

CECL Webinar Series: The Roadmap to Success

Irina Korablev, Senior Director
Deniz Tudor, Director
Anna Krayn, Senior Director

August 24, 2017



Moody's Analytics CECL Webinar Series: The Roadmap to Success

TODAY

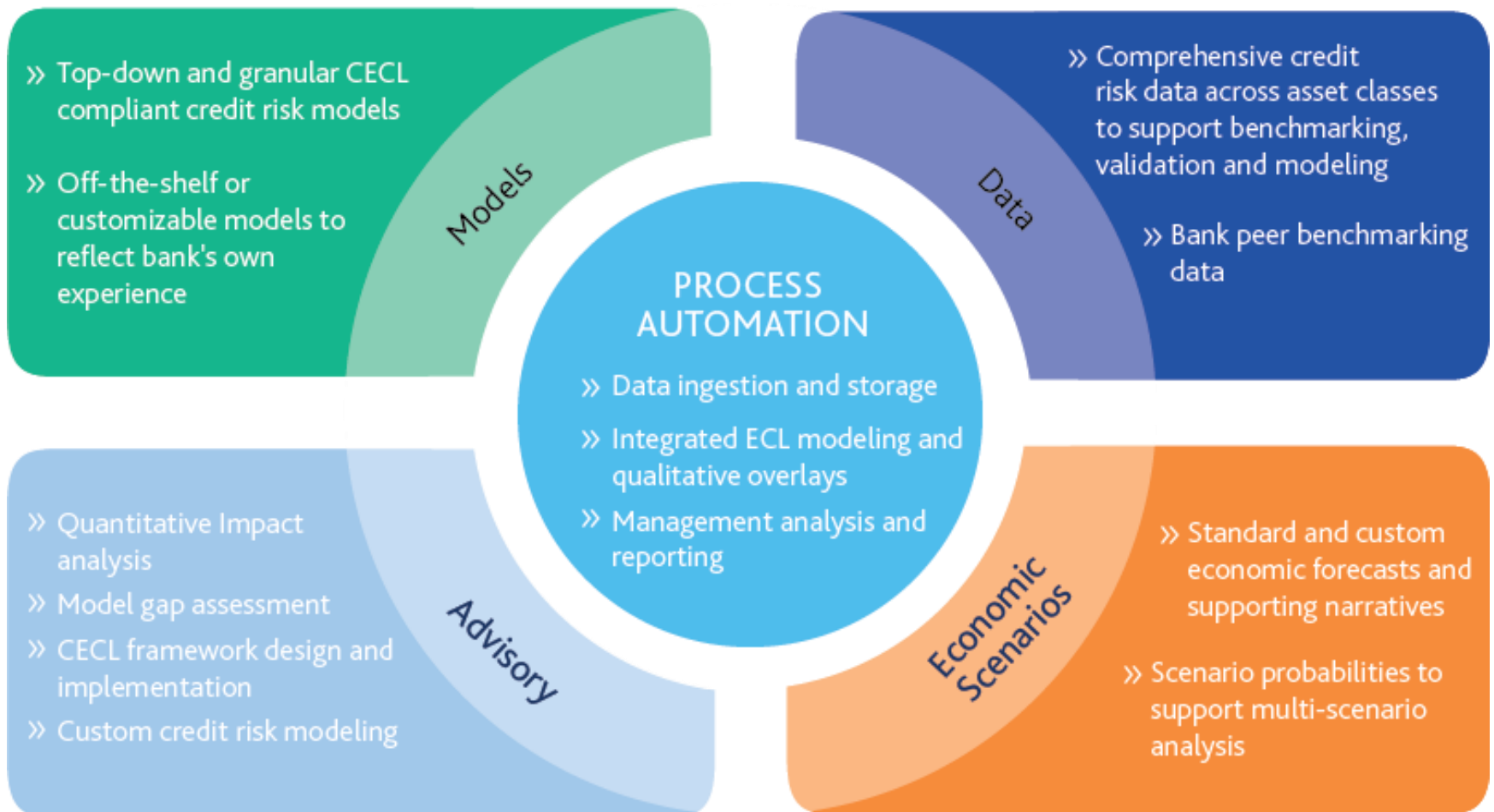
Leveraging Industry Data for CECL Compliance

UPCOMING EVENTS

- Wed, Sep 6** **Lifetime Expected Credit Loss Modeling**
- Tue, Sep 19** **Economic Scenarios for CECL: What's Reasonable and Supportable?**
- Thur, Oct 5** **Empowering Users, Satisfying Auditors**

Moody's Analytics CECL Solution Suite

Today's Focus is on Data



Today's Speakers



Deniz Tudor

Director, Consumer Credit Analytics

Dr. Deniz Tudor is a Director in the Content Economics and Structured Analytics Group. She leads projects developing and testing econometric models for a variety of clients. She is a product manager for consumer credit industry models. Deniz is also responsible with partnerships with other data vendors and involved with new product development and strategy. Deniz has a PhD from the University of California, San Diego.



Irina Korablev

Senior Director, Data Intelligence

Irina Korablev leads the Data Science and Analytics team within DI group at Moody's Enterprise Risk Solutions (ERS) division. Her team provides data driven insights, products and innovations based on the ERS data assets and delivers validation studies for Moody's Analytics default probability models.

Irina holds an MS in Applied Math from Moscow State University and MA in Economics from Central European University, completing her studies in Essex, UK and Budapest, Hungary.

Moderator



Anna Krayn

Senior Director, Regulatory and Accounting Solutions

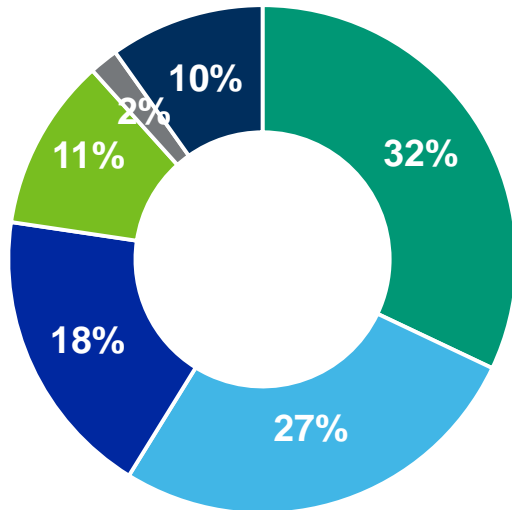
Anna is a senior director who manages the regulatory and accounting solutions team in the Americas. The team is responsible for solutions structuring, leveraging Moody's Analytics products and services focusing on impairment, stress testing, and capital planning solutions. Her primary focus is on financial institutions.

