Global Credit Data
by banks for banks

LGD & EAD platform

- User Handbook -

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Global Credit Data
THE NETHERLANDS
www.globalcreditdata.org

Table of Contents

Abbreviations & Acronyms

BA	Basel Accord
ED	European Directive
FAC	Facility Asset Class
FAQ	Frequently asked Questions
ID	Identification Number
(A)IRB	(Advanced) Internal Ratings Based Approach
LC	Large Corporate
LGD	Loss Given Default
LL	Lender Limit (may be committed or uncommitted)
LOA	Lender Outstanding Amount (exposure by the bank to the borrower)
Loan	Also called a Facility
N/A	Not applicable
NR	No Rating
Obligor	Also called a Borrower or Counterparty
ODF	Observed Default Frequency (historical observation)
PD	Probability of Default (forward looking estimate)
PF	Project Finance
S&P	Standard & Poor's ; a rating agency
SL	Specialized Lending
SPC (or SPV)	Special Purpose Company (Vehicle) which owns the financed asset
SME	Small Medium Enterprise
VR	Validation Rule

1. Introduction

Global Credit Data (GCD) is an international "not-for-profit"-association owned by international banks and active in the pooling of historical credit data. The pooled data is used by member banks to build and benchmark credit risk models, both for economic and regulatory capital purposes as well as for impairment modelling. Strict anonymity, high security standards (both concerning the borrowers of the banks and the bank submitting data) and high data quality standards are crucial for members. Our motto is "By banks for banks": the banks own the data and are all active participants.

The following documentation relates to one of the databases GCD is running: the LGD & EAD platform which collects historical loss information.

By making use of the database, participating member banks have the possibility to further **enhance the modelling, calibration and benchmarking** of their **internal LGD and EAD models**.

The data collection of GCD focuses on the wholesale portfolios and on the so-called "low default / data portfolios" which include the following asset classes: Large Corporates, SMEs, Banks & Institutions active on Financial Markets, Sovereigns and obligors in Specialised Lending (Project, Ship Finance, Aircraft Finance, and Commodities Finance) and Private Banking. For more information on the asset classes, see chapter 5.b.

GCD data is used by members for a variety of purposes including capital modelling under the Basel rules and Expected Loss Provision modelling under accounting rules (IFRS 9, CECL). The detailed rules around collection of historical data (internal and external) vary greatly and therefore GCD has not officially adopted any one rule set. The GCD philosophy is to return raw data to members so that they can deal with the data and make calculations in compliance with the rules affecting them.

One of the founding principles for GCD was that the Basel II rules set a requirement for banks wanting to adopt the Advanced Internal Rating Based approach (AIRB) to collect and maintain the data necessary to build models. Banks complying with the Basel II §431 rule should be able to contribute their data to GCD's LGD/EAD data pool which requires at least the following level of detail:

> *"Banks using the advanced IRB approach must also collect and store a complete history of data on the LGD and EAD estimates associated with each facility and the key data used to derive the estimate and the person/model responsible. Banks must also collect data on the estimated and realised LGDs and EADs associated with each defaulted facility.*
>
> *Banks that reflect the credit risk mitigating effects of guarantees/credit derivatives through LGD must retain data on the LGD of the facility before and after evaluation of the effects of the guarantee/credit derivative. Information about the components of loss or recovery for each defaulted exposure must be retained, such as amounts recovered, source of recovery (e.g. collateral, liquidation proceeds and guarantees), time period required for recovery, and administrative costs."*

It should also be noted that §432 also "encourages" Foundation banks, those who do not have approval for their own LGD/EAD models, to collect the same data as above.

The rule in Basel II §448 requires banks to use

"all relevant, material and available data…"

and allows use of external pooled data

"A bank may utilise internal data and data from external sources (including pooled data)".

The encouragement to base models on real historical data is given in Basel II §449, viz:

"Estimates must be grounded in historical experience and empirical evidence, and not based purely on subjective or judgmental considerations. […]"

Note: Global Credit Data is not pooling banks' LGD/EAD estimates in this database. Instead of asking banks for their view of the LGD level according to their methods, Global Credit Data collects all the relevant facts relating to the default and the cash flows which occurred after default. In total GCD collects 120+ different data fields per defaulted obligor at different points in time. GCD then calculates the relevant LGD levels in a transparent and replicable way.

The following documentation aims to help all member banks to understand the data model (data input as well as data return) so that they can use the data appropriately in their modelling and validation processes.

2. USE CASES FOR THE LGD & EAD PLATFORM

a. Overview

Through its LGD & EAD platform, GCD gives participating member banks the possibility to further **enhance the modelling, calibration and benchmarking** of their **internal LGD and EAD models**. Although banks are required to use their own internal default history to build and calibrate LGD models, additional data information can be necessary for various purposes (see below Figure 1). As GCD is collecting a broad range of information ("cost and recovery cashflows") for defaulted borrowers, banks have the possibility to create their own reference data set, representative for their banks' portfolio, and use the information for modelling, calibration or benchmarking. Next to a detailed data return, GCD is supporting its member banks with benchmarking reports (such as the peer comparison report).

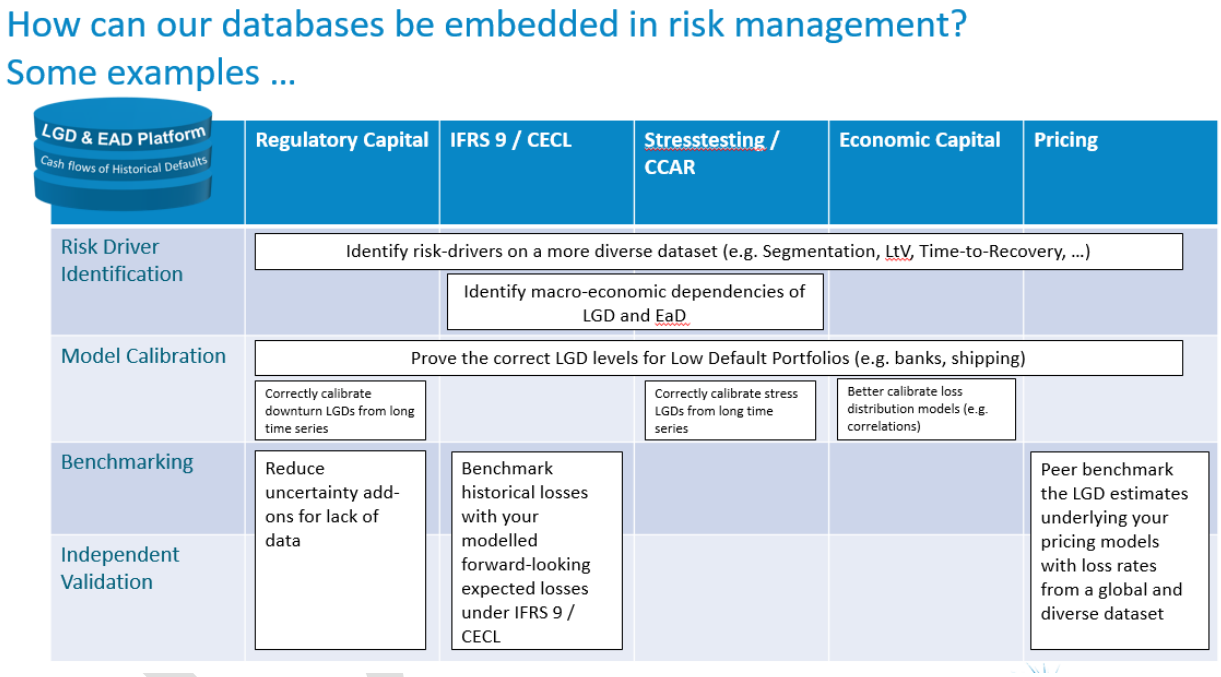


FIGURE 1: EMBEDDING THE LGD & EAD PLATFORM IN REGULAR BANKING PROCESSES

b. Frequently asked questions

1. *Which default definition should banks apply when delivering data to GCD?*

Banks are required to deliver their defaults following their most recent internal default definition. In case their default definition changes over time, banks are asked to update their data accordingly.

2. *How does GCD take into account that the participating member banks don't necessarily have a uniform default definition?*

All participating members are banks or similar financial institutions which adhere to the default definition as defined in the Basel II regulations[1].

