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US Current Expected Credit Losses (CECL) Industry Benchmark Study: Round 2

Study Kick-off

Project Team Benchmarking Study

Nathaniel Royal

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Nathaniel is Global Credit Data's new North American Executive. He was previously a quantitative analyst and modeler at M&T Bank in Buffalo, NY. Nathaniel received his Ph.D. in Geospatial Statistics and Data mining from the University of California Santa Barbara.

Soner Tunay

Head of Quantitative Analytics, Finance & Risk Services at Accenture Consulting

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Soner has held executive level positions leading model development and validation functions in various US banks, FBOs and G-SIBs. Soner is regarded an industry thought leader in Risk Rating analytics, CCAR and CECL models. He chairs industry conferences and teaches masterclasses to industry participants on credit risk and integration of modeling with business aspects. Soner received his Ph.D. in Economics from Boston College.

Daniela Thakkar

Methodology & Membership Executive, Global Credit Data

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Daniela has 15 years of experience in credit risk management, modelling and reporting. Prior to Global Credit Data, she was heading the financial risk team at Delta Lloyd Bank where she was responsible among others for the Basel III migration plan and the implementation of AIRB-compliant credit risk models. Her profile is rounded by risk positions at RSU Rating Service Unit, PricewaterhouseCoopers and NIBC.

Industry Perspective

Stevan Maglic

Senior Vice President and Head of Quantitative Risk Analytics at Regions Bank

Stevan is Senior Vice President and head of Quantitative Risk Analytics at Regions Bank, where his current responsibilities focus on quantitative aspects of forecasting and stress testing, risk rating, valuation, economic capital, credit strategy, reserve methodologies and credit portfolio management. Steve has 20 years of industry experience in quantitative modeling and risk management and has prior experience building portfolio management and analytics infrastructure at Merrill Lynch, Bank of Montreal and ABN AMRO. Steve has a Ph.D. in applied physics from Northwestern University, a B.S. in physics from University of Colorado in Boulder, and has held Series 7 and Series 63 certifications.

REGIONS

- Participant in Round 1
- One of Eleven Participating Banks
- ~30th Largest Bank in the USA
- Products:
  - Commercial banking
  - Retail banking
  - Mortgage banking
  - Investment banking
  - Asset Management

Agenda

- INTRODUCTION
- BACKGROUND
- ROUND ONE RESULTS
- METHODOLOGY
- CONTACTS

Prequel to Round 1

CECL will have the most significant impact on American banking since the Dodd-Frank Act was adopted. Models currently being developed indicate that bank profitability—and bank department profitability—will be affected as institutions charge for credit loss provisions on new loans and credit downgrades on existing loans.

Prior to Round 1 of the CECL Benchmarking Study a detailed CECL Methodology survey was completed, sponsored by Global Credit Data, the IIF and Accenture. The survey provided comparative information on bank's planned methodologies for implementation of CECL. The questions focused on credit data and modeling for the C&I CRE and Consumer portfolios.

26 Banks Participated in Step 1 – CECL Methodology Survey:

Bank of America, Scotiabank, BB&T, BMO Bank of Montreal, Citi, Citizens Bank, Comerica Bank, Credit Suisse, Deutsche Bank, Fifth Third Bank, People's United Financial, Inc., SunTrust, synchrony, BOK Financial, Goldman Sachs, HSBC, KeyBank, Morgan Stanley, MUFG, PNC, Regions, State Street, usbank, Zions Bank, JPMorgan Chase & Co., M&T Bank

WHO SHOULD PARTICIPATE IN ROUND TWO?

Any financial services companies who are implementing CECL, including regional banks, community banks, supranational banks, global banks, insurance companies, specialty financial companies, etc.

KEY QUESTIONS ADDRESSED

How do your final numbers compare to your peers?

What drives the difference in those numbers?

