\$ 8,810	\$ -	\$ -	\$ 880,974
Other	\$ 21,378	\$ 16,033	\$ -	\$ -	\$ 534,446
<b>Total</b>	<b>\$ 773,895</b>	<b>\$ 248,425</b>	<b>\$ 60,658</b>	<b>\$ -</b>	<b>\$ 20,933,686</b>

» \$1.1B (5%)  
Criticized or  
Classified  
(i.e., non-Pass)

# Example of a traditional loss rate approach (2 of 3)

## ALLL Calculation for “Pass” and “Watch” Rated Loans

1                      2                      3                      4

Pass	Loan Balance	Loss Rate %	Qual Factor	Adj Adj. Loss Rate	ALLL
Commercial & Industrial	\$ 7,356,750	0.27%	0.40%	0.67%	\$ 49,290
Commercial RE	\$ 3,733,706	0.41%	0.55%	0.96%	\$ 35,844
Multifamily	\$ 1,555,139	0.28%	0.10%	0.38%	\$ 5,910
1-4 SFR RE	\$ 3,129,113	0.12%	0.10%	0.22%	\$ 6,884
ADC Loans	\$ 870,038	1.45%	0.25%	1.70%	\$ 14,791
Ag Loans	\$ 669,540	0.04%	0.20%	0.24%	\$ 1,607
Other	\$ 443,590	0.51%	0.15%	0.66%	\$ 2,928
<b>Sub-Total</b>	<b>\$ 17,757,878</b>			<b>0.66%</b>	<b>\$ 117,253</b>

Watch	Loan Balance	Loss Rate %	Qual Factor	Adj Adj. Loss Rate	ALLL
Commercial & Industrial	\$ 855,436	2.01%	0.40%	2.41%	\$ 20,616
Commercial RE	\$ 746,741	2.09%	0.55%	2.64%	\$ 19,714
Multifamily	\$ 83,610	2.35%	0.10%	2.45%	\$ 2,048
1-4 SFR RE	\$ 64,518	2.53%	0.10%	2.63%	\$ 1,697
ADC Loans	\$ 130,506	0.98%	0.25%	1.23%	\$ 1,605
Ag Loans	\$ 158,575	4.23%	0.20%	4.43%	\$ 7,025
Other	\$ 53,445	3.55%	0.15%	3.70%	\$ 1,977
<b>Sub-Total</b>	<b>\$ 2,092,830</b>			<b>2.61%</b>	<b>\$ 54,683</b>

ACL = Loan Balance x Loss Rate  
(i.e., 1 x 4)

Loss Factor % based upon weighted average charge-off rate (with an eight-quarter look-back period)

# Example of a traditional loss rate approach

Criticized and Classified Loans

Special Mention	Loan Balance	Loss Rate %	Qual Factor	Adj. Loss Rate	ALLL
Commercial & Industrial	\$ 256,631	4.22%	0.40%	4.62%	\$ 11,856
Commercial RE	\$ 348,479	4.97%	0.55%	5.52%	\$ 19,236
Multifamily	\$ 16,722	4.83%	0.10%	4.93%	\$ 824
1-4 SFR RE	\$ 32,259	1.14%	0.10%	1.24%	\$ 400
ADC Loans	\$ 54,377	11.99%	0.25%	12.24%	\$ 6,656
Ag Loans	\$ 44,049	2.25%	0.20%	2.45%	\$ 1,079
Other	\$ 21,378	5.23%	0.15%	5.38%	\$ 1,150
<b>Sub-Total</b>	<b>\$ 773,895</b>			<b>5.32%</b>	<b>\$ 41,202</b>