> *452. A default is considered to have occurred with regard to a particular obligor when either or both of the two following events have taken place.*
>
> - *The bank considers that the obligor is unlikely to pay its credit obligations to the banking group in full, without recourse by the bank to actions such as realising security (if held).*
> - *The obligor is past due more than 90 days on any material credit obligation to the banking group. Overdrafts will be considered as being past due once the customer has breached an advised limit or been advised of a limit smaller than current outstandings.*
>
> *453. The elements to be taken as indications of unlikeliness to pay include:*
>
> - *The bank puts the credit obligation on non-accrued status.*
> - *The bank makes a charge-off or account-specific provision resulting from a significant perceived decline in credit quality subsequent to the bank taking on the exposure.*
> - *The bank sells the credit obligation at a material credit-related economic loss.*
> - *The bank consents to a distressed restructuring of the credit obligation where this is likely to result in a diminished financial obligation caused by the material forgiveness, or postponement, of principal, interest or (where relevant) fees.*
> - *The bank has filed for the obligor's bankruptcy or a similar order in respect of the obligor's credit obligation to the banking group.*
> - *The obligor has sought or has been placed in bankruptcy or similar protection where this would avoid or delay repayment of the credit obligation to the banking group.*

This ensures initial relevance. Still, institutions may vary in some of the aspects such as the days past due criterion for default identification, indications of unlikeliness to pay, conditions for the return to non-defaulted status etc. In 2015, the EBA has issued detailed guidelines and consultation papers to ensure a more consistent use of the definition of default. Over time this should result in even more comparable default definitions. GCD expect bank members to provide with the data they use for internal modelling, validated internally as well as externally (regulators audit), and therefore this will guarantee common default definition..

[1] Note: The updates of the regulatory framework in the last years (widely known as Basel III and Basel IV) have not changed the original definition of the asset classes, therefore the definition still refers to the Basel II document (published as BCBS128.pdf on the Basel Committee of Banking Supervision's webpage).

We believe that on anaggregated level the data is an excellent tool for benchmarking purposes. Differences in default definition (as well as other differences) can be spotted by comparing member banks' data with peers. Further, the data includes information on the trigger of the default (Field "Nature_of_Default") which allows members to further analyse the data and create a data set which is representative for their own banks' portfolio (for further information on creating a reference data set, see chapter 16 e).

Description	Definition
Default - 90 Days Past Due	Obligor is more than 90 Days past due on any material credit obligation.
Default - Unlikely to Pay	Obligor is unlikely to pay its credit obligations in full without recourse by the bank to actions such as realizing security. May include less than 90-days past due payment.
Default - Bankruptcy	Either the Obligor has sought or been placed in bankruptcy protection or the Bank has filed for the Obligor's bankruptcy.
Default - Charge-off or Specific Provision	Bank makes a charge-off or account-specific provision resulting from a significant perceived decline in credit quality subsequent to the bank taking on the exposure.
Default - Sold at Material Credit Loss	Sale of a distressed credit obligation resulting in a material economic loss. Applies also to counterparties on financial markets, in case of sale of credit obligation or Closure of the counterparty accounts, without material credit loss (LGD near 0).
Default - Distressed Restructuring	A loan which has had a restructuring of its credit obligation, resulting in a loss caused by the material forgiveness or postponement of principal, interest and any associated fee payments.
Default - Non-Accrual	A loan which has been classified or placed on non-accrual status.

FIGURE 2: DEFAULT REASONS COLLECTED IN THE LGD / EAD PLATFORM

Note: the first two criteria are the Basel II criteria. The other 5 criteria represent "subcriteria" of the "unlikely to pay" criteria.

2. *Does GCD also collect "technical defaults"?*

No, GCD is collecting all the defaults which are considered as default following the default definition policy of each member bank. "Technical defaults" are usually not considered as "real defaults" but caused by delays in processes, manual errors etc and therefore are not collected. GCD wishes banks to deliver the defaults which they report to their regulators and use in the calculation and calibration of their PD models.

3. *Is GCD collecting the default information on borrower level or on facility level? Is there a way to identify the non-default loans that were flagged as default due to other loans in default?*

GCD is collecting the default information on borrower level (although technically the field is part of the LOAN table. Validation rules ensure that all loans are flagged defaulted if one of the loans is defaulted.) For that, it is not possible to identify loans afterwards as non-defaulted loans of a defaulted borrower.

3. *Does GCD only collect resolved defaults or also unresolved defaults?*

GCD does collect both resolved and unresolved defaults. Banks who submitted both resolved and unresolved defaults, will receive back both resolved and unresolved defaults. Banks who only submit resolved loans, will only receive bank resolved loans. For more information on the definition of "resolved" and "unsolved", please consult chapter 6b.

4. *The database may contain data on the same defaults collected from different member banks. How does GCD account for possible repetitions? How does GCD recommend their member banks to treat the data to eliminate the threat of possible repetitions?*

Although Banks may have exposures to the same borrower, these should not be viewed as duplicates as each Bank will have different types of exposure with that borrower and will give each lender a different default experience.

5. *Does GCD only collect cases which have resulted in a loss or also cured cases?*

GCD collects the defaulted cases (following the Basel II definition, see earlier FAQ in this chapter) of a participating bank, independently whether they have cured or resulted in a loss.

In order to facilitate the data analysis, GCD's data include a calculated field called "Cure" based on the data input from banks. The GCD definition for "cure" is:

- Loan needs to be resolved ANDTime to resolution (Difference between default date and resolution date) < 365 days AND
- Collateral is not sold during work-out AND
- Guarantee is not called during work-out
- No write-off

However, every bank can apply its own definition of "cured" and calculate that based on the values in the database.

6. *How can restructured cases be seen in the data?*

GCD collects the defaulted cases (following the Basel II definition, see earlier FAQ in this chapter) of a participating bank, independently whether the loans to that defaulted borrower have been restructured or not pre-default.
In case the loan(s) are restructured post-defaults, banks are required to submit their cashflows based on the original loan structure. For more details, see the example in chapter 15h.

7. *Do banks also report their forbearance cases to GCD?*

No, forbearance itself is not a default criteria. GCD collects the defaulted cases (following the Basel II definition, see earlier FAQ in this chapter) of a participating bank, independently whether they have been forborne or not. At the moment, it is not possible to retrieve from the data whether a case has been forborne pre-default or not.

8. *How does GCD treat liquidations?*

GCD differs between various types of "liquidations":

- A borrower can be "liquidated" after default.
- Banks can also sell (part of) the defaulted loan.
- Banks can sell/liquidate the collateral.

In all situations, the proceedings and the costs related to the liquidation are stored in GCD's data model (and it is possible to differentiate between them).

9. *Does GCD has any guidance how to treat borrowers with a small outstanding at default: Do they need to be reported as well? Does GCD apply any materiality threshold for small default amounts (in comparison to the outstanding amount)?*

The basic rule is: If the submitting bank considers a borrower as defaulted, then the case is reported to GCD. All banks apply the Basel II default definition (see FAQ above) but can differ in their materiality thresholds with respect to small exposures and/or small default amounts. When analysing the data, we advise all banks to create a RDS (=Reference Data Set) and banks can apply then their own materiality thresholds.

10. *How does GCD take into account that the participating member banks use different definitions for calculating a LGD or CCF/EAD (e.g. discount rate)?*

As stated, Global Credit Data is not pooling banks' LGD/EAD estimates in this database. Instead of asking banks for their view of the LGD level according to their methods, Global Credit Data collects all the relevant facts relating to the default and the cash flows which occurred after default. In total GCD collects 120+ different data fields per defaulted obligor at different points in time. GCD then calculates the relevant LGD levels in a transparent and replicable way. For more information on the calculated values, see chapter 16d.

11. *Is GCD's data model accepted by the regulators / auditors of the participating banks?*

We don't have any formal agreements with regulators to accept our data or not, but we do know that across Europe, Australia, the US and Canada, members use and have used the data for:

- Building, calibrating and benchmarking regulatory approved capital models
- Calibrating stress test models, including CCAR
- Design and initial testing of IFRS9 models

We also have had direct discussions with regulators in various countries, including with the Fed and the OCC in the US, with the intention of informing them about our database as a background for when they receive estimates and models from our members which in some way use our data. We have also directly discussed our data with members of the Basel Committee's working groups to enlighten them as to both realistic levels of PD and LGD as well as to promote the benefits of data pooling.

To summarize, GCD's data templates for both PD and LGD have now become the industry standard, meaning that auditors (re CECL and IFRS9), regulators and management are now expecting banks to collect historical default and loss data at the same level of granularity and detail as the > 50 GCD member banks do, whether they currently use it or not.

3. SUBMISSION PROCESS

a. Overview

Banks performing a submission to GCD by using the GCD's data portal (https://www.globalcreditdata.net).

The data submission process begins with member banks receiving individual pre-submission packages on their data submitted so far. These customised analytics identify improvement fields for each bank. During submission, the data is checked by the validation rules in an automated, iterative process. After all validation rules have been successfully passed, the data is confirmed by the member and then separately checked by executives according to auditing standards consistently applied. Both the validation and auditing rules are set and regularly reviewed by the Methodology Committee. After the data is audited, it is then aggregated, anonymised and readied for return. At this point the data submitted by each bank, together with their previously submitted data is scored using pre-set data quality scoring.

EXHIBIT 9:
DATA SUBMISSION PROCESS FLOW

The legal aspect of the data submission process (what data needs to be submitted by banks, who is the owner of the data, who is entitled to receive back the data, who is responsible for the data quality etc., who decides about publications etc.) is laid out in the two overarching documents relevant for the organization:

A. The Articles of Association and
B. The Data Pool Regulations

Both documents are available on our website.

b. Submission types

Banks can choose between full submissions and partial updates. By definition, a first submission of a new member is a full submission and the GCD Data Pool Regulations require at least one full submission every three years. Resubmission of any existing data is done through the data portal as usual, where data is tested with exactly the same tests as for new data. The resubmitted data is checked by the audit process as usual and if accepted is then used to replace the old data as a step in the aggregation function.