Round 1 of the GCD CECL Benchmarking Study

The Global Credit Data Consortium, in cooperation with Accenture, completed the most comprehensive CECL modeling benchmarking study in the banking industry to date; this study can be leveraged, in combination with a formal gap assessment, to help banks realize key benefits to allowance levels, pricing and product optimization, P&L, among other areas

- The CECL Benchmarking Study was the **only one of its kind** and provided a unique, and much needed, opportunity to gain insight in how your expected loss models benchmark with peers - neutral to your bank's portfolio and macro-economic forecast.
- Presented the results of this study to the IIF in May. Regulator feedback was provided.
- **Enabled outcomes comparison** – relative standing in the industry among its peers
- Provided deep insights into the relative differences by loss estimation methodology, key parameters (e.g., term structures, R&S, mean reversion and historical loss rates, etc.) and scenarios
- Informed overlays by illustrating the cycle and scenario sensitivities of the products
- Helped guide the strategy around B/S management, product offering and pricing by leveraging the industry benchmarks
- Allowed attribution analysis – attribution of CECL numbers across product features including credit quality, term, etc.
- **Helped banks develop confidence** in CECL numbers – sanity check before locking down models, overlays and going live

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Join the CECL Benchmarking Study for Round 2

This study benchmarks GCD members and non-member bank participants with their peers and to provide clients with insights into potential gaps in their CECL programs.

You can sign up for the second round now!

How we do it:

Industry Expert Group

Designs Template, Scenarios, Approach, to fit US market and majority of CECL models

Template

- CECL Parameters
- CECL Scenarios
- Hypothetical Portfolio

Participating Banks

Run their individual models based on the hypothetical portfolio, scenarios, parameters and submit result to GCD

CECL Model Suite of Individual Bank

Results submitted by banks to GCD

- Lifetime PD
- Lifetime LGD
- Lifetime EAD
- ECL

Project Team

End-to-End project management (from "template" to "data collection" to "report" to "industry advocacy")

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- Collect, anonymize and aggregate data
- Return anonymized data & benchmarking reports back to banks

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- Data analysis
- Result interpretation

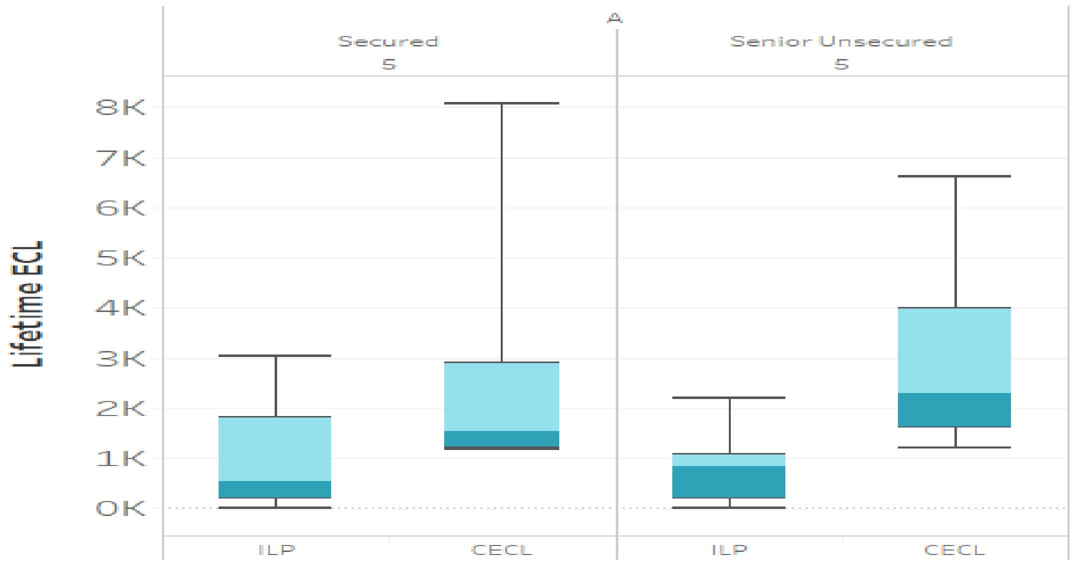
IIF (Institute of International Finance)

