**Survey Questions for Non-Retail Credit Rating Models**

**Introductory Questions**

1. What is your banks’ name?
2. What is the region of your banks’ headquarters?
   * North America
   * South America
   * Africa
   * Europe
   * Australia
   * Asia
3. Indicate the size of your institution’s total assets

* Less than €10bn
* €10bn to €100bn
* €100bn to €250bn
* €250bn to €1000bn
* More than €100 bn

1. How many employees in your bank are working on developing credit risk models for wholesale/ non-retail portfolios?

* Less than 3
* 3-10
* 11-20
* More than 20

1. What legal or regulatory constraints apply to the development of your rating models?
   * Basel
   * Country Specific Guidelines (E.g Fed, PRA, Bafin etc)
   * Supra-national regulatory guidelines (E.g EBA, ECB etc.)
   * Other

**Segmentation and number of rating models**

1. How does your bank segment your non-retail portfolio for modelling purposes (i.e. to determine a separate model is to be built for a specific segment)?

* Largely based on business/expert judgment
* Pure statistical analysis based
* Hybrid approach
* Other (please specify)

1. If statistical analysis is used, what methodologies your bank uses for segmentation analysis?

* Logistic regression
* Decision tree
* Other (please specify)

1. If statistical analysis is used, what are the main drivers your bank uses in segmentation analysis?

* Borrower type (e.g. corporates, SME, Banks, Sovereigns)
* Geographic location
* Financial ratios
* Industry specific indicators
* Other (please specify)

1. How many rating models does your bank have for the non-retail portfolios?

* <5
* 5-20
* 21-40
* 41-60
* >61

1. How does your bank define a rating model? For an example, if you use same risk factors with different weight for two regions, do you consider them as two models or one model? Please type your answer.

**Rating grades and PD**

1. How many rating grades does you bank use?

* <5
* 5-10
* 10-20
* >20

1. How does your bank determine the number of rating grades?

* Exactly based on rating agencies’ number with some qualitative adjustments
* Based on statistical analysis (pls specify how statistical analysis is used)
* The number of rating grades are fixed in our bank.

1. Does your bank have different rating grades for different segments?
   * No, only one rating grades for all borrowers
   * Yes, pls specify:
     + What are the segments with different rating grades?
     + Why are segmentations for rating grades needed?
     + Does the same grade mean the same across different segments?
2. What do your bank’s rating grades represent?

* Relative ranking
* Probability of default
* Expected Loss

1. Does your bank have specific definitions/criteria for each rating grade in order to differentiate them?

* No
* Yes (pls specify)

1. How does your bank test accuracy of your model?
   * Compare model ratings with final authorized/adjudicated ratings
   * Accuracy ratio
   * Other (pls specify)
2. Does your bank test accuracy of your final authorized/adjudicated rating?

* No
* Yes (pls specify)

1. Does your bank incorporate forward looking information in your rating models?

* No
* Yes, how?
  + forward looking macroeconomic and/industry indicator as model factor with weighs assigned
  + Factor score adjusted based on economic cycle (e.g. scaling factor)
  + Other (please specify)

1. What is the typical forward looking duration if your bank builds forward looking factors in the risk rating models?
   * 12 months
   * Average terms for loans for all borrowers in a specific rating model
   * Maximum term of a borrower
   * Average Term of a borrower
   * Other (please specify)
2. What is the typical forward looking duration you bank use when assigning a credit rating?
   * 12 months
   * Average terms for loans for all borrowers in a specific rating model
   * Maximum term of a borrower
   * Average Term of a borrower
   * Other (please specify)
3. Does your bank has rating grades with ‘zero’ default?
   * No
   * Yes (please specify borrower types with ‘zero’ defaults, e.g. sovereign)
4. If your bank has business outside its country of domicile running by a local subsidiary, does your bank have local ratings in addition to global/central ratings?
   * No
   * Yes (please specify reasons for the need of local ratings, e.g. local regulation)
5. For international exposures, does you bank cap some borrower types’ ratings at country IG?