Full Submission requires:

- Submission of all resolved defaults present in the GCD dataset

- Submission of all unresolved defaults present in the GCD dataset
- Submission of new defaults (resolved/unresolved) if available

Partial Updates require:

- Submission of none or some existing defaults present in the GCD dataset
- Submission of new defaults (resolved/unresolved) if available

Note: The data pooling process is built on a so-called "replacement functionality". The replacement functionality overwrites for a certain Entity_ID the current information in the database with the new information provided in the submission.

Banks must therefore resubmit their existing defaults by resubmitting the default with the same Entity_ID as present in the GCD Dataset and have to take into account the following

- Banks are required to resubmit all information of the borrower, its loans, collaterals and guarantors (otherwise the current data in the database gets deleted)
- Banks are also required to use the same IDs for the loans, collaterals and guarantors of the borrower being updated.

During the aggregation phase, GCD process will identify the borrowers resubmitted based on their Entity_ID and replace all existing information.

c. Submission cycles

We collect the information twice a year inside our so-called submission windows. The banks submit their data either between April and May or October and November in the two submission windows. Data is submitted during these periods to allow GCD to have a complete fresh data set to return each June and December. The data portal is open during the whole year except for two small windows where we implement the changes for the next submissions. Banks can perform trial submission during the whole year to prepare their data for the next submission.

In order to do a submission, the members are preparing their data first in the appropriate format and then upload the data on to the data portal https://www.globalcreditdata.net. Members can run as many trial submissions as they want. In case they choose a firm submission, the data will be checked and audited by GCD Executives.

Banks participating in a certain "data pool" are required to deliver in each submission cycle a certain percentage of their defaulted portfolio. The definition of a data pool and the thresholds applied are further defined in the data pool regulations (downloadable on our website). Below a summary table with the percentage required :

Asset Class	Year of default	1st submission *	2nd submission and further
All	≤ 2000	No minimum	No minimum
LC or SME	≥ 2001	30% **	80%
Other	≥ 2001	50% **	80%

* 1st submission is meant for banks newly joining a Data Pool, at whichever date

** with a minimum, for the whole submission, of 3 obligors per Asset Class

d. Frequently asked questions on the submission process

1. *How can new banks join the data collection?*

Any new member can do a "out-of-cycle" submission any time during the year. The data pool regulations allow that first submitters do only deliver part of their defaulted portfolio in the first submission. In such a case the datapool regulations requires that this first submission is representative for the bank's defaulted portfolio. A successful "out-of-cycle" submissions entitles a blank to receive pooled data back for the asset classes, default status and default years that they provide. However, the data will not be integrated in the pooled database yet. The next in cycle submission the new bank will perform a full submission and their data will be included in the overall pooled database

The following variables should be taken into account in testing the representativeness of the first sample:

- Geographic distribution
- Industry distribution
- Degree of collateralization
- LGD distribution
- Time to resolution
- Cure rate
- Facility type

2. *What if a bank encounters at a later moment some data errors in their submission, e.g. a loan should have been part of a different asset class? In general, how can banks update already submitted cases?*

In case banks need to update information on borrowers/loans/collaterals/transactions which have been already submitted once to GCD, they are able to re-submit the total borrower again through the portal using the replacement functionality (using the same Borrower ID, Loan ID, Collateral ID etc. as before). The new submitted information on the borrower will then replace the existing information on the borrower. Banks need to pay attention to submit the whole information on a borrower again (e.g. also loans where updates have not been necessary), otherwise the existing information will be replaced. GCD executives closely monitor any changes made in the existing data to avoid errors and guarantee stability in the database.

3. *How does a data update of already resolved cases effect other banks?*

Banks will get the new data back in the next data return (e.g. the delivered identifiers (borrower ID, Loan ID, collateral ID, …) stays the same but the fields are updated. We therefore always encourage banks to use the most recent data set for their analytics.

In case the data update concerned the asset class (field: facility_asset_class) which is the basis of our "give-to-get rules" (see chapter 5.b for more details), the effect on the other banks depends:

- If a bank is eligible to get the new asset class as part of their "give to get" then the bank will be able to see the change in their data
- If a bank is not eligible to receive the data, they won't be able to see this reclassification: it will look as though both borrower and loans are no longer present.

4. *How does GCD ensure anonymity and confidentiality?*

The anonymity of the LGD & EAD platform is ensured by the following features and rules:

- No name of obligor is delivered or recorded: no name of obligor is requested at any time (there is not even a data-field where it could be entered!);
- No name of lender is recorded: each member-bank has a code, which allows the Global Credit Data executives and the Data agent to monitor the data contributions and feed-back, but even this code does not appear in any data output;
- All internal Ids given – necessarily - by the lenders to their obligors are substituted with other Ids from the Data agent (who keeps tables of correspondences).
- Critical mass rules are applied by the Data agent to the data output: by grouping countries into areas, data is always contributed by 3 banks at least (see chapter 5.f for more information). Further, a minimum number of different banks must be available in an asset class to release the data to the Member Banks (see chapter 5.f for more information).

Confidentiality is a set of practices. All members accept the rules of confidentiality detailed in the Data Pool Regulations. The Global Credit Data Executives pay attention not to divulge the names of members to the Board or the various committees. In the working groups, where the representatives of banks get to know more about the other banks in the group, confidentiality remains a respected feature.

5. *How does GCD ensure data security?*

GCD has implement a high-security data portal which can be reached by https://www.globalcreditdata.net. The data portal is run by Cap Gemini and all data lies physically only at the servers of Cap Gemini.

Cap Gemini itself is ISO27001-certificated (the certificate and the statement of applicability are available at request from the GCD Executives) and the data portal is secured among others by a "IP white list", which requires that the banks' IP addresses are added to the data portal before banks can access it. Please contact globalcreditdata-support.bnl@capgemini.com for technical questions on the data portal.

6. *Does GCD clean the data after receipt?*

No, each bank does its own cleaning during the collection process to pass the validation and audit. GCD never changes values or removes data, but we do advise members to do this when we see a need for correction.

7. *Can GCD reject data which passes all validations?*

Yes, GCD routinely questions incoming data for comparability and requests banks to reconsider. GCD also completes pre-submission and in-cycle audits of members' complete data sets in order to ensure completeness and compatibility with other banks' data. A scoring system including feedback is used to let members understand their own data quality in comparison to others.

8. *Do banks change the data after a GCD audit?*

Yes, by comparing data from one member with others, GCD can point out likely data collection errors and members usually fix these quickly. Peer Comparison reports are a new tool introduced to compare key statistics on the data of the submitting bank vs other banks. The above processes ensure that member banks are aware of any problems with the quality of their data and are able to solve them in order to make the most out of their membership with Global Credit Data.

9. *What happens to old data after rule changes?*

When possible, we adjust fields for old data when a field or definition changes, but many times we request for members to re-submit all data (3-year cycle).

10. *Is GCD certified in following any specific standards (e.g. a service organization control report (SOC) of the SSAE, the ISO standard, …)*

Yes and no. GCD has outsourced is data pooling process (including the physical location of the data) to Capgemini, which is ISO27001-certificated. The certificate and the State of Applicability is available at request from the GCD executives. GCD itself is not certificated but bind to a set of policies regularly reviewed by the board and available on the website (https://www.globalcreditdata.org/statuatory-information/policies-procedures).

4. VALIDATION AND DATA QUALITY

a. Validation rules

The first hurdle banks have to pass is the process in which data goes through extensive tests to ensure that data meets GCD's current data quality rules. The input checks are setup to correct any misinformation or faulty data that is entered into the web portal. There are two types of validation rules:

- Error: Data is incorrect, validation rules will prevent members from submitting this data

- Warning: Data has an unsatisfactory or unlikely value, banks are encouraged to check and correct if necessary although submission is still possible.

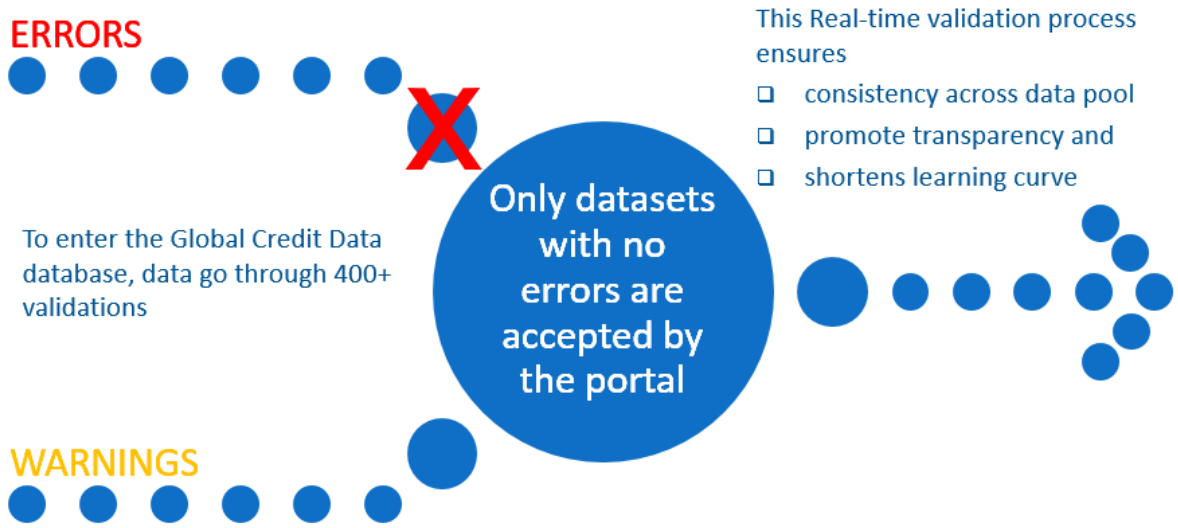


FIGURE 3: VALIDATION RULES

Member banks must first prepare their data in 8 interlocking tables (see chapter 5.a) and then create a submission file ready to submit using CSV, Excel or XML data formats.