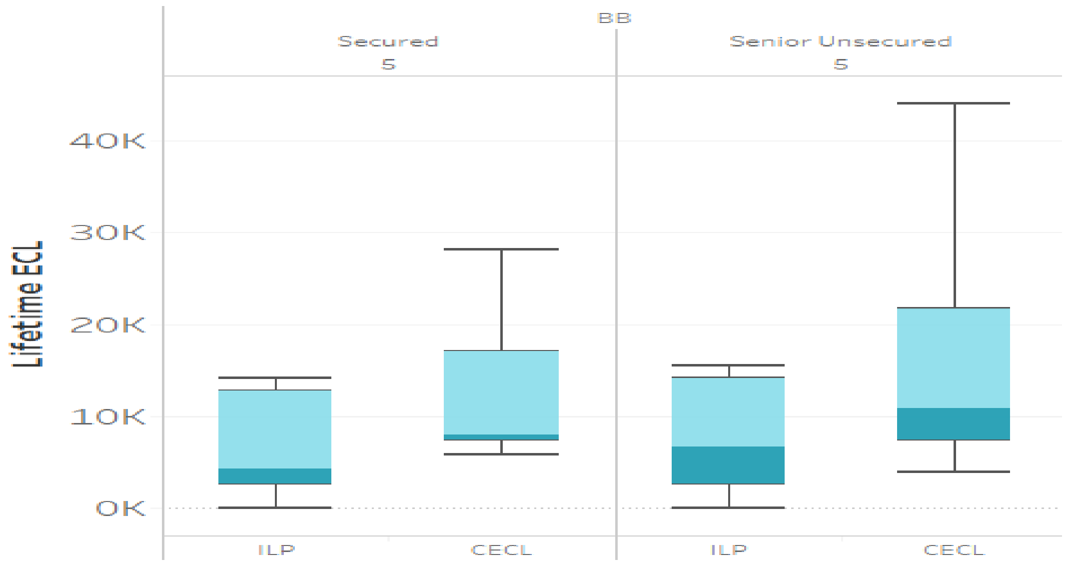
- Industry advocacy

Socialize, Fine-tune and Publish Study Report

CECL Banking Industry Benchmarking Study: Deliverables

Study confirms that CECL are expected to be higher than the ILP as CECL is forward looking and is calculated over the life of the product





- The study confirms that **CECL are higher than ILP**, under a defined parametrization and under a common scenario (the CCAR Base scenario).
- For this example, the CECL almost 2 times higher than ILP across all the hypothetical borrowers(5 year term Loan) of Large Corporates.
- Under the incurred loss model, banks recognize losses when they reach a probable threshold of loss but CECL removes the probable loss threshold and requires a lifetime credit loss allowance to be established on day one of each exposure

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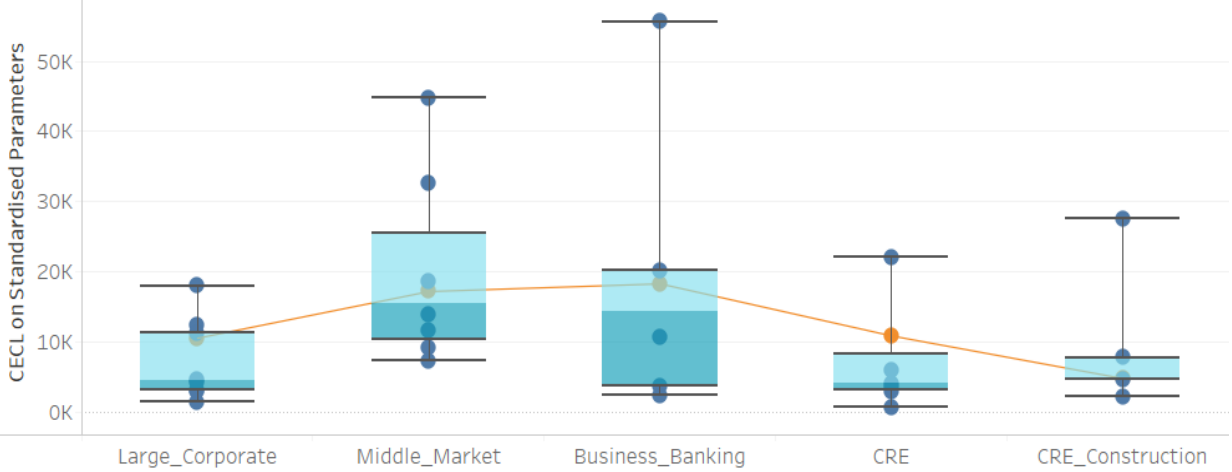
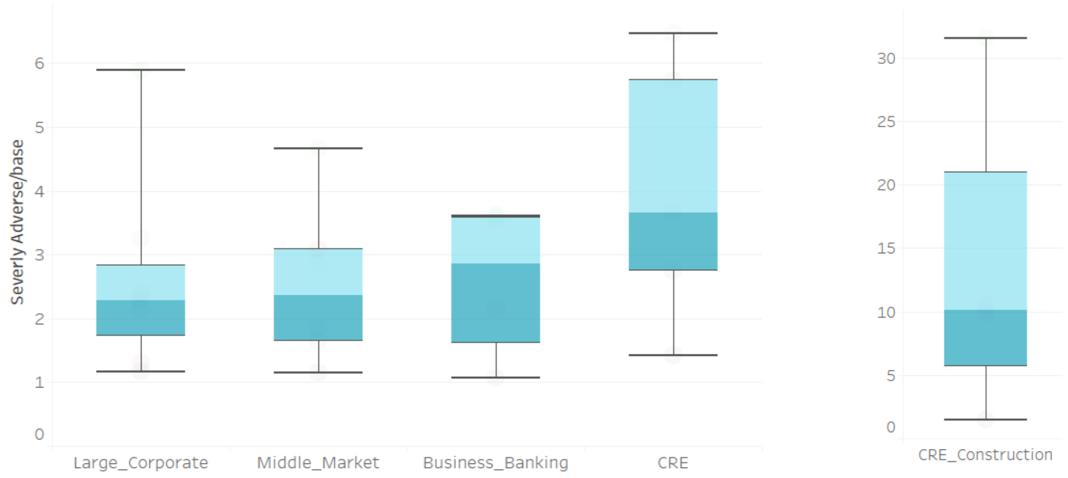
CECL Banking Industry Benchmarking Study: Deliverables