Substandard	Loan Balance	Loss Rate %	Qual Factor	Adj. Loss Rate	ALLL
Commercial & Industrial	\$ 85,544	14.88%	0.40%	15.28%	\$ 13,071
Commercial RE	\$ 99,566	15.35%	0.55%	15.90%	\$ 15,831
Multifamily	\$ 16,722	13.47%	0.10%	13.57%	\$ 2,269
1-4 SFR RE	\$ -	10.45%	0.10%	10.55%	\$ -
ADC Loans	\$ 21,751	27.93%	0.25%	28.18%	\$ 6,129
Ag Loans	\$ 8,810	12.50%	0.20%		
Other	\$ 16,033	24.96%	0.15%		
<b>Sub-Total</b>	<b>\$ 248,425</b>			<b>15.01%</b>	<b>\$ 37,301</b>

Doubtful	Loan Balance	Loss Rate %	Qual Factor	Adj. Loss Rate	ALLL
Commercial & Industrial	\$ -	35%	0.40%	35.40%	\$ -
Commercial RE	\$ 49,783	28%	0.55%	28.05%	\$ 13,964
Multifamily	\$ -	20%	0.10%	20.10%	\$ -
1-4 SFR RE	\$ -	15%	0.10%	15.10%	\$ -
ADC Loans	\$ 10,875	50%	0.25%	50.25%	\$ 5,465
Ag Loans	\$ -	15%	0.20%	15.20%	\$ -
Other	\$ -	40%	0.15%	40.15%	\$ -
<b>Sub-Total</b>	<b>\$ 60,658</b>			<b>32.03%</b>	<b>\$ 19,429</b>

<b>Total</b>	<b>\$ 20,933,686</b>			<b>1.29%</b>	<b>\$ 269,867</b>
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ACL = Loan Balance x Loss Rate

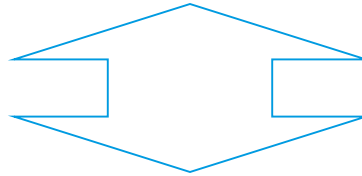
# Fulfill CECL Requirements for CRE Loans

Information  
Set



Methodology  
Foundation

- 1 » Historical experience: Credit loss estimation based historically observed relationship between realized defaults/losses and CRE market cycles
- 2 » Current conditions: Current conditions on market, property, and loan
- 3 » Reasonable and supportable forecasts: A reasonable forward-looking view into the forecastable future, but no need to go overboard, e.g. 30-year forecast on CRE market condition is likely not supportable



- 4 » Method: Examine existing loss estimation method, e.g. an existing PD/LGD model can likely serve as a good starting point. Also examine whether it should be modified to incorporate additional requirements
- 5 » Lifetime loss estimates: Over contractual terms. Also based on reasonable and supportable forecasts
- 6 » Interest rate forecast: For floating-rate loans which are very common in CRE markets, it is necessary to be based on a forecast of floating-rate index
- 7 » Prepayments: Separate input or embedded in credit loss estimation methods?



# Fulfill CECL Requirements for CRE Loans: Example

Example: A permanent mortgage, collateralized by an office building located in zip code 94105

## 2 » Current conditions:

- *Market:* SoMa district in San Francisco currently has vacancy rate of 6.5%, prevailing rent of \$43/sqft, cap rate of 3.9%
- *Property:* Appraisal value \$14.8 million as of 12/31/2016, and full-year NOI of 1.008 million in 2016
- *Loan:* New loan originated at 12/31/2016, loan amount \$9.6 million; 5-year term, floater indexed to 3-month LIBOR

## 3 » Reasonable and supportable forecasts:

- Lots of new developments likely lead to oversupply in the near future
- Expect SoMa office submarket to soften as a result

Year	Market Vacancy	Market Rent (\$/Sq.Ft/Year)	Market Cap Rate
2016	6.52%	43.12	3.88%
2017	12.39%	38.93	3.72%
2018	14.82%	37.36	3.72%
2019	14.88%	38.01	3.88%
2020	14.49%	39.37	3.74%
2021	14.15%	40.91	3.98%

An organization can have a different forecast, as long as it is reasonable and supportable.