CECL Implementation Concerns

Data and data-related issues consistently rank high

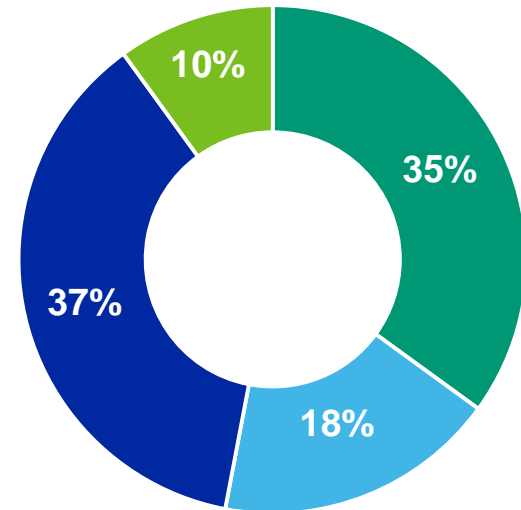
What is the most significant challenge you anticipate in CECL implementation?

February 2017



- Data availability
- ECL quantification
- Scenario design
- Qualitative overlay methodology
- Performance (i.e. speed of execution)
- Data and processes governance

August 2017



- Data availability
- Scenario selection, design, and support
- Expected credit loss methodology
- Process governance and controls

Data for CECL Compliance

CECL is forward looking

Types of Data

- » Economic Data
- » Historical Performance Data

Time Period

- » Historical experience
- » Forecasts

Use Cases

- » Directly as input into credit loss forecasting models
- » Augmentation of firm's own experience
- » Benchmark existing models
- » Support for qualitative adjustments
- » Multipurpose: stress testing, business strategy, etc.

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Economic and
Consumer Credit
Data & Forecasts

Economic Data & Forecasts

CECL requires institutions to take into account current and future economic conditions for all lines of business

Regional, national, subnational

» Economic Performance

GDP Growth, Disposable Income Growth

» Labor Markets

Unemployment, Wage/Salary Growth, Financial Assets

» Demographics

Population, number of households, migrations etc.

» Real Estate Markets

Home prices, home sales, housing starts, permits, commercial real estate prices

» Financial Markets

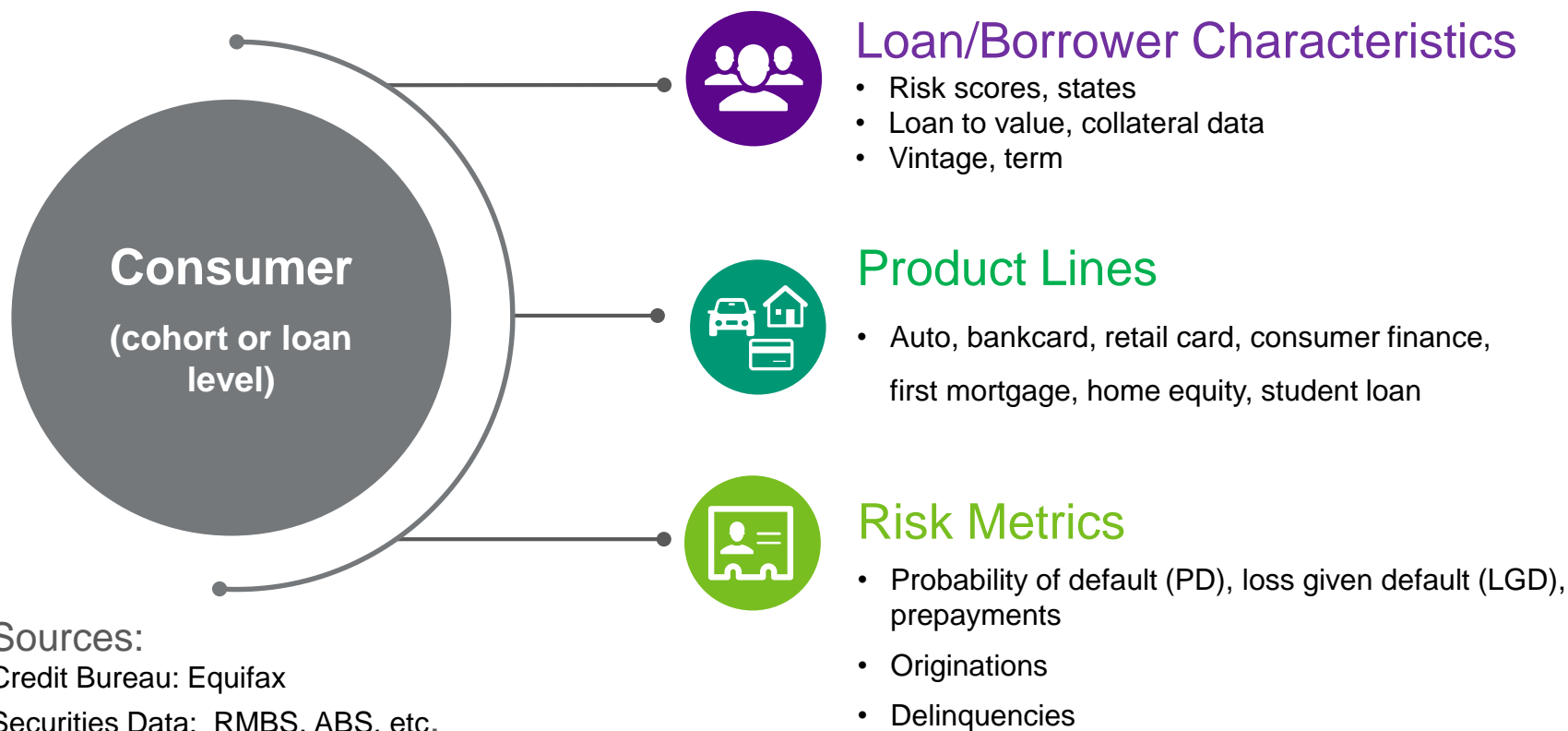
Fed Funds Interest Rates, Debt-Service Ratios, Revolving Consumer Debt

» Specialized Data

Vehicle Sales, Used Car Prices, New Car Prices, Oil Prices

Asset Class: Consumer Credit

Fill in data gaps, benchmark, validate, enhance and calibrate consumer credit models



Sources:

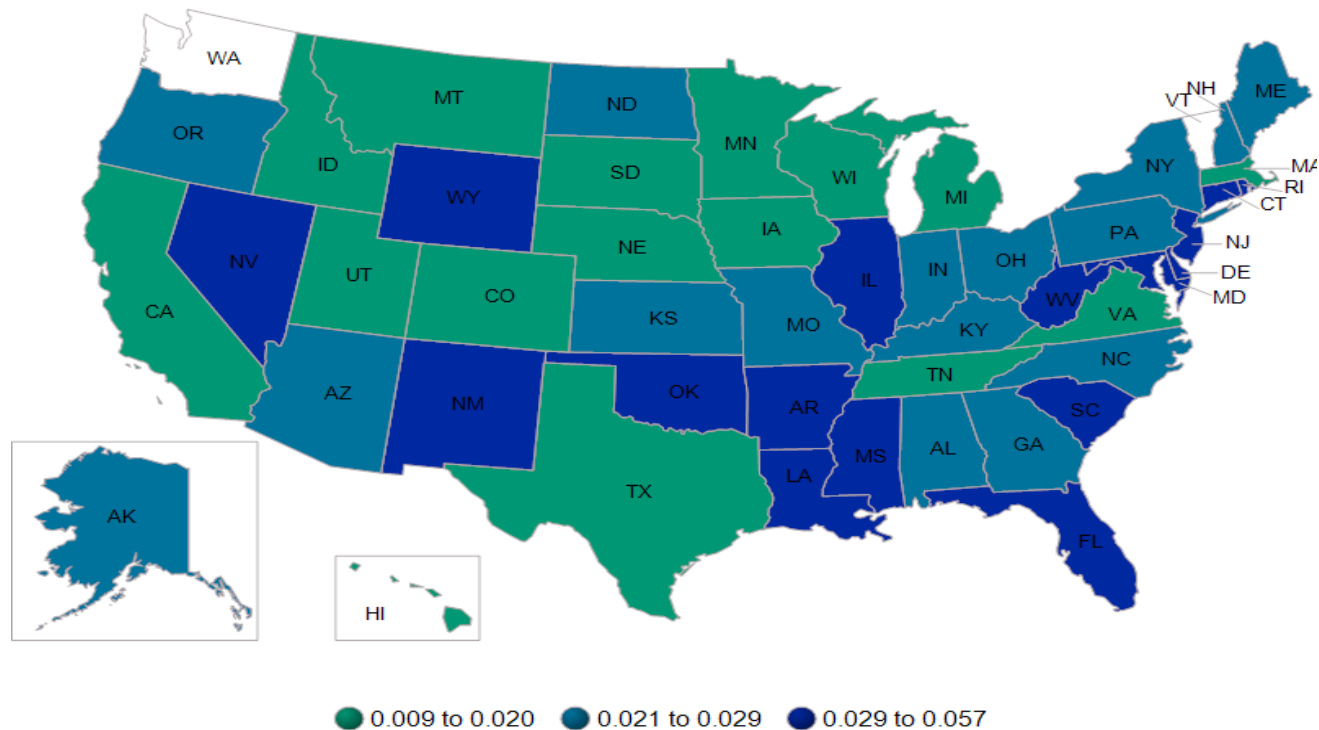
Credit Bureau: Equifax

Securities Data: RMBS, ABS, etc.