The considerable variability in the initial benchmarking results suggests that some banks can improve significantly the level and variability of their ALLL and PLLL estimates through targeted changes



Variability of CECL by Portfolios

- The study reveals a **significant variability in lifetime ECL between banks**, even under a defined parametrization and under a common scenario (the CCAR Base scenario)
- For this example, variability differs across the portfolios, with the highest variability in the Middle Market segment and the lowest in Commercial Real Estate - Construction
- The value of the example bank is displayed as a orange dot/line



Variability in Sensitivity of CECL to Macroeconomic Scenarios

- When applying the CCAR stress scenario, banks' average ECL increases, as expected under a stress scenario, but with it so does the variability between banks
- Reaction of banks' models can be more or less sensitive to extreme macro-economic threats
- For this sample, the Commercial Real Estate - Construction portfolio is most sensitive to stress scenario.

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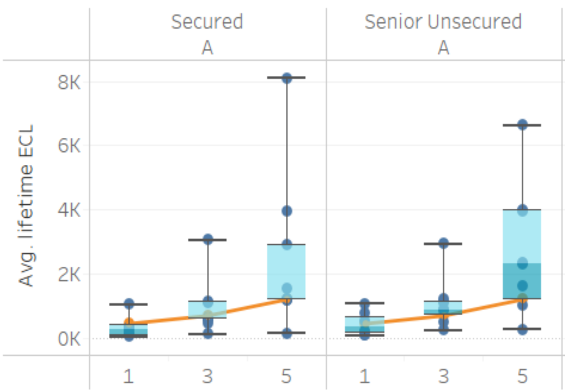
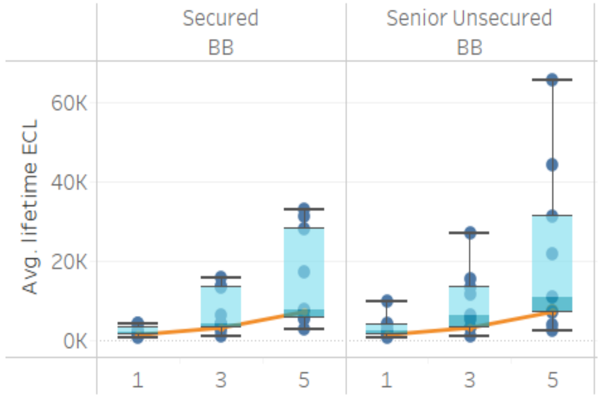
CECL Banking Industry Benchmarking Study: Focused Insight