Source: Embedded forecast from  
Moody's CMM

# CECL Step by Step Leveraging Existing PD x LGD Models

	5				6			3			4					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)		
Year. Qtr	Scheduled Balance (000s)	3-Month LIBOR	Coupon Rate	Quarterly P&I (000s)	Market Vacancy	Property NOI (000s)	Property Value (000s)	DSCR	LTV	Qtrly PD	Qtrly LGD	Qtrly EL	Expected Loss (000s)	Expected Receivable P&I (000s)		
0	\$ 9,600	0.98%	3.48%	\$ 144	6.5%	\$ 1,008	\$ 14,800	1.75	65%							
1.1	\$ 9,539	1.14%	3.64%	\$ 144	8.2%	\$ 1,020	\$ 15,278	1.77	62%	0.0%	17.5%	0.00%	\$ 0.1	\$ 144		
1.2	\$ 9,480	1.20%	3.70%	\$ 146	10.1%	\$ 948	\$ 14,573	1.62	65%	0.0%	17.5%	0.00%	\$ 0.4	\$ 146		
1.3	\$ 9,420	1.33%	3.83%	\$ 147	11.8%	\$ 954	\$ 15,228	1.62	62%	0.0%	17.5%	0.01%	\$ 0.6	\$ 147		
1.4	\$ 9,361	1.47%	3.97%	\$ 149	12.4%	\$ 938	\$ 15,192	1.57	62%	0.1%	17.6%	0.01%	\$ 1.1	\$ 148		
2.1	\$ 9,302	1.73%	4.23%	\$ 151	13.0%	\$ 945	\$ 15,430	1.56	60%	0.1%	17.7%	0.02%	\$ 1.7	\$ 150		
2.2	\$ 9,245	2.01%	4.51%	\$ 155	13.8%	\$ 939	\$ 15,431	1.51	60%	0.1%	17.8%	0.02%	\$ 2.0	\$ 153		
2.3	\$ 9,189	2.25%	4.75%	\$ 160	14.4%	\$ 937	\$ 15,421	1.47	60%	0.2%	18.2%	0.03%	\$ 3.2	\$ 157		
2.4	\$ 9,135	2.80%	5.30%	\$ 163	14.8%	\$ 891	\$ 14,582	1.36	63%	0.4%	19.1%	0.07%	\$ 6.9	\$ 157		
3.1	\$ 9,084	3.25%	5.75%	\$ 172	15.2%	\$ 890	\$ 14,366	1.29	63%	0.6%	19.5%	0.11%	\$ 10.5	\$ 162		
3.2	\$ 9,035	3.52%	6.02%	\$ 179	15.1%	\$ 894	\$ 14,259	1.25	63%	0.7%	20.1%	0.14%	\$ 13.0	\$ 166		
3.3	\$ 8,987	3.85%	6.35%	\$ 183	15.0%	\$ 881	\$ 13,972	1.20	64%	0.9%	20.7%	0.18%	\$ 17.2	\$ 166		
3.4	\$ 8,941	3.96%	6.46%	\$ 189	14.9%	\$ 866	\$ 13,771	1.15	65%	0.9%	21.1%	0.18%	\$ 17.4	\$ 171		
4.1	\$ 8,894	3.96%	6.46%	\$ 191	14.8%	\$ 851	\$ 13,459	1.12	66%	1.0%	22.1%	0.21%	\$ 20.0	\$ 171		
4.2	\$ 8,847	3.87%	6.37%	\$ 191	14.7%	\$ 855	\$ 13,278	1.12	67%	1.0%	23.1%	0.22%	\$ 20.7	\$ 170		
4.3	\$ 8,798	3.76%	6.26%	\$ 189	14.6%	\$ 845	\$ 12,778	1.12	69%	1.1%	24.8%	0.24%	\$ 23.1	\$ 166		
4.4	\$ 8,748	3.70%	6.20%	\$ 187	14.5%	\$ 833	\$ 12,222	1.11	72%	1.1%	26.9%	0.28%	\$ 27.0	\$ 161		
5.1	\$ 8,697	3.63%	6.13%	\$ 186	14.4%	\$ 820	\$ 11,791	1.10	74%	1.2%	28.8%	0.30%	\$ 29.2	\$ 157		
5.2	\$ 8,645	3.54%	6.04%	\$ 185	14.3%	\$ 817	\$ 11,530	1.10	75%	1.1%	30.4%	0.31%	\$ 30.0	\$ 155		
5.3	\$ 8,591	3.40%	5.90%	\$ 184	14.2%	\$ 808	\$ 11,304	1.10	76%	1.0%	31.6%	0.29%	\$ 28.1	\$ 156		
5.4	\$ 8,536	3.22%	5.72%	\$ 8,718	14.2%	\$ 801	\$ 11,062	1.10	77%	10.3%	32.5%	2.99%	\$ 286.7	\$ 8,431		