Example 1: Consumer Credit Bureau Data

Default Rate, First Mortgage

% of outstanding, as of 7/2017

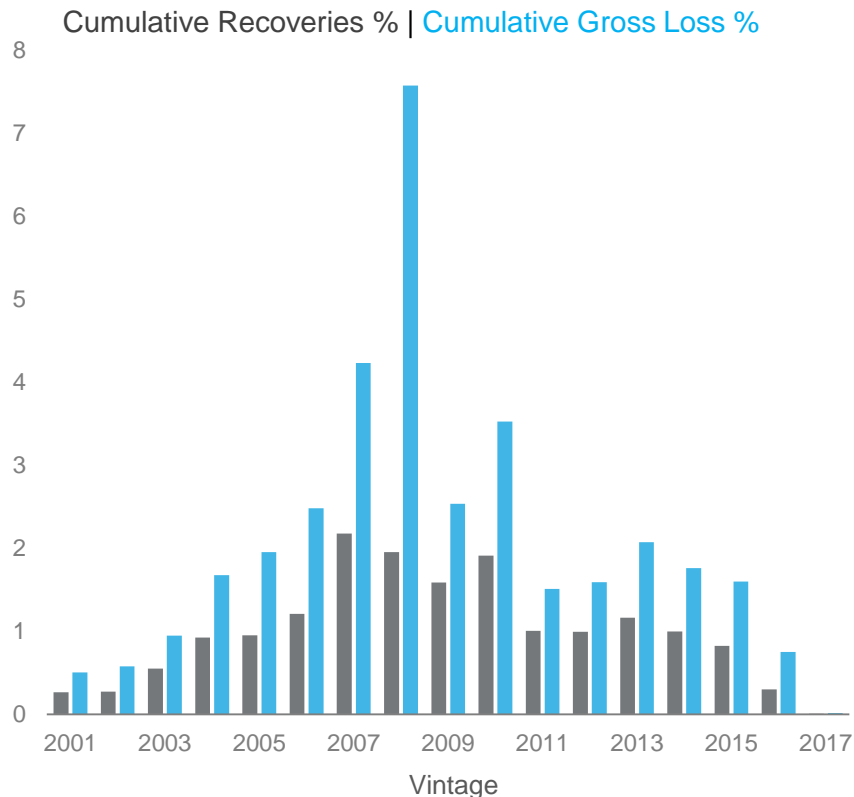


Sources: Equifax, Moody's Analytics

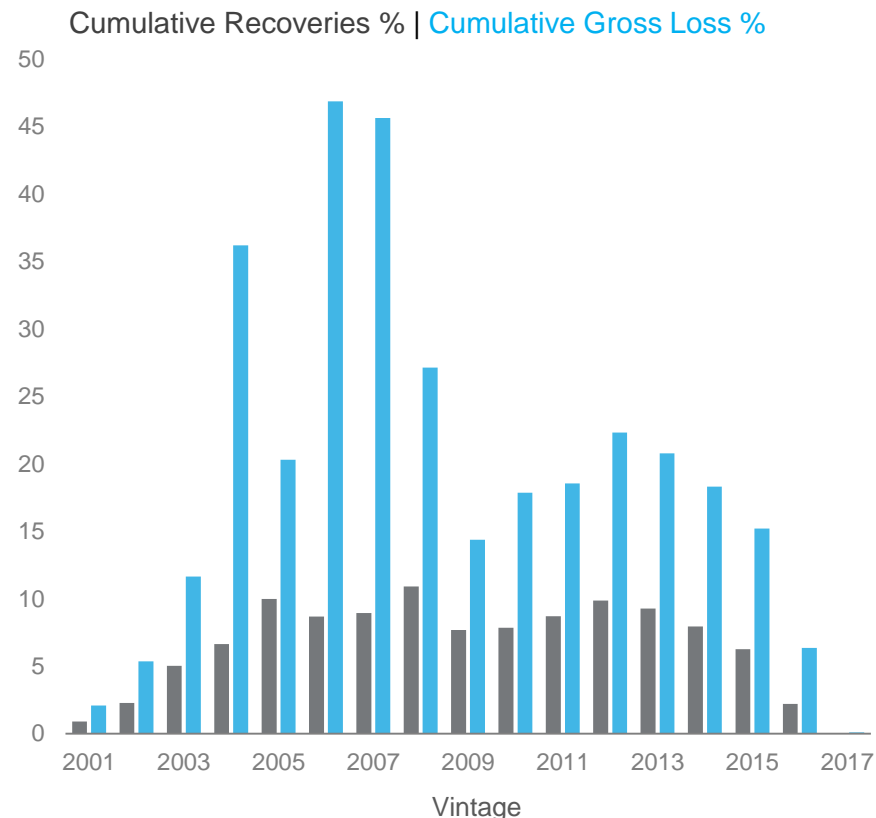
Example 2: Securities Data

ABS Data: Auto Loan Recoveries

Prime Loans



Subprime Loans



Further stratifications by new car/used car, LTV, vintage, term, etc.

Example 3: Forward Looking Look-Up Table

Product	State	Credit Score	Origination Quarter	Outstanding Balance	PD Rate	LGD Rate	ECL Rate	ECL
Bankcard	CA	700-719	2009Q2	\$100	4%	99%	4.0%	\$ 4
Bankcard	CA	660-699	2011Q2	\$300	6%	95%	5.7%	\$ 17
Bankcard	CA	660-699	2013Q2	\$500	7%	90%	6.3%	\$ 32
Bankcard	CA	700-719	2015Q2	\$200	4%	85%	3.4%	\$ 7
Bankcard	CA	700-719	2017Q2	\$700	5%	95%	4.8%	\$ 33
Bankcard	CA	700-719	2019Q2	\$1,000	6%	95%	5.7%	\$ 57
Sum				\$2,800				\$ 150

PD/LGD rates should be analytically driven estimates incorporating current and future economic conditions

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Commercial Real
Estate (CRE) and
Commercial and
Industrial Data (C&I)

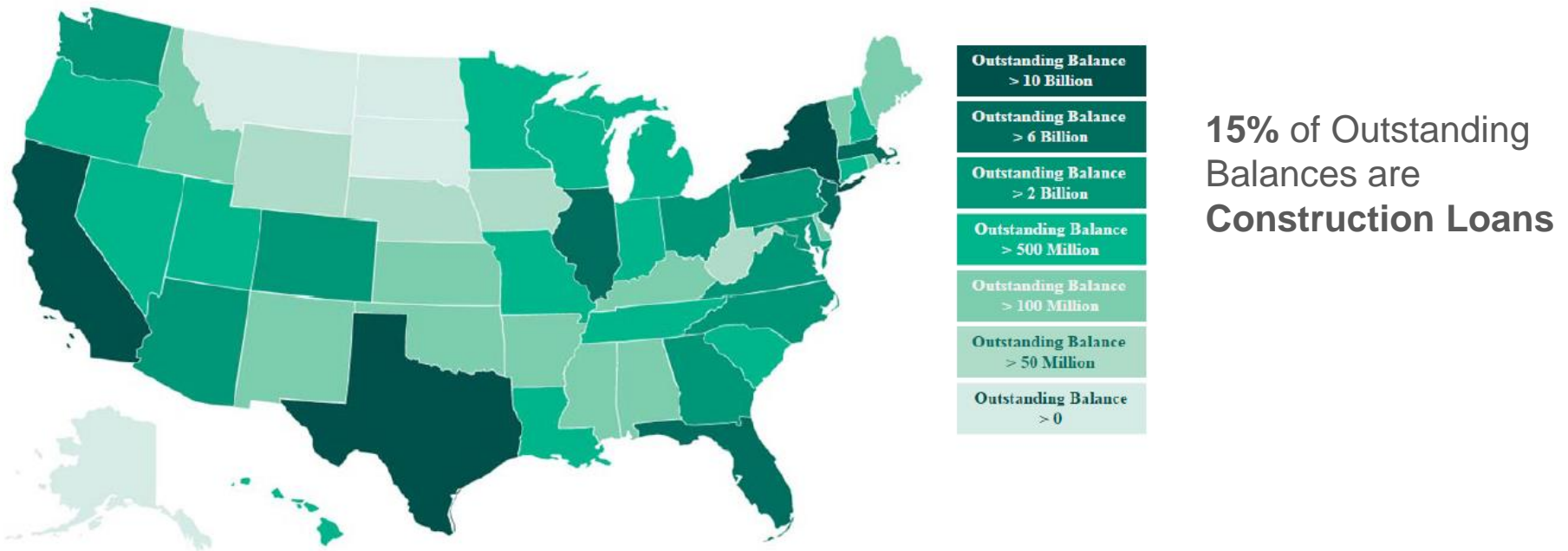
Asset Class: CRE

Private Firm CRE Data Consortium

Benchmark, develop, validate, and/or calibrate PD and Loss Estimation models

Date Range	Total Balances	Total Loans	Total Properties	MSA	Defaults
2009 – 2016	\$319B+	41,000+	64,200+	345	1,500+