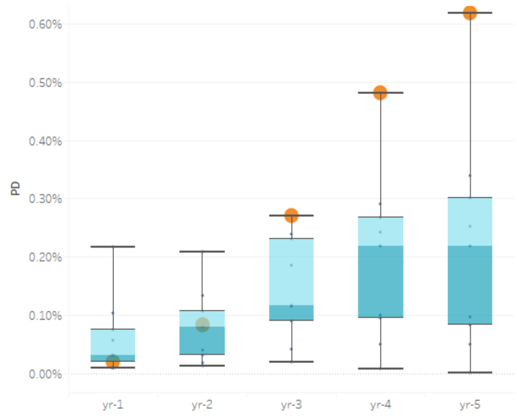
The considerable variability in the initial benchmarking results suggests that some banks can improve significantly the level and variability of their ALLL and PLLL estimates through targeted changes

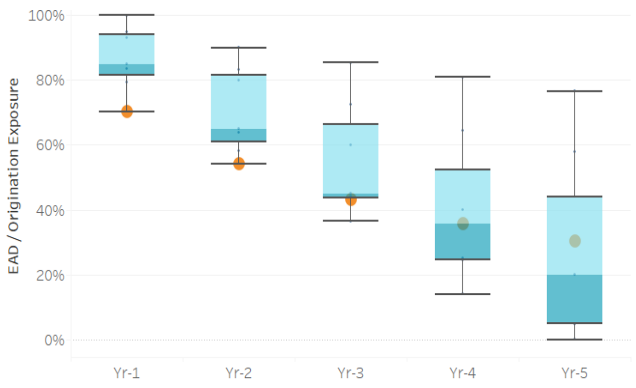




Variability of CECL at Borrower Level

- In the study we also focus on the variability for the various hypothetical borrowers for different portfolios, characterized by the various risk drivers
- For the sample in hand, the variability of the ECL changes with the risk drivers. The riskier the exposure, the lesser the consensus on the ECL
- The value of a particular bank is displayed as a orange dot/line, helping the bank understand their models better





Variability in Model Components over the Life of the Product

- Variability in PD (EAD, LGD) Models is an important driver in explaining variability in CECL among banks
- Banks vary in the 1-year PiT (starting point) as well as in the "steepness" of the curve
- The value of a particular bank is displayed as a orange dot, helping the bank understand their models over the time

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Methodology and Approach

Template: Hypothetical Portfolio

The hypothetical portfolio is composed of a set of loans chosen to provide coverage of various types of asset classes/borrowers, exposures and facilities, fit to the US market.

PERMUTATIONS BY ASSET CLASS / BORROWER	
Residential Mortgage	64
Heloc	16
Auto	32
Personal Unsecured	18
Credit Cards	64
Large Corporates	12
Mid Market	12
Business Banking	12
CRE – Income Producing, Construction	4

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ASSET CLASS / BORROWER TYPE
Residential Mortgage
Heloc
Auto
Personal Unsecured
Credit Cards
Large Corporates
Mid Market
Business Banking
CRE – IP, Construction

×

OBLIGOR
Credit Quality
Industry
Geography

×

EXPOSURE
EAD Range
Avg. Usage
O/S
Limit
Revolver / Term
Reference Rate
Maturity

×

FACILITY
LGD Range
Facility Type
Secured / Unsecured

Illustrative (Large Corporates)