To enter the GCD database data must go through 450+ validations. This real-time validation process ensures consistency across the data pool, promotes transparency, shortens the learning curve and most importantly keeps the level of data quality high. Validation rules and methodologies have been developed and constantly reviewed by the Methodology Committee.

Global Credit Data's validation rules are contained in GCD's 'Global Credit Data LGD - EAD Platform Data Structure and Validation Guide'.

b. Audit of the data

GCD executives will then audit each bank's submission and revert with expert comments on data quality and suggestions to improve, and resubmit if necessary. Member banks then revise their data. Data is only accepted once the audit process is completed successfully.

Data audits are produced to assist banks in ensuring that data is reported uniformly and follows business rules. There is a focus on data completeness and encouraging more granularity, for example with fields reported as "unknown" or with missing information such as missing collateral information.

c. Pre-submission package including out-of-cycle audit

Prior to this data submission, GCD executives prepare an individual analysis for each bank using the existing data that helps them prepare their submission data for the next cycle. The so-called pre-submission packages contain a large variety of analytics on correctness, completeness and comparability to other banks and are the starting point for improving and completing data.
A pre-submission package is prepared before each official semi-annual submission including an audit of the full data input from each member bank using internal queries and validation rules results.
Audits are performed by an experienced Global Credit Data Executive with senior credit experience and a long history with the data model. Significant evidence can then be gained on data quality strengths and weaknesses of the database.

d. Scoring

Based on its data submission each bank is assigned a single score. The scoring ranges from 0 (good) to 6 (bad). The scoring allows monitoring improvement on data quality by item, asset class and bank. 40% of the score, represents the correctness of the data; whether the data complies with the most recent validation rules. If an entry is new or resubmitted, the score is automatically 0. Another 40% of the score covers completeness checks. It scores if a bank submits optional fields or optional tables. The final 20% scores comparability. It compares banks' LGDs, Time to Recovery and Cure Rates and detects if a bank's submission is significantly different from the pool. Naturally, this must be a softer criterium as not all the banks are expected to be the same but it triggers a discussion on completeness of the submission if levels are very low or high compared to peers.
The scoring is a tool where the absolute numbers are not so important but rather tracking over time shows improvement in the overall dataset as well as by individual members.

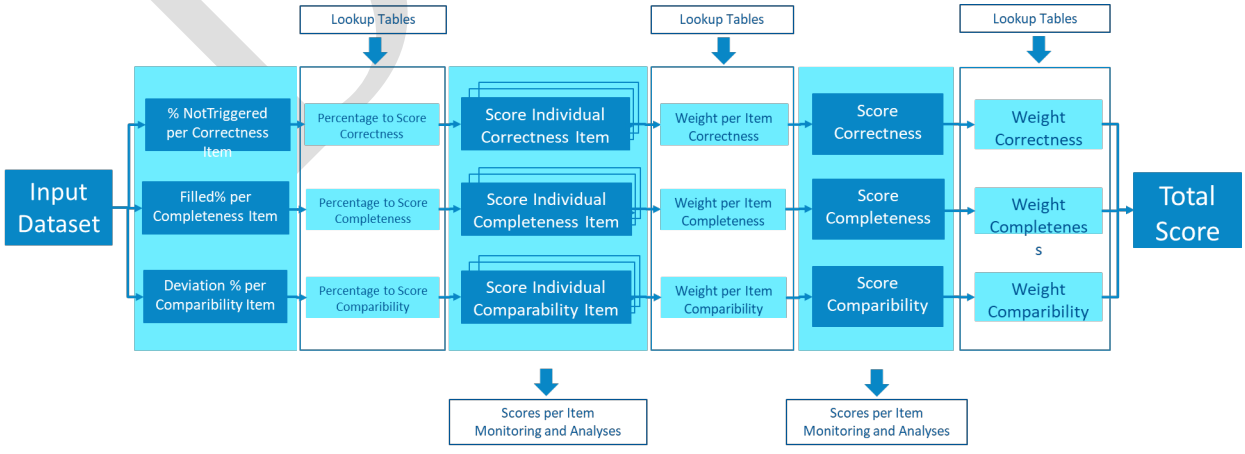


FIGURE 4 SCORING MODEL

e. Frequently asked questions on data quality

1. *How do data audits happen?*

A Global Credit Data executive reviews each delivery of data for reasonableness and completeness, followed where necessary, by a request for clarifications or amendments.
Global Credit Data issues then an audit letter for each bank which highlights weaknesses and forms a data quality track record for their management.

2. *Does GCD audit the data systems at each bank?*

No, that would be too intrusive. GCD relies on the member-banks internal audit and validation processes. Global Credit Data can't go into the banks and audit their data entry from source systems or paper records but we can look at the data from all angles possible. GCD uses automated validations of the data fields and values in their input portal as well as in-cycle audit where a member's data is manually audited before aggregation, looking for biases, bad data, etc.

3. *How are patterns of bad data determined?*

Human expertise is needed to determine persistent patterns of insufficient data quality which may pass automatic filters (defaults missing any reference to guarantors, for example). Only executive experience can sense the non-reporting of some defaults (missing types of exposures, unresolved through long pending defaults, non work-out defaults, etc.). Such pattern can also be detected during specific analytics performed during the previous period resulting in additional questions and correction requests to member banks.

4. *Is GCD doing further analysis after submission and aggregation?*

Yes, GCD is doing further data quality checks after aggregation, e.g. checking the plausibility of the number of default/cure and loss rates in comparison to peers. GCD will also perform cross-checks with the PD datapooling and the member banks' pillar 3 reporting. This is part of the audit process and ensures a high data quality.

5. *Does GCD perform any reviews to ensure that all defaults are indeed aligned with Basel definition?*

With respect to the default definition, GCD is reviewing in their data audits the following three elements:

1. Is the number of defaults in line with what we expect from public reports, such as the Annual Report and the Pillar 3 report?
2. Is the number of defaults in line with different data pools (e.g. LGD/EAD datapool and PD/ODF datapool)?
3. Is the distribution of default reasons plausible?

GCD is not adjusting any data delivered by banks but reports the finding in audits and ask member banks to change the data accordingly.

5. INTRODUCTION IN THE DATA MODEL

a. Overview data model

The structure of the database reflects the full complexity of the legal relationship between a bank lender and a borrower. It is designed to deal with the simplest through to the most complex deals. The types of complexity covered include:

- Single company borrower with multiple facilities (loans, commitments and off-balance sheet)
- Each loan or group of loans having single or multiple full or partial guarantors
- Each loan or group of loans being fully or partially secured by multiple collaterals

In addition, the information around loans, guarantors, collateral and pricing is time stamped so that the changing loan limits, collateral values and guarantor coverage can be reflected at different points in the life of the loan from origination through to resolution. **The data that is used in the LGD/EAD database is recognised as the industry standard and is used by many banks for their own internal data collection to build a predictive model of lending for the future.**

The data model consists of eight interlocking tables. The entity, the loan and the entity financial table contain the static information e.g. country of residence in the entity table or facility type in the loan table. The following tables capture information that changes over time. The loan history contains among others the information on limits and outstanding amounts. Guarantor and Collateral information is collected in separate tables. The loan pricing contains information on the interest rates. Finally, in the transaction table the cash flows that occurred between default and resolution (or post default date for unresolved) are collected each separated by date, type and source of payment.