Footprint as of 12/2016 by Outstanding Balance

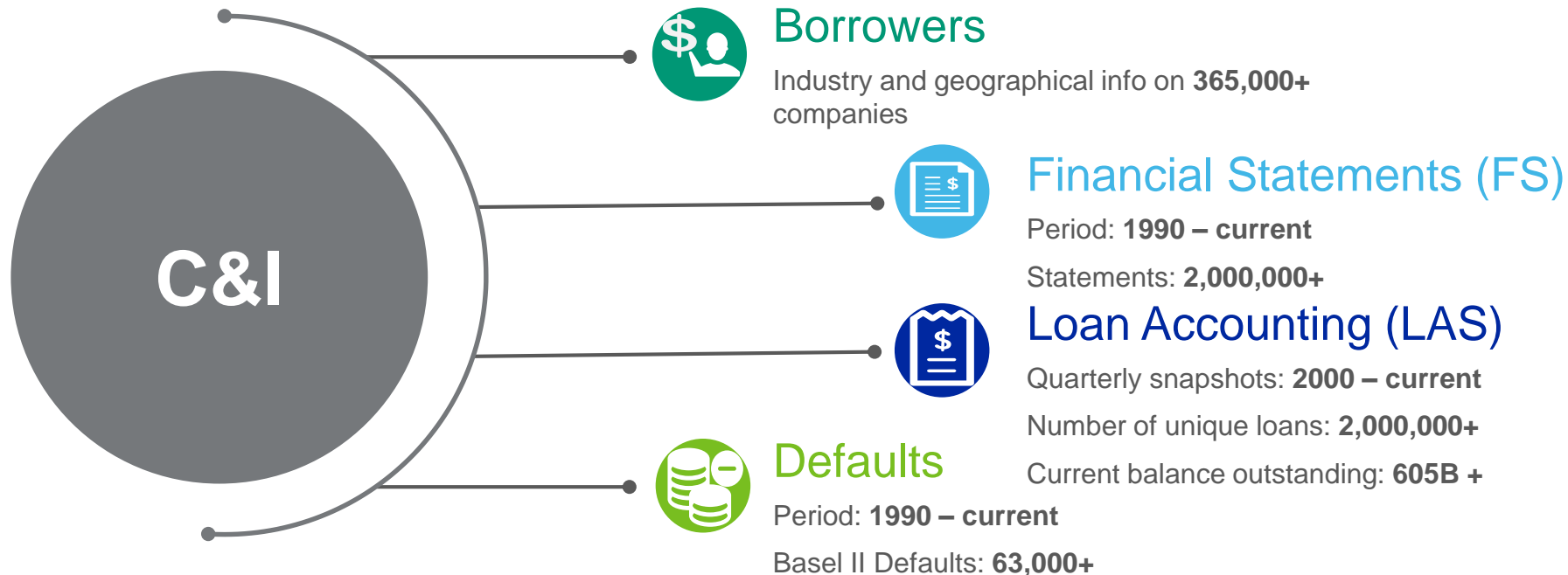


The data is collected from bank consortium on semi-annual basis

Asset Class: Commercial & Industrial

Private firm C&I data consortium

Benchmark, develop, validate, and/or calibrate PD, EAD and Loss Estimation models for private firms



The data is collected from bank consortium on semi-annual basis

Granular Loan Level Data

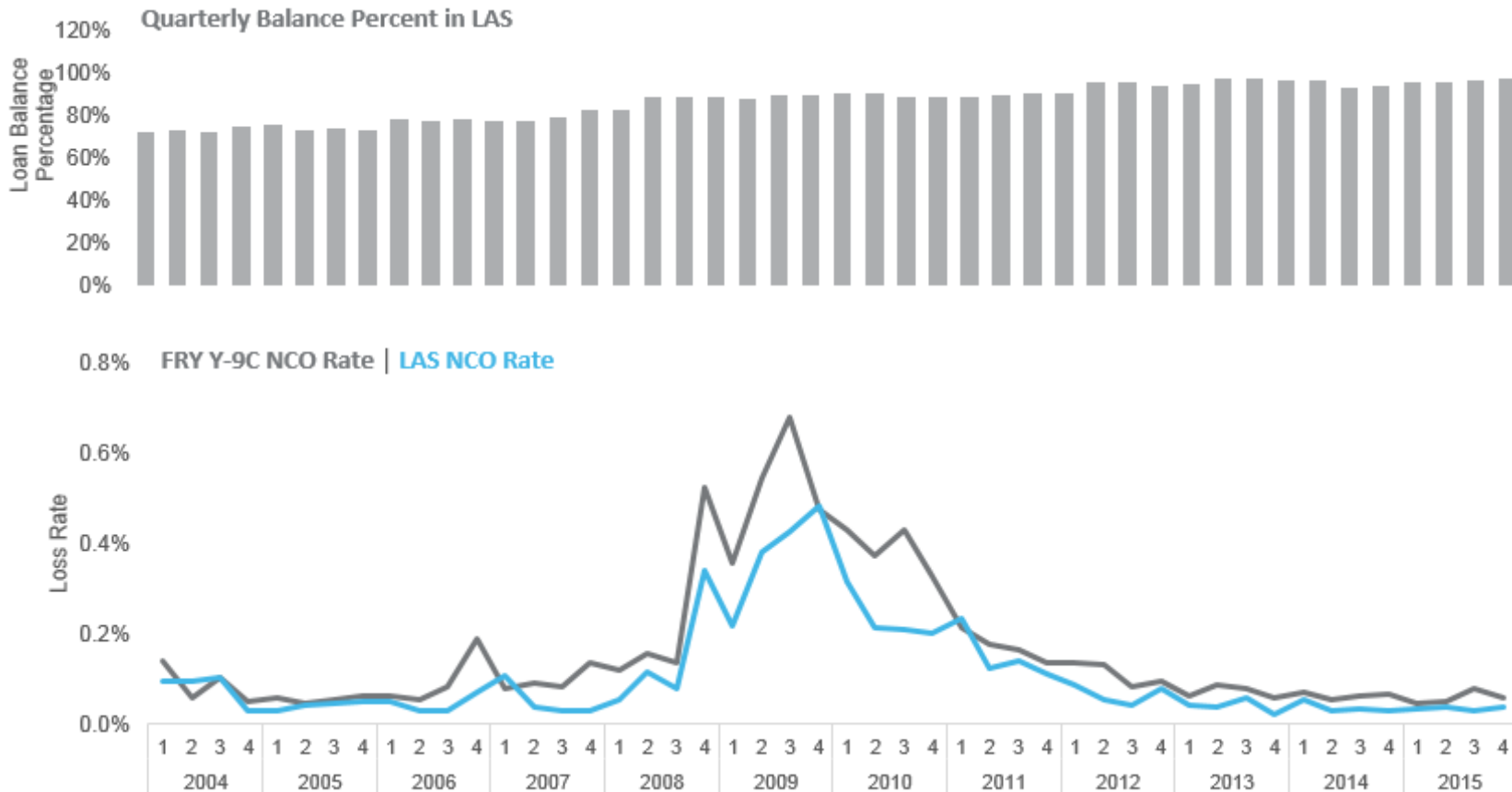


Data consist of:

- » Quarterly portfolio snapshots of C&I loan information from 2000 Q2 to 2016 Q4
- » Borrower information:
 - internal bank rating
 - industry
 - size
 - geographical info, etc.
- » Loan information:
 - product type
 - origination & maturity date
 - balance
 - interest rate
 - charge off history, etc.