Obs#	Geography	Credit Quality	Loan Term	Secured Type	Origination Exposure	Revolver Utilization	Loan Type	Amortization Method	Interest Rate Type	Reference Curve	Interest Rate	Historical Loss Rate	Annualized Prepayment Rate	Loss Estimate	Lifetime ECL	R&S Period ECL	Mean Reversion Period
1	U.S.	A	1	Secured	1,000,000	0.5	Revolver	Revolving	Floating	LIBOR	2.75%+50bps	5 bps					
2	U.S.	BB	1	Secured	1,000,000	0.5	Revolver	Revolving	Floating	LIBOR	2.75%+100bps	30 bps					
3	U.S.	A	3	Secured	1,000,000		Term	Linear	Fixed		4.00%	5 bps					
4	U.S.	BB	3	Secured	1,000,000		Term	Linear	Fixed		5.00%	30 bps					
5	U.S.	A	5	Secured	1,000,000		Term	Linear	Fixed		4.50%	5 bps					
6	U.S.	BB	5	Secured	1,000,000		Term	Linear	Fixed		5.50%	30 bps					
7	U.S.	A	1	Senior Unsecured	1,000,000	0.5	Revolver	Revolving	Floating	LIBOR	2.75%+50bps	5 bps					
8	U.S.	BB	1	Senior Unsecured	1,000,000	0.5	Revolver	Revolving	Floating	LIBOR	2.75%+100bps	30 bps					
9	U.S.	A	3	Senior Unsecured	1,000,000		Term	Linear	Fixed		4.00%	5 bps					
10	U.S.	BB	3	Senior Unsecured	1,000,000		Term	Linear	Fixed		5.00%	30 bps					
11	U.S.	A	5	Senior Unsecured	1,000,000		Term	Linear	Fixed		4.50%	5 bps					
12	U.S.	BB	5	Senior Unsecured	1,000,000		Term	Linear	Fixed		5.50%	30 bps					

Template: Scenarios & Parameters

The industry expert group has also developed CECL scenarios and parameters for banks to test their own models on the hypothetical portfolio.

CECL SCENARIOS

This first run of the benchmark study will be based on FRB's CCAR scenarios published in February 2019

- Using CCAR scenarios and bank own for this study helps reduce operational burden

CECL PARAMETERS

Banks are asked to run the CECL models various times with different parameters:

- 4 key parameters are included – Reasonable & Supportable (R&S) Period, Mean Reversion Period, Mean Reversion Method, and Historical Loss Rate* beyond R&S Period

CECL Parameters	S1	S2	S3	S4	S5
Reasonable & Supportable Period	8 quarters	Bank Own	8 quarters	8 quarters	Bank Own
Mean Reversion Period	4 quarters	4 quarters	4 quarters	Bank Own	Bank Own
Mean Reversion Method	Linear	Linear	Linear	Linear	Bank Own
What To Use Beyond "R&S + Mean Reversion Period"	Hist. Avg. Loss Rate*	Hist. Avg. Loss Rate*	Bank Own	Hist. Avg. Loss Rate*	Bank Own

Economic Scenarios	S1	S2	S3	S4	S5
2019 CCAR Baseline Scenario (CB)	Yes	Yes	Yes	Yes	Yes
2019 CCAR Severely Adverse Scenario (a)	Yes	Yes	Yes	Yes	Yes
Bank's Own Scenario Set (BO)	Yes	No	No	No	Yes

Secure Data Submission Process

GCD has a recognized track record of data pooling while ensuring data quality, security, and confidentiality

PRINCIPLES

Data Confidentiality

- GCD's data collections are based on detailed data pool regulations with strict rules on confidentiality.
- GCD is in collaboration with an independent data agent bound to the same strict rules.

Data Security

- Data will be transmitted only by encrypted and secured protocols and processed by a mature data portal. Our data transmission hosting platform is tailored to the security requirements of our financial services contributors.

Data Quality

- GCD performs an independent audit by comparing data from participating banks to point out likely data collection errors, so that participating banks can fix these quickly.
- GCD uses automated validations of the data fields and values in their input portal as well as in-cycle audit where a bank's data is manually audited before aggregation, looking for biases, bad data, etc.

Cooperation

- Results will be discussed with banks in detail based on sound and profound audit and peer comparison reports.

SUBMISSION PROCESS

- ➢ Banks submit their data to GCD's data portal https://www.globalcreditdata.net
- ➢ Data portal is secured and only accessible by whitelisted IP addresses
- ➢ Mature data pooling infrastructure operated and hosted by CapGemini

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Further Information

- For further information, please consult https://www.globalcreditdata.org/services/benchmarking-cecl-models.
  - The draft data templates are stored on the website for download and feedback (registration required)
  - Further guidelines (e.g. mapping advice etc.) will be added in the upcoming weeks

- Or contact ...

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GCD’s North American Conference: October 1st & 2nd

https://www.globalcreditdata.org/