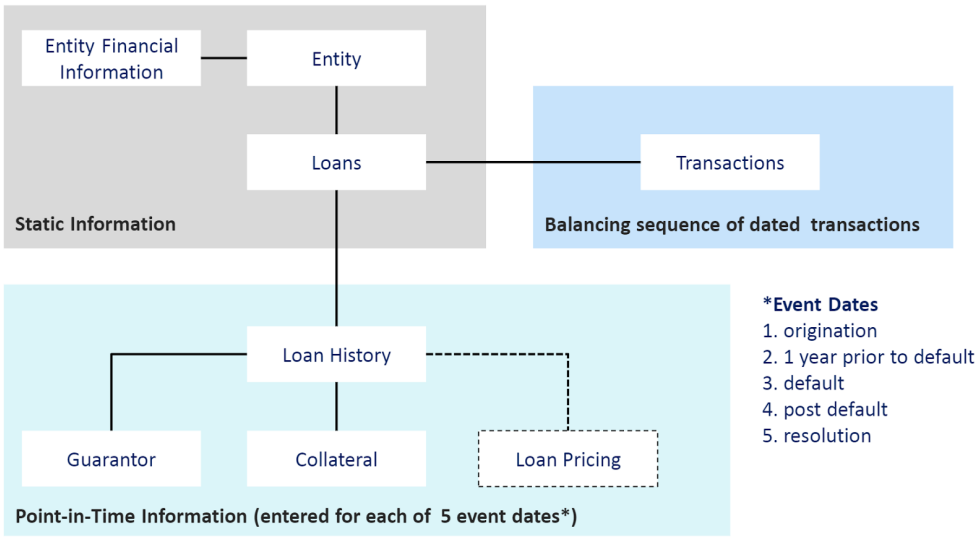


FIGURE 5: THE LGD/EAD DATA MODEL – 8 INTERLOCKING TABLES

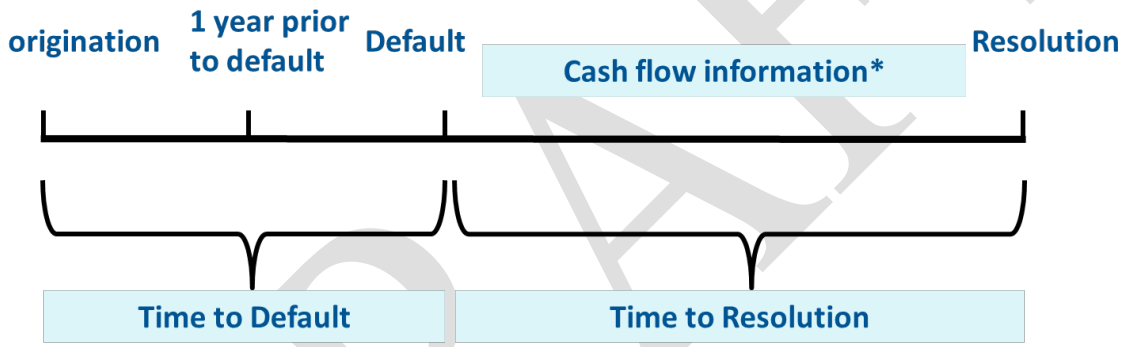


FIGURE 6: THE LGD/EAD DATABASE STRUCTURE

Data is collected from the point of origination, 1 year prior to the default, the point of the default and later time stamped data (unresolved cases only) up to and including the point of resolution (resolved cases only). Cash flow and accrual transactions are collected in relation to loans, collateral and guarantors and are time stamped to exact dates, sources and purposes. This is key for discounting of cash flow to produce economic LGDs and for calculating the progress of defaulted loan cases over time.

Please consult the 'Global Credit Data LGD - EAD Platform Data Structure and Validation Guide' for the exact technical "relationship diagrams" which link the various tables together.

b. Main segmentation variables: Asset Class and US Segment

GCD's datapools are centered around two main segmentation variables: asset class and US Segment. Both are defined in the tables below.

When submitting their data, Global Credit Data members **are obliged to follow the definition of GCD** and always select the most specialised code applicable to a borrower. We ask members to look at the *type of obligor* itself (e.g. is the obligor a bank or a sovereign?), without regard to the guarantor.

With GCD being a global database, the asset classes have been built upon the – globally recognizable - Basel II definitions. The updates of the regulatory framework in the last years (widely known as Basel III and Basel IV) have not changed the original definition of the asset classes, therefore the definition still refers to the Basel II document (published as BCBS128.pdf on the Basel Committee of Banking Supervision's webpage).

*Asset Class (*Field: ***Facility_Asset_Class*** in the Loan table)*:*

ASSET CLASS	GCD Definition	Comment
SME	Borrowers in the Corporate Asset Class as defined in §218 and § 273 Basel II Accord where the reported sales for the consolidated group of which the firm is a part is less than €50 million and where the exposure is not treated as retail, i.e. Group Exposure > 1M €	Includes undrawn commitments by banks to borrower groups (measured 1 year before default, if available) > 1M€ (less is classified in retail and therefore not delivered)
Large Corporate	Borrowers in the Corporate Asset Class as defined in §218 and § 273 Basel II Accord where the reported sales for the consolidated group of which the firm is a part is above or equal than €50 million, *but which is not reported in a more specialised Asset Class*	• Remaining asset class for everything which cannot be attributed to a more specific asset class. Note: the Large Corporate asset class excludes borrowers (or exposures) called Corporate by the Basel II Accord, but which are separated by Global Credit Data into other asset classes, e.g. SME, Ship Finance etc. • Includes Acquisition Finance • Note: the Basel III reform has removed for part of those counterparties (borrowers belonging to a group with a consolidated revenues > €50 million) the possibility to use the AIRB approach (see https://www.bis.org/bcbs/publ/d424.htm)
Banks & Financial Companies	Asset class as defined in §230 Basel II Accord: Includes exposures to banks and certain security firms	• Basel II includes in this asset class those security firms which are subject to supervisory and regulatory arrangements comparable to the Basel II framework (including, in particular, risk-based capital

	On top of that, this asset class includes ALL entities part of the "Finance and Insurance" industry (GCD Industry code = 600)	requirements) and Multilateral development banks that do not meet the criteria for a 0% risk weight under the standardised approach • GCD has enlarged this asset class further and includes in there also Financial Companies. Attention: the asset class contains therefore more than what is called "Banks" in the Basel II regulation or what is considered the exposure class "Banks" in the regulatory reporting framework. We also consider insurance companies, funds, etc. as part of that asset class. Please also note that securitizations, being a certain financial intermediary, are part of that asset class. (*)
Ship Finance	Specialised Lending (**) Asset Class Object Finance (here: Ships) as defined in §219 and §223 Basel II Accord	• Note: This asset class only contains the specialised finance deals where the cash flow to service comes from the ship itself. Often under an SPC structure. • The asset class does not include any general financing of shipping companies or loans to corporates or individuals secured by a ship.
Aircraft Finance	Specialised Lending (**) Asset Class Object Finance (here: Aircraft) as defined in §219 and §223 Basel II Accord	Existence of a SPC is considered as sufficient condition (involves rentals and singularity of asset)
Real Estate Finance	Specialised Lending (**) Asset Class as defined in §219 Basel II Accord: Includes income-producing real estate (as defined in §226) and high-volatility commercial real estate (as defined in §227)	• This is specialised finance of real estate where the cash flow to service comes from the real estate. Often under an SPC structure. • The asset class therefore does not contain loans to corporates (with other business activities) which are collateralized by real estate. Those would need to be grouped to SME or Large Corporates. • The asset class does not contain loans to firms having their business activities in the real estate sector (those would be SME and Large Corporates)
Project Finance	Specialised Lending (**) Asset Class Project Finance as defined in §219, §221 and §222 Basel II Accord	This is specialised finance where the cash flow to service comes from the project. Nearly always under an SPC structure. Please consult chapter 15 j for more information what constitutes project finance and how it is entered into the GCD database.

Commodities Finance	Specialised Lending Asset Class Commodities Finance as defined in §219, §224 and §225 Basel II Accord	
Sovereigns	Asset class as defined in §229 Basel II Accord.	• Includes Sovereigns, Central Banks, certain PSE identified as sovereigns in the standardised approach, Multinational development banks that meet the criteria for a 0% risk weight under the standardised approach, and the entities Bank for International Settlements, the International Monetary Fund, the European Central Bank and the European Community • Includes also municipalities, as per Global Credit Data internal discussion (***)
Public Services	A class of exposures on state-owned or collectively-owned and state-sponsored entities delivering public services	• Exposures on entities wholly controlled by a state or a municipality but with autonomous finance, considered as corporate by nature by the Basel Accord • Related to health, public transport, education, water, etc
Private Banking	A class of exposures on high net-worth individuals or related companies, which generally benefit of specialized service by the banks	Exposures on High Net Worth Individuals or individually controlled legal entities, assimilated to corporate Not specifically addressed by the Basel Accord; generally a specific business line out of retail

(*) GCD provides mapping tables from the standard industry codes (SIC, NAICS, NACE) to the GCD industry code. The data model includes also a variable "Bank or Financial Company" which allows to distinguish between the different type of exposures:

Bank_Or_Financial_Company	Description
1	Universal Bank
2	Commercial Bank
3	Retail Bank or Building Society
4	Investment Bank
5	Private Bank
6	Credit Company (consumer, car, equip.)
7	Real Estate – mortgage or leasing
8	Government Agency (re-finance or guarantee)
9	Factoring
10	Mutual Fund (Investment, Geared, Unit Trust, ETF, REIT)
11	Hedge Fund
12	Pension Fund (provident, retirement etc)
13	Brokerage
14	Asset Management
15	Financial Processing Services
16	Insurance (and re-) company (public or mutual)
17	Insurance related Services
18	Financial and Non-Financial Group
19	Securitisation Vehicles

FIGURE 7: SUBCATEGORIES FOR THE ASSET CLASS "BANKS & NON-BANK FINANCIAL COMPANIES"

(**) Specialized Lending is defined as follows:

Specialised Lending Asset Classes as defined in the Basel II Accord:

219. Within the corporate asset class, five sub-classes of specialised lending (SL) are identified. Such lending possesses all the following characteristics, either in legal form or economic substance:

- The exposure is typically to an entity (often a special purpose entity (SPE)) which was created specifically to finance and/or operate physical assets;
- The borrowing entity has little or no other material assets or activities, and therefore little or no independent capacity to repay the obligation, apart from the income that it receives from the asset(s) being financed;
- The terms of the obligation give the lender a substantial degree of control over the asset(s) and the income that it generates; and
- As a result of the preceding factors, the primary source of repayment of the obligation is the income generated by the asset(s), rather than the independent capacity of a broader commercial enterprise.
-

220. The five sub-classes of specialised lending are project finance, object finance, commodities finance, income-producing real estate, and high-volatility commercial real estate. [...]