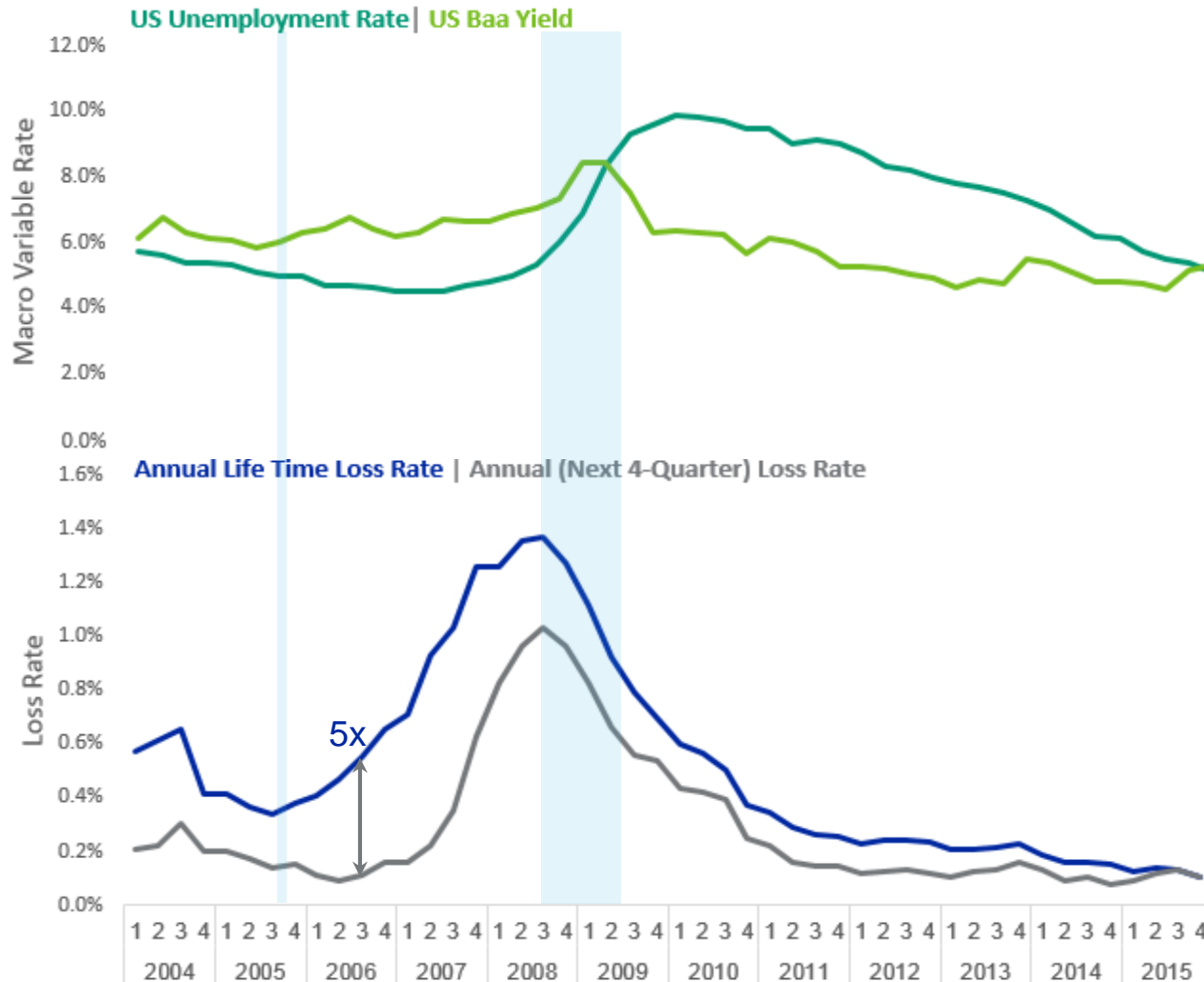
Quarterly NCO Rate Compares Well with FR Y-9C

We compared the **quarterly net charge off (NCO)** rates calculated based on Loan Accounting System (LAS) data to those reported on FR Y-9C



At each quarter **LAS NCO Rate** = $\Sigma(\text{NCO}) / \Sigma(\text{balance outstanding})$