CECL = \$9.6 – PV(col 15) = \$9.6 – 9.14 = \$0.46 million



# Summary of Key Considerations for CRE Loans

- » CECL principal and methodology are intuitive to understand
  - Many existing models and methodology can be leveraged and applied under the CECL framework
  
- » Key considerations that might be beyond existing models/methodology
  - *Reasonable and supportable forecasts:*
    - » It can be internal view or based on reputable 3<sup>rd</sup> party experts
  - *CECL is a lifetime measure*
    - » Expected losses over the contractual term of the loans
  - *Floating rate loans:*
    - » Need to forecast the floating rate index, which can be used to forecast P&I for credit loss estimation purpose
  - *Commonly available PD and LGD models are applicable here:*
    - » It's important that PD and LGD models capture the historical experience
    - » In our example, the following relationship should be determined by empirical data:
$$PD = f(LTV, DSCR, Vacancy, \dots)$$
$$LGD = g(LTV, Market Price Change, \dots)$$
  - *Prepayment*
    - » Embedded in PD model, e.g. in our example
    - » Separate input. It can be a straightforward addition to our example.

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# Moody's Credit Loss and Impairment Analysis Suite

## Solutions to Support CECL Impairment Calculation



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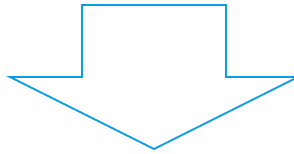
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# Specific Rules on CECL Methodology

- » *Paragraph 326-20-30-3*: the allowance for credit losses may be determined using various methods. For example, an entity may use discounted cash flow methods, loss-rate methods, roll-rate methods, probability-of-default methods, or methods that utilize an aging schedule. An entity is not required to utilize a discounted cash flow method to estimate expected credit losses. Similarly, an entity is not required to reconcile the estimation technique it uses with a discounted cash flow method.
- » *Paragraph 326-20-30-4*: if an entity estimates expected credit losses using methods that project future principal and interest cash flows (that is, a discounted cash flow method), the entity shall discount expected cash flows at the financial asset's effective interest rate. When a discounted cash flow method is applied, the allowance for credit losses shall reflect the difference between the amortized cost basis and the present value of the expected cash flows. If the financial asset's contractual interest rate varies based on subsequent changes in an independent factor, such as an index or rate, for example, the prime rate, the London Interbank Offered Rate (LIBOR), or the U.S. Treasury bill weekly average, that financial asset's effective interest rate (used to discount expected cash flows as described in this paragraph) shall be calculated based on the factor as it changes over the life of the financial asset. Projections of changes in the factor shall not be made for purposes of determining the effective interest rate or estimating expected future cash flows.
- » *Paragraph 326-20-30-5*: if an entity estimates expected credit losses using a method other than a discounted cash flow method described in paragraph 326-20-30-4, the allowance for credit losses shall reflect the entity's expected credit losses of the amortized cost basis of the financial asset(s) as of the reporting date. For example, if an entity uses a loss-rate method, the numerator would include the expected credit losses of the amortized cost basis (that is, amounts that are not expected to be collected in cash or other consideration, or recognized in income).
- » *Paragraph 326-20-30-6*: an entity shall estimate expected credit losses over the contractual term of the financial asset(s) when using the methods in accordance with paragraph 326-20-30-5. An entity shall consider prepayments as a separate input in the method or prepayments may be embedded in the credit loss information in accordance with paragraph 326-20-30-5. An entity shall consider estimated prepayments in the future principal and interest cash flows when utilizing a method in accordance with paragraph 326-20-30-4. An entity shall not extend the contractual term for expected extensions, renewals, and modifications unless it has a reasonable expectation at the reporting date that it will execute a troubled debt restructuring with the borrower.