(***) The data model includes also a variable "Entity_Asset_Class" which allows to distinguish between different type of exposures where can be identify subcategories of Sovereigns:

Entity_Asset_Class	Description
1	Corporates
2	Corporates Specialized Lending
4	Banks
5	Guarantors(N/A)
6	Sovereigns
7	Central Banks
8	Non-bank Financial Companies
9	High Net Worth Individuals
10	Municipalities
11	Federal States & Provinces
12	Other Non-Commercial or Administrative Bodies
13	Multi-National Development Banks

FIGURE 8: SOVEREIGN SUBCATEGORIES IN THE FIELD OF ENTITY_ASSET_CLASS HIGHLIGHTED IN BLUE

US Segment:

The segmentation field has been introduced to allow banks based in the US to more easily recognize their regular segments in the GCD databases.

Description	Definition	Further information
C&I	Commercial & Industrial	• A commercial and industrial loan (C&I loan) is a loan to a business rather than a loan to an individual consumer. These loans may or may not be secured by collateral owned by the business requesting the loan. The main purpose of a C&I loan is to finance capital expenditures or provide working capital to the borrower. A C&I loan is generally a short-term (1-2 year) line of credit or term loan, secured by collateral and cash flow owned by the business requesting the loan. • Remaining asset class for everything which cannot be attributed to a more specific asset class. Note: the C&I segment excludes borrowers (or exposures) called Corporate by the Basel II Accord or called C&I loans internally in your bank, which would fall into other segments, e.g. Asset-based Lending, /equipment finance etc. (*)

CRE	Commercial Real Estate as defined in US regulation, using the definition from FRY14Q guidance ("Loan secured by Real Estate")	Definition FRY14Q: A loan secured by real estate is a loan that, at origination, is secured wholly or substantially by a lien or liens on real property for which the lien or liens are central to the extension of the credit–that is, the borrower would not have been extended credit in the same amount or on terms as favorable without the lien or liens on real property. To be considered wholly or substantially secured by a lien or liens on real property, the estimated value of the real estate collateral at origination (after deducting any more senior liens) must be greater than 50 percent of the principal amount of the loan at origination. (page 411, FR_Y-9C20170930_i.pdf) • Note the definition above refers to a "collateral value-to-loan"-ratio of greater than 50%, which would translate into a "Loan-to-value" (LTV) ratio of less than 200%. With other words, a loan is only characterized as being a "CRE-loan" if he is substantially secured by Real Esate. *Example 1:* Property value of 100 Loan of 20 (first mortgage) → LTV = 20% → Client/Loan is part of the CRE portfolio *Example 2:* Property value of 100 Loan 1 of 80 (first mortgage) Loan 2 of 20 (second mortgage) → LTV 1 = 80 / 100 = 100% → CRE-loan → LTV 2 = 20 / (100-80) = 100% → CRE-loan *Example 3:* Property value of 100 Loan 1 of 95 (first mortgage) Loan of 20 (second mortgage) → LTV 1 = 95 / 100 = 95% → CRE-loan → LTV 2 = 20 / (100-95) = 400% → no CRE-loan
Banks & Financial Institutions	Segment as defined in §230 Basel II Accord: Includes exposures to banks and certain security firms On top of that, this segment includes ALL entities part of the "Finance and Insurance"	• Basel II includes in this asset class those security firms which are subject to supervisory and regulatory arrangements comparable to the Basel II framework (including, in particular, risk-based capital requirements) and Multilateral development banks that do not meet the

	industry (GCD Industry code = 600) However, it does not include "Securitizations", which are part of the GCD asset class "Banks and Financial Institutions".	criteria for a 0% risk weight under the standardised approach • GCD has enlarged this asset class further and includes in there also Financial Companies. Attention: the asset class contains therefore more than what is called "Banks" in the Basel II regulation or what is considered the exposure class "Banks" in the regulatory reporting framework. We also consider insurance companies, funds, etc. as part of that asset class. • Note: There is one difference in comparison to the GCD Asset Class "Banks and Financial Institutions" as mentioned in the above table: Securitizations are <u>not</u> part of that segment
Securitizations	Securitization is the financial practice of pooling various types of contractual debt such as residential mortgages, commercial mortgages, auto loans or credit card debt obligations (or other non-debt assets which generate receivables) and selling their related cash flows to third party investors as securities, which may be described as bonds, pass-through securities, or collateralized debt obligations (CDOs).	• Note: Securitizations form a separate segment in the "US Segmentation". In the field "asset class", they are part of the "Bank & Financial Institutions" asset class (see table above)
Sovereigns & Central Banks	This segment includes only exposure to countries or their central banks.	• Note: Every other level of government is part of the following segment "local Governments&PSE"
Local Governments & PSE	Local Governments such as Municipalities, and States and any Public Sector Entities	• PSE = Exposures on entities wholly controlled by a state or a municipality but with autonomous finance, considered as corporate by nature by the Basel Accord. Related to health, public transport, education, water, etc

Project Finance	Specialised Lending (*) Asset Class Project Finance as defined in §219, §221 and §222 Basel II Accord	This is specialised finance where the cash flow to service comes from the project. Nearly always under an SPC structure.
Asset Based Lending	Asset based finance refers to any credit facility made available to corporate borrowers against clearly identified and eligible assets such as account receivables, inventory, natural resource reserves, fixed and/or other assets, which in turn support borrowing availability based on a prescribed borrowing base.	
Energy Reserves (Oil & Gas)	Any credit facility made available to corporate borrowers in the upstream (or exploration and production (E&P) sector. The upstream sector includes searching for potential underground or underwater crude oil and natural gas fields, drilling exploratory wells, and subsequently drilling and operating the wells that recover and bring the crude oil or raw natural gas to the surface. This does not include midstream and downstream.	Reserve Based Lending is expected to have the Oil and Gas Reserves as collaterals attached.
Leasing & Equipment	Any credit facility used to finance the purchase of machinery or equipment, with the equipment or machinery financed used as security.	
Private Banking	A class of exposures on high net-worth individuals or related companies, which generally benefit of specialized service by the banks	Exposures on High Net Worth Individuals or individually controlled legal entities, assimilated to corporate Not specifically addressed by the Basel Accord; generally a specific business line out of retail

Both segmentation fields ("Facility Asset Class" and "US Segment") are linked to each other as displayed in the graph below.

Note: While the asset class is inputted by the banks (field: ***Facility_Asset_Class*** in the Loan table), the US segment is derived by combining various fields provided by banks in the database!

How to derive the US Segment from the Facility Asset Class?

Facility Asset Class	Description
1	Small/Medium Enterprise (SME)
2	Large Corporate
3	Banks & Financial Company
4	Ship Finance
5	Aircraft Finance
6	Real Estate Finance
7	Project Finance
8	Commodities Finance
9	Sovereign, Central Banks
10	Public Services
11	Private Banking

US Segment	Description
1	C&I (Commercial & Industrial)
2	US Commercial Real Estate
3	Banks & Financial Institutions
4	Securitizations
5	Sovereigns & Central Banks
6	Local Governments & PSE
7	Project Finance
8	Asset Based Lending
9	Energy Reserves (Oil & Gas)
10	Leasing & Equipment
11	Private Banking

- Further information/fields/indicators needed
  - Collateral Real Estate attached
  - Product Code
  - Bank or Financial Company
  - Entity Asset Class