Link Historical Loss Rate with Macro Variables

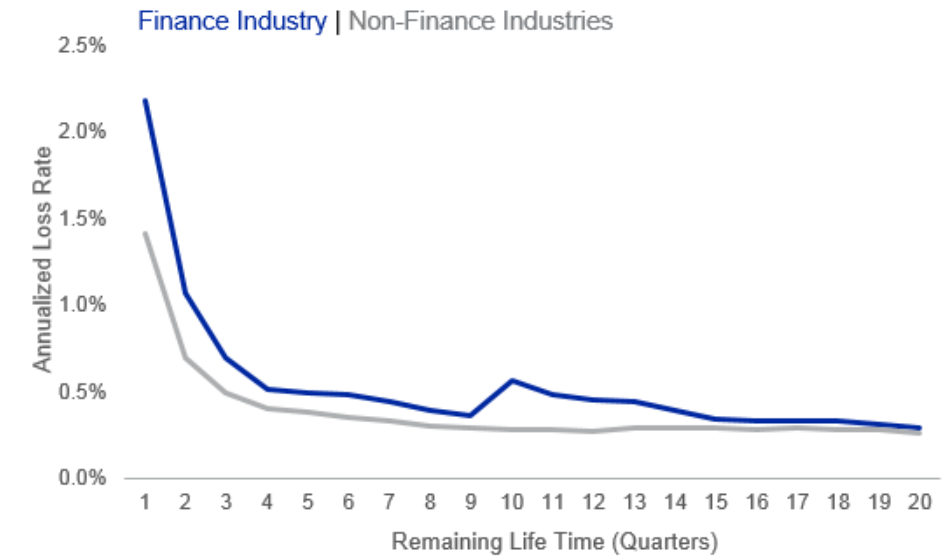
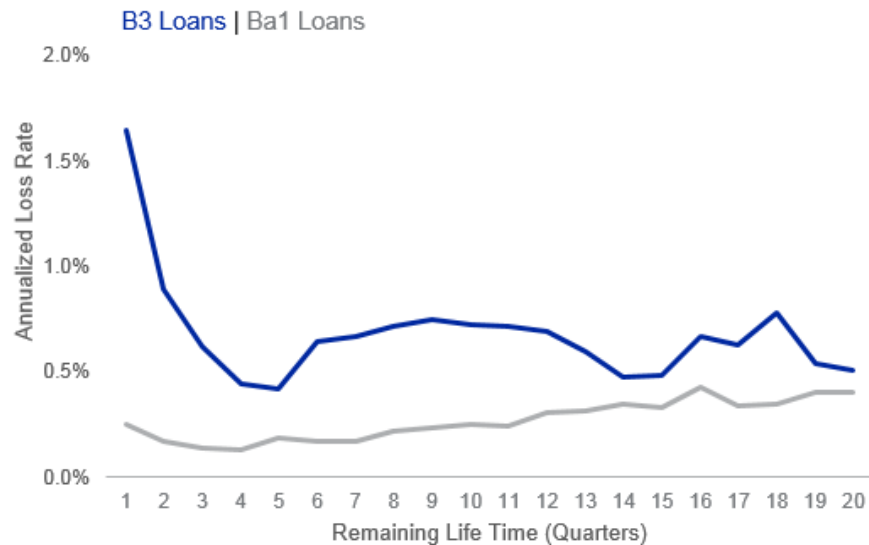
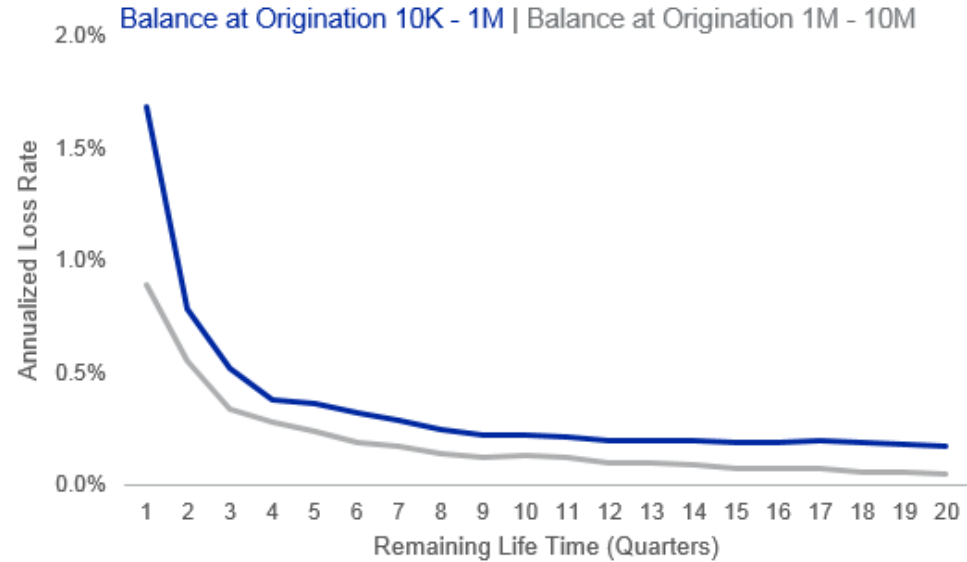
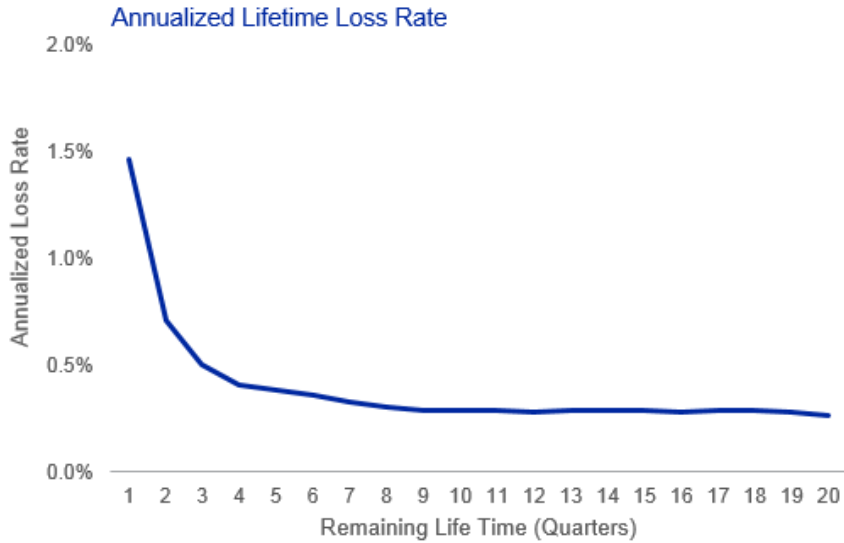


At each quarter **Life Time Loss Rate** = $\Sigma(\text{NCO through Q4 2016}) / \Sigma(\text{balance outstanding in that quarter})$

Next 4-Quarter Loss Rate = $\Sigma(\text{NCO over next 4 quarters}) / \Sigma(\text{balance outstanding in that quarter})$

Granularity of Data is Important

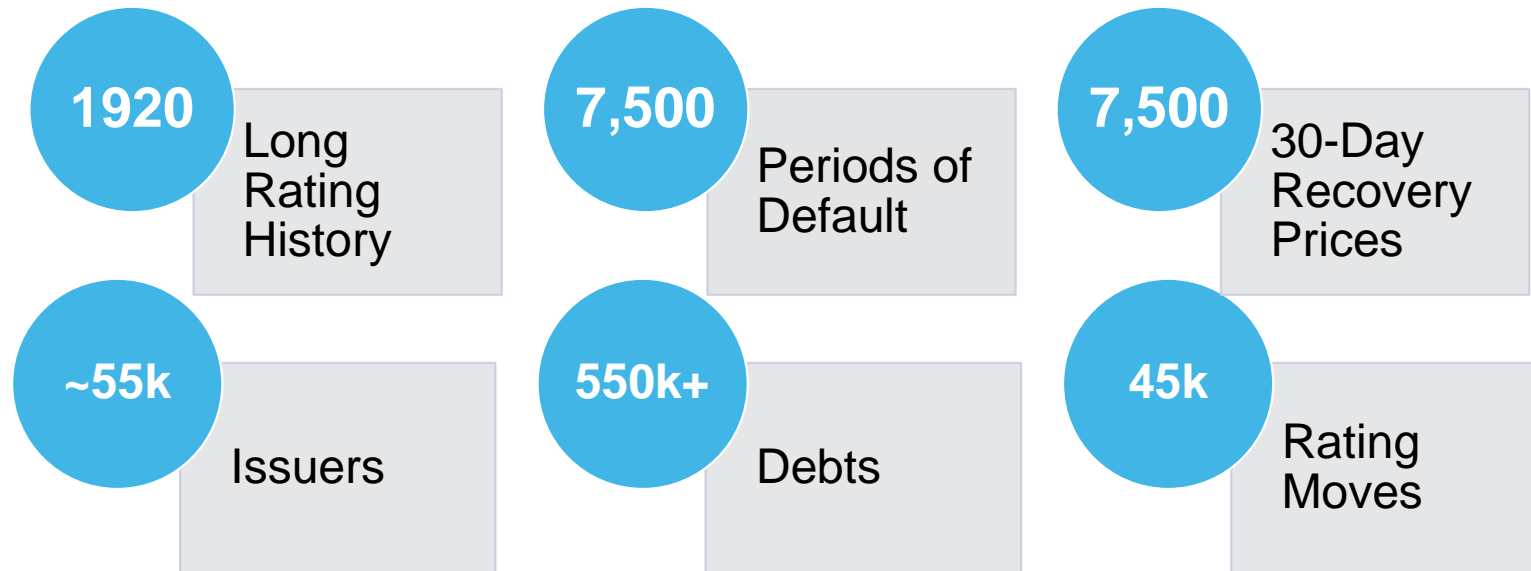
Actual Lifetime Loss Rate Varies with Maturity, Size, Rating and Industry



Asset Class: Rated Corporate Entities

Rated firms performance history

This data includes Moody's ratings, default, and recovery data for global sovereign and corporate entities. A comprehensive set of **ultimate recovery** data is also fully integrated into the database.