* No
* Yes (please specify the borrower types and the type of country IG used (i.e. Local Currency rating or Foreign Currency rating)

1. Does your bank have facility ratings?

* No
* Yes (please specify why they are needed and how they are used)

1. Does your bank derive PDs from ratings?
   * Yes
   * No, drive ratings from PD
2. How many PD curves does your bank have?
   * 1 PD master scale
   * More than 1 based on segments (please specify the segments)
3. What data does your bank use to derive your PDs?
   * Internal only
   * Internal primarily, supplementing with external data for segments where no internal data is available
   * Both internal and external
4. Is your bank’s PD for a given IG grade for a fixed period of time?

* No
* Yes (please specify the time period, e.g. 5 years)

1. Does your bank have/use expected loss-based ratings?
   * No
   * Yes (please specify the purpose and how they are used)
2. Where does your bank use borrow risk ratings (pick all applicable one)?

* AIRB regulatory capital purpose
* Pricing
* Adjudication for credit risk control
* Other (please specify)

**Model development and implementation**

1. What rating modelling approach does your bank use?
   * Score card model based on a hybrid of expert judgment with some statistical analysis
   * Score card model largely based on expert judgment
   * Statistical default prediction model based on financial ratios (e.g. Moody’s RiskCalc)
   * Statistical default prediction model based on market indicators (e.g. CDS, stock price) and financial metrics (e.g. Moody’s EDF)
   * Other (plus specify)
2. What are the major model development methodologies your bank use (pick all you use)?

* Linear regression
* Logistic regression
* Other non-linear regression
* Simulation (historical, Mont Carlo)
* Decision tree
* Other optimization methods (plus specify)
* Other methods (plus specify)

1. How does your bank incorporate expert judgment in rating models?
   * Use pure judgmental credit factors in the model
   * Judgmental factors measured by some quantified numbers based on some statistical analysis
   * Judgmental overlays
2. If judgmental overlays are used, how does your bank apply overlays?
   * Judgmental overlays at factor level
   * Judgmental overlays at section level
   * Pure judgmental overlays on top of model ratings
3. How often does your bank revise/recalibrate rating models?
   * Annually
   * Every 2-3 years
   * Every 4-5 years
   * As requested and needed (e.g. industry restructuring)
4. Does your bank use external data in developing rating models?
   * No
   * Yes (plus specify the data sources)
5. How are the external data used?
   * Directly used in model development and calibration
   * Used as benchmarks
   * Used for validations only
6. If external data are used in model development, do you analyze/select the data to be comparable to your bank’s portfolios (i.e. how do you justify the use of external data)?
   * Yes
   * No (plus explain why not)
7. What platform does your bank use to implement rating models?
   * Vendor platforms (plus specify e.g. Moody’s RA
   * Internally developed platform
   * Excel based
   * Others (please specify)

**Model performance Assessment**

1. How does your bank assess the performance of rating models?

* Based on match rates between model generated rating and final authorized/published rating only
* Based on match rates and other criteria (please specify these other criteria)
* Do not use match rate, use other (please specify)

1. Does your bank use different criteria for different segments to assess the performance of rating models?

* No, Use same criteria for all rating models
* Yes (please specify. e.g. consistently lower/higher override rates allowed for certain segments)

1. How does your bank decide that a rating model does not perform well and requires re-calibration? Please elaborate.
2. How often does your bank review performance of rating models?
3. Annually
4. Every 2-3 years
5. Ad hoc
6. Other (please specify)
7. Does segmentation is part of your regular review?

* Yes (please elaborate how do you analyze override bias)
* No

1. What is the target (independent variable) in your borrower risk rating model? Please select all relevant options and elaborate on how the target is set. e.g. match x% of ratings assigned by credit adjudicators.
2. Rating assigned by an experienced credit adjudicator
3. Probability of default
4. Probability of moving to a watchlist (or problem loan) category
5. Other (please specify):

1. Indicate the percentage contribution to model prediction for each of the following types of factors.

|  |  |
| --- | --- |
| Contributing Factors | Approx. Percentage Contribution  (0% - 100%) |
| Factors based on historical financial statements  (i.e. P&L, Balance Sheet, Cash Flow Statement) |  |
| Factors based on forecasted financial performance |  |
| Factors based on non-financial quantitative data: |  |
| Factors based on professional judgement: |  |
| Other (please specify) |  |