FIGURE 9: LINK BETWEEN ASSET CLASS AND US SEGMENT

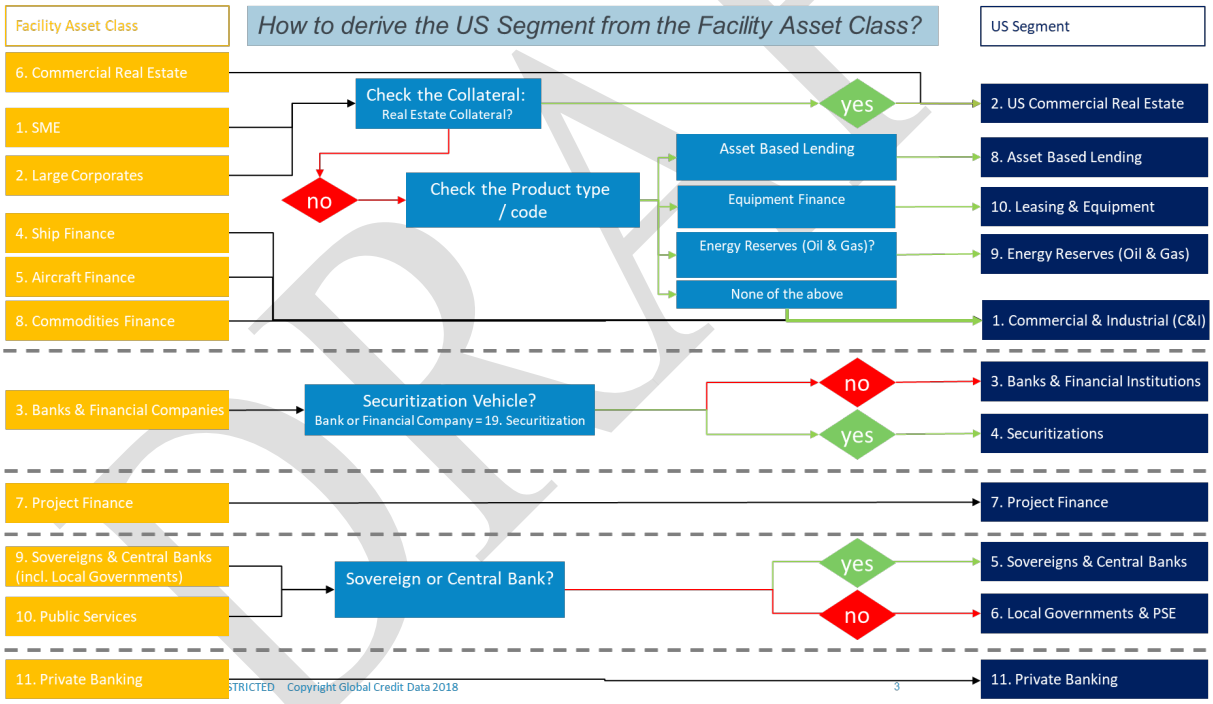


FIGURE 10: LINK BETWEEN ASSET CLASS AND US SEGMENT

c. Mandatory vs optional fields

Each of Global Credit Data's databases has tables and fields for members to fill with data. We have Mandatory fields, conditional mandatory, conditional optional and optional fields. Some fields have extra information which members may find difficult or legally challenging to provide, such as pricing information or borrower financial statistics. These fields are therefore optional

and provide extra information for the database that is not necessarily vital for it to function correctly.

The tables itself are mandatory / optional as follows:

Table	Mandatory / Optional
ENTITY	Mandatory
FINANCIAL	Mandatory (see validation rule ENT050)
LOAN	Mandatory
TRANSACTION	Mandatory
HISTORY	Mandatory
COLLATERAL	Optional*
GUARANTOR	Optional* (Note: when there is a Guarantor_ID available in the GUARANTOR table the same ID should be available in the Entity table)
PRICING	Optional*

* "Optional" means that the table needs to be technically created when submitting the data but can be empty.

The data input structure (XLS-file) shows which fields of those tables are mandatory, conditional mandatory or optional.

d. Input vs calculated fields

The GCD data collection covers basic information as inputs. Based on these inputs GCD calculates certain fields as outputs. These fields include:

- **Replacing country codes** with regions, if they do not meet critical mass rules to ensure anonymity. In the database these fields are recognized with the prefix DA_, e.g. Country_of_Residence will become DA_Country_of_Reference.

  → The exact "critical mass rules" are defined in chapter 5.f.

- **Replacing identifiers** with a global uniform set to ensure anonymity. To be concrete: Banks are delivering e.g. the field "Entity_ID" and receiving back the field "DA_Entity_ID" which includes general GCD identifier. Each Bank receives its own IDs back but the field is blank for other banks' data.

- **Calculation of variables** such as LGD, Recovery Rate, Cures based on a methodology agreed by the GCD members. Collecting all the relevant facts that relate to the default and the cash flows which happened after default, enables GCD and users of the data to calculate their own view of EAD and LGD, according to differing methodologies. For easy use of the GCD data the members have agreed on a certain methodology. For more information on the definition of those fields, see chapter 16.

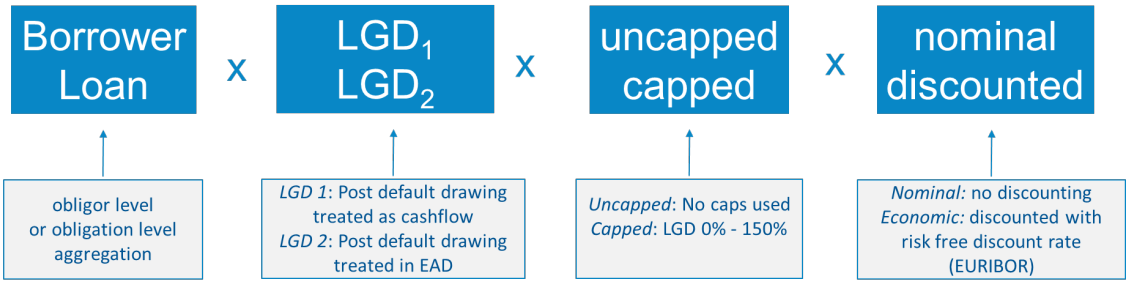


FIGURE 11: DIFFERENT LGD CALCULATIONS IN THE GCD DATABASE

- **Conversion of all currency values to EUR:** For each borrower the associated monetary fields (e.g. cashflow transactions, collateral values, lender outstanding amount etc.) are required to be delivered using the same currency (validation rules also ensure that). The reason for that is that GCD's validation rules check whether the cashflows after default and the loss/write-off are balancing with the outstanding amount at default (for more details on the balancing, please consult chapter 14). We advise to use the currency of the original contract. When the data is given back to banks, all values are converted in EUR at the FX rate at date of default.

Because of these changes during the aggregation process, the data input structure (=the data fields the banks deliver to GCD) looks slightly different than the data output structure (=the data fields the banks get returned).

e. The "give-to-get principle": Who is eligible to receive what data?

All GCD datapools operate on a so-called "give-to-get principle".

The official rules are contained in the Data Pool Regulations, but the basic principles can be summarized as follows:

- Members should put in all (minimum 80% but unbiased) defaults for an asset class they want returned and for the years they want returned and this must be a minimum of 3 obligors.
- In a certain submission cycle, banks can only receive access to the latest data set if they have provided data themselves.
- Only banks who deliver unresolved defaults, are allowed to receive unresolved defaults.
- Only banks who deliver the field *Postal_Code* are allowed to receive the entries in the *Postal_Code* field. Minimum requirement is 80% of the fields filled.

Judging which years have to be returned can be hard in Low default portfolios when the first and last years may have no defaults. GCD Executives work then with the bank involved on the issue of years without defaults. In very low default asset classes such as Sovereigns a bank may only have 3 defaults in 20 years, so we establish with the bank involved the relevant time span to be returned (based on their portfolio activity).

f. The “critical mass rules”: How does GCD ensure anonymity?

In order to ensure further data anonymity, the LGD / EAD platform has the following critical mass rules.

Case	Release
Less than 3 banks present in a Facility Asset Class	Data cannot be released to the members participating in this asset class
3 or more banks present in a Facility Asset Class	Data can be released to the members participating in this asset class
Less than 3 banks contribute entities for a given Country_Of_Residence per Asset Class. Applicable for Asset Classes 1, 2, 10 and 11	Country_Of_Residence is aggregated to a level where at least three banks are participating using Country_Of_Residence aggregation. This aggregation level is given back in DA_Country_Of_Residence
At least 3 banks contribute entities for a given Country_Of_Residence per Asset Class. Applicable for Asset Classes 1, 2, 10 and 11	Country_Of_Residence is given back in DA_Country_Of_Residence
Less than 3 banks contribute entities for a given Collateral_Country_Of_Jurisdiction per Asset Class. Applicable for Asset Class 6	Collateral_Country_Of_Jurisdiction is aggregated to a level where at least three banks are participating using Country_Of_Jurisdiction aggregation. This aggregation level is given back in DA_Collateral_Country_Of_Jurisdiction
At least 3 banks contribute entities for a given Collateral_Country_Of_Jurisdiction per Asset Class. Applicable for Asset Class 6	Collateral_Country_Of_Jurisdiction is given back in DA_Collateral_Country_Of_Jurisdiction

Example: If only two banks have submitted data for the country “NL”, the data in that country will be shown as “Benelux”. If only two banks have submitted data for “Benelux”, the data in those countries will be shown as “Western Europe” etc.

The applicable country hierarchy can be found in the ‘Global Credit Data LGD - EAD Platform Data Structure and Validation Guide’. After application of the critical mass rules, the field “country of residence” is renamed to “DA_Country_of_Residence” in the data return.