# Sample Methods Permitted by the Standard

- » *Paragraph 326-20-30-3*: the allowance for credit losses may be determined using various methods. For example, an entity may use discounted cash flow methods, loss-rate methods, roll-rate methods, probability-of-default methods, or methods that utilize an aging schedule. An entity is not required to utilize a discounted cash flow method to estimate expected credit losses. Similarly, an entity is not required to reconcile the estimation technique it uses with a discounted cash flow method.



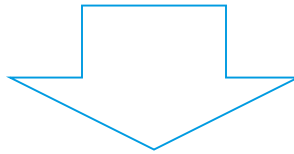
## **Institutions may apply multiple, non-exclusive, methods:**

- » Discounted cash flow (DCF)
- » Loss-rate
- » Roll rate
- » Probability-of-default (PD) and loss-given-default (LGD)
- » Methods using aging schedules



# The Use of Discount Rates under CECL

- » *Paragraph 326-20-30-4*: if an entity estimates expected credit losses using methods that project future principal and interest cash flows (that is, a [discounted cash flow method](#)), the entity shall discount expected cash flows at the financial asset's effective interest rate. When a discounted cash flow method is applied, the allowance for credit losses shall reflect the difference between the amortized cost basis and the present value of the expected cash flows. If the financial asset's contractual interest rate varies based on subsequent changes in an independent factor, such as an index or rate, for example, the prime rate, the London Interbank Offered Rate (LIBOR), or the U.S. Treasury bill weekly average, that financial asset's effective interest rate (used to discount expected cash flows as described in this paragraph) shall be calculated based on the factor as it changes over the life of the financial asset. Projections of changes in the factor shall not be made for purposes of determining the effective interest rate or estimating expected future cash flows.

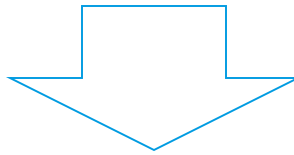


## Guidelines on the use of discount rates:

- » Discount rate = The financial asset's effective interest rate: e.g. a mortgage's effective coupon rate
- » A floating-rate curve is required for the life of a floating-rate loan for credit loss estimation purpose
  - Because a floating-rate loan's default risk in the future is dependent upon the mortgage payments based on future coupon rates

# Other Key Considerations

- » Paragraph 326-20-30-6: an entity shall estimate expected credit losses over the contractual term of the financial asset(s) when using the methods in accordance with paragraph 326-20-30-5. An entity shall consider prepayments as a separate input in the method or prepayments may be embedded in the credit loss information in accordance with paragraph 326-20-30-5. An entity shall consider estimated prepayments in the future principal and interest cash flows when utilizing a method in accordance with paragraph 326-20-30-4. An entity shall not extend the contractual term for expected extensions, renewals, and modifications unless it has a reasonable expectation at the reporting date that it will execute a troubled debt restructuring with the borrower.



## Expected credit losses over contractual terms:

- » i.e. lifetime credit loss estimates
- » Should not consider loan extension, renewals and modifications unless justified

## Prepayments:

- » Consider prepayments as a separate input
- » Or, embedded in the credit loss estimation