1. Indicate how each of the following information is captured in assigning borrower risk ratings

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Model Input –  Financial Quantitative Data (Yes / No / NA) | Model Input –  non-Financial Quantitative Data  (Yes / No / NA) | Model Input –  based on Professional Judgement  (Yes / No / NA) | Override of Model Output  (Yes / No / NA) |
| Financial Metrics |  |  |  |  |
| Strategic Position |  |  |  |  |
| Concentration vs. Diversification |  |  |  |  |
| Operations |  |  |  |  |
| Management Structure |  |  |  |  |
| Governance and  Risk Management |  |  |  |  |
| Regulatory Environment |  |  |  |  |
| Geopolitical, Economic, and Trade Considerations |  |  |  |  |
| Industry Outlook |  |  |  |  |
| Extra-ordinary Events |  |  |  |  |
| Other (please specify) |  |  |  |  |

**Risk Rating and Overrides**

1. When your bank performs review of rating models, is override bias (i.e. ratio of notch up and down) usually a concern?

* Yes (please elaborate how do you analyze override bias)
* No

1. When your bank performs review of rating models, is stability of override over periods a concern?

* Yes (please elaborate how do you analyze override bias)
* No

1. Where does override occur and how often is override applied?

|  |  |
| --- | --- |
| Modelling Component | Approximate Percentage of Overrides  (0% - 100%) |
| Input Factors |  |
| Input Factor Weights |  |
| Model Output (i.e. Model Generated Rating) |  |
| Other (please specify) |  |

1. Percentage of upward vs. downward override?
2. 70% upward override / 30% downward override
3. 60% upward override / 40% downward override
4. 50% upward override / 50% downward override (i.e. balanced)
5. 40% upward override / 60% downward override
6. 30% upward override / 70% downward override
7. Other (please specify):
8. What type of overrides are monitored?
9. All overrides
10. Only overrides greater than 1 notch
11. All overrides except policy-related overrides
12. Other (please specify)
13. How do you monitor overrides? Please provide specific comments on all relevant items:
14. Do you monitor exact match rate, within one notch match rate etc.?
15. Do you set override monitoring thresholds?
16. What are the thresholds for Green, Yellow, Red?
17. Do you monitor quarter-over-quarter rating change?
18. Do you have one threshold for all models or different thresholds for different models?
19. Do you monitor the model at the aggregate portfolio level or at individual model level?
20. Do you have different override monitoring approaches by geography?
21. How are the override thresholds set?
22. Expert judgement
23. Statistical method (please specify)
24. Other (please specify)
25. How often are the override thresholds reviewed and updated?
26. Annually or less
27. (b) every 2 years
28. every 3 years
29. Aperiodic
30. What is the outcome of overrides monitoring (e.g. detailed analysis if Red)? Please provide specific comments on all relevant items:

* Are mandatory actions required at some point depending on the results of overrides monitoring (2 quarters of Red for example)?
* If so, is advising model owners and model users for their review and feedback a sufficient action?
* Can model recalibration be an outcome of overrides monitoring?
* Are corrective actions tied to model materiality?

1. Do you monitor the model performance before and after the override?
2. Yes
3. No
4. Cannot Monitor
5. Do you have a replication team independent of teams assigning ratings?
6. Yes
7. No
8. What are the acceptable levels of rating replication errors?
9. Less than 10%
10. 10 – 20 %
11. 20 – 30%
12. Greater than 30%
13. We don’t replicate ratings
14. What is the actual level of rating replication error observed?
15. Less than 5%
16. 5 – 10 %
17. 10 – 20%
18. Greater than 20%
19. We don’t replicate ratings

**COVID19 RELATED QUESTIONS**

1. What is the impact of delay / hidden defaulted obligors?
2. Are there any deviations from risk model’s assumptions?
3. Are there pockets of risk in the new paradigm resulting from the crisis?