Supplement Internal Data

Capital Industries



6900 Issuers
900 Defaults

Media & Publishing



1200 Issuers
280 Defaults

Banking



5500 Issuers
450 Defaults

Energy



2300 Issuers
300 Defaults

Retail



1200 Issuers
260 Defaults

Consumer Goods



4000 Issuers
600 Defaults

Utilities



2300 Issuers
60 Defaults

Real Estate



800 Issuers
330 Defaults

Technology



2700 Issuers
370 Defaults

Transportation



3000 Issuers
270 Defaults

Sovereigns



1600 Issuers
200 Defaults

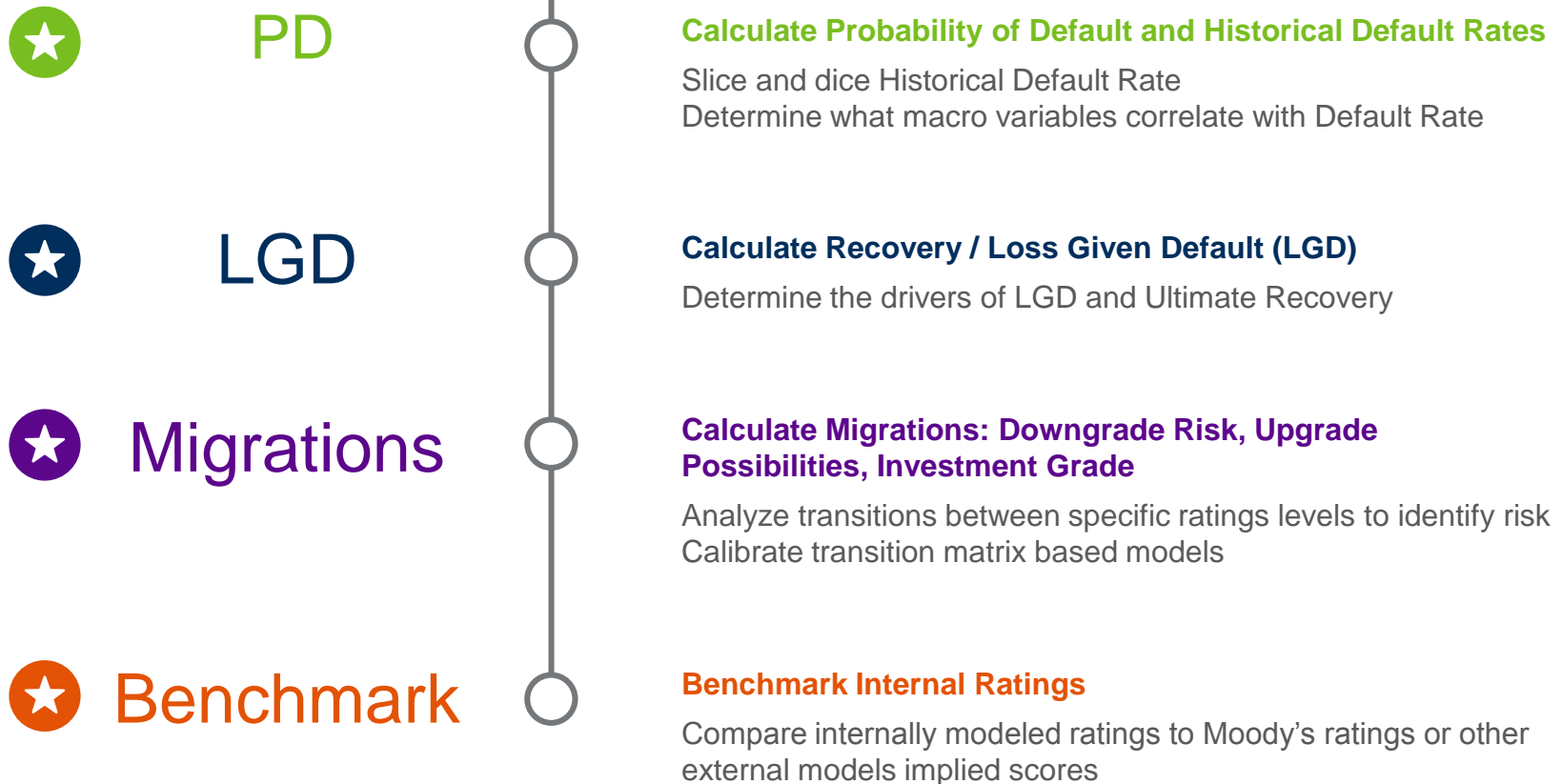
High Granularity Data

Countries	# of Issuers	# of Issues	# Defaults	# of recoveries
United States	34,448	343,861	5,746	6,292

Industry	# of Issuers	# of Issues	# Defaults	# of recoveries
High Tech Industries	1,087	5,823	145	218
Hotel, Gaming, & Leisure	792	3,748	81	114
Media: Advertising, Printing & Publishing	393	2,533	125	70
Media: Broadcasting & Subscription	595	3,580	126	89
Media: Diversified & Production	174	1,121	33	26
Metals & Mining	1,213	7,406	173	244
Retail	923	4,014	109	131
Services: Business	792	3,847	86	127
Services: Consumer	207	1,306	25	27
TOTALS	55,407	619,070	7,479	7,604

Main Takeaways

Uses of industry data





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MORE INFORMATION AND WEBINAR RECORDINGS

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RFPC
17

Risk & Finance Practitioner Conference 2017

Theme: The Rise of Risktech

OCTOBER 22 – 24 | FAIRMONT SCOTTSDALE PRINCESS | SCOTTSDALE, ARIZONA

www.moodysanalytics.com/rfpc17

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