DA_COUNTRY_OF_RESIDENCE
AD
AE
AFRICA
AI
AL
AM
AN
AO
AR
AT
AU
AZ
BALKANS
BB

Various countries grouped together according to the sheet Geographic Country Hierarchy in the data input output structure

LGD-EAD Platform Data Input Output Structure and Validation 2018

Country Code	Country Name	Geography 1	Geography 2	Geography 3	Geography 4
-1	UNKNOWN	-	-	-	World
DZ	ALGERIA	-	Northern Africa	Africa	World
BJ	BENIN	-	Northern Africa	Africa	World
BF	BURKINA FASO	-	Northern Africa	Africa	World
CM	CAMEROON	-	Northern Africa	Africa	World
CV	CAPE VERDE	-	Northern Africa	Africa	World
CF	CENTRAL AFRICAN REPUBLIC	-	Northern Africa	Africa	World
TD	CHAD	-	Northern Africa	Africa	World
CG	CONGO	-	Northern Africa	Africa	World
CD	CONGO, THE DEMOCRATIC REPUBLIC OF THE	-	Northern Africa	Africa	World
CI	CÔTE D'IVOIRE	-	Northern Africa	Africa	World
DJ	DJIBOUTI	-	Northern Africa	Africa	World
EG	EGYPT	-	Northern Africa	Africa	World
GQ	EQUATORIAL GUINEA	-	Northern Africa	Africa	World
ER	ERITREA	-	Northern Africa	Africa	World
ET	ETHIOPIA	-	Northern Africa	Africa	World

FIGURE 12: OVERVIEW CRITICAL MASS RULES: AFTER APPLYING THE CRITICAL MASS RULES, THE FIELD "COUNTRY_OF_RESIDENCE" IS RENAMED INTO "DA_COUNTRY_OF_RESIDENCE". THE FIELD INCLUDES BOTH COUNTRIES AND AGGREGATED REGIONS AS A RESULT OF THE CRITICAL MASS RULES

GCD publishes a **Data Pool Participation and Critical Mass Report** together with its data return on the data portal. In the report, member banks can see per asset class which countries are mapped to which aggregated level.

Critical Mass on Country of Residence

	Facility Asset Class					
Country Name	Small/Medium Enterprise (SME)	Large Corporate	Banks & Fin Co	Sovereign, Central Banks	Public Services	Private Banking
ALBANIA		EASTERN EUROPE				
ALGERIA	NORTHERN AFRICA	DZ		DZ		NORTHERN AFRICA
ANGOLA		SOUTHERN AFRICA				
ANGUILLA		CARIBBEAN ISLANDS				
ARGENTINA	AR	AR	AR	AR	SOUTH AMERICA	SOUTH AMERICA
ARUBA		CARIBBEAN ISLANDS				CARIBBEAN ISLANDS
AUSTRALIA	AU	AU	AU		WORLD	AU
AUSTRIA	GERMANY & AUSTRIA	AT				GERMANY & AUSTRIA
BAHAMAS	BS	CARIBBEAN ISLANDS	CARIBBEAN ISLANDS			BS
BAHRAIN	MIDDLE EAST	MIDDLE EAST	BH			MIDDLE EAST
BANGLADESH		SOUTHERN ASIA	SOUTHERN ASIA			
BARBADOS	CARIBBEAN ISLANDS	CARIBBEAN ISLANDS	CARIBBEAN ISLANDS			
BELGIUM	BE	BE	BE			BENELUX
BELIZE	CENTRAL AMERICA					
BERMUDA	BM	BM	BM			CARIBBEAN ISLANDS

FIGURE 13: EXTRACT FROM THE LGD CRITICAL MASS MAPPING REPORT

g. Frequently asked questions on the segmentation

1. *In some situation, we experience scenario's where one borrower can be mapped to various asset classes. How should these situations be handled in the data delivery?*

In general, we expect very rare cases where a borrower can be added to more than one asset class. As stated in the chapter 5.b, banks should select the most specific asset class.

Example: a standard project finance deal would be grouped to ASSET CLASS 7 (=PROJECT FINANCE), although under the national / supranational Basel II regulations it would be reported under CORPORATES. Only those borrowers who cannot be attributed to a specific asset class (Aircraft finance, Ship finance, Real Estate finance, Commodity Finance, Private Banking, Banks & Non-Bank Financial Institutions) will fall under Large Corporates or SME (dependent on the turnover).

Note: we are asking banks to deliver their data on legal borrower level (and not on a "grouped" level).

Example: A bank granting a Specialized Lending loan to "Air Moon Boeing B5 Co" and a direct loan to "Air Moon" - parent of the former, should report "Air Moon Boeing B5 Co" under Borrower ID1 in Aircraft Finance and "Air Moon" under Borrower ID2 in Large Corporate.
Even if as bank, for its own reports, files all its loans to the Air Moon group in Large Corporate, it is recommended, for the statistical relevance of Global Credit Data, to create 2 Borrower IDs

in order to separate the Specialized Lending facilities in Aircraft Finance and the corporate loans in Large Corporate.

In the very rare other situations where two facilities of the same borrower might be part of two different asset classes, we ask the member to make a choice where the entity primarily falls (based on the distribution of the exposure) or to split the borrower up and create two different "borrowers", one in each asset class.

2. *Does GCD take care of a customer hierarchy (e.g. subsidiaries, sister companies, …)? At what level should the data delivery be?*

It is not uncommon that banks are financing a "group of companies" where multiple legal entities can draw on one single loan. In these types of credit structures, it is normally (but not necessarily) the case that all companies will default together. Our data model allows only one borrower per loan. Banks are requested to create one Borrower_ID/Entity_ID for the whole group and link all loans of the group to that ID.

3. *Can banks reclassify already submitted borrowers / loans to a different asset class?*

Yes, banks can reclassify their borrowers/loans to another asset class as part of a data quality upgrade during the submission cycles (for more information on the submission cycle see chapter 3).

This is usually done because the original classification given to the borrower was incorrect (for instance when the assets and sales of a borrower classified as "Large Corporates" are actually below the "SME - LC threshold"). Changing data is accepted by submitting the borrower again through the data portal. The system will then replace all the existing data of the borrower with the new data. GCD executives closely monitor changes in the facility asset class in the audit process and only accepts changes if an acceptable reason is provided by the submitting bank.

4. *How are securitizations treated in GCD's asset class segmentation?*

The question is whether to classify securitizations for industry and asset class in accordance with what they finance or in accordance with their own function as securitisation vehicles.

As an example: A securitisation vehicle covering commercial real estate loans could be argued to be either in "Real Estate Finance" or part of the "Banks and Non-bank Financial Companies". GCD's guidance is to treat them - in their delivery to GCD - as financial industry participants with the purpose of facilitating the financing of underlying assets, in the same way that banks and finance companies are. A bank which only funds Real Estate deals is treated as a bank, not as Real Estate. A specialised shipping bank is still a financier, not part of the shipping industry.

To be concrete: Securitizations should be reported as part of the asset class "Banks and Non-Bank Financial Institutions" (Field: Facility_Asset_Class = 2 and Entity_Asset_Class = 8). The field "Bank_Or_Financial_Company" indicates them as securitization vehicles (code = 19) and the industry_code should be set to 600 = Finance and Insurance. If possible, set the secondary industry code to the industry they are financing.

5. *How are leasing companies and lease financing treated in the GCD data model?*

It is important to differentiate various scenarios:

- In case the bank provides a loan to a "leasing company" (a company whose purpose is to provide leasing goods), the borrower would appear in the asset class "Bank & Non-bank Financial Institutions" (FAC 3). The industry code should help to identify such a leasing company. "Bank & Non-bank Financial Institutions" borrowers should always have a Primary Industry Code of 600. Below our mappings to UK SIC and NAICS where 600 maps to all the finance types.

GCD Industry_Code	NAICS12	INDEX ITEM DESCRIPTION BACK
550	512210	Master recording leasing and licensing
550	512220	Integrated record companies (i.e., releasing, promoting, distributing)
550	512220	Musical recording, releasing, promoting, and distributing
550	512220	Record releasing, promoting, and distributing combined with mass duplication
550	512220	Sound recording, releasing, promoting, and distributing
550	518210	Computer time leasing
600	522220	Automobile finance leasing companies
600	522220	Equipment finance leasing
600	522220	Leasing in combination with sales financing
600	522220	Machinery finance leasing
600	522220	Truck finance leasing
650	531110	Apartment hotel rental or leasing
650	531110	Apartment rental or leasing
650	531110	Building, apartment, rental or leasing
650	531110	Building, residential, rental or leasing
650	531110	Cottage rental or leasing
650	531110	Duplex houses (i.e., single family) rental or leasing
650	531110	Dwelling rental or leasing
650	531110	Equity real estate investment trusts (REITs), primarily leasing residential buildings and dwellings
650	531110	Houses rental or leasing
650	531110	Mobile (manufactured) home, on site, rental or leasing
650	531110	Real estate rental or leasing of residential building
650	531110	Residential building rental or leasing
650	531110	Residential hotel rental or leasing
650	531110	Retirement hotel rental or leasing
650	531110	Single family house rental or leasing
650	531110	Town house rental or leasing
650	531120	Arena, no promotion of events, rental or leasing
650	531120	Auditorium rental or leasing

- In case the bank provides "equipment finance" to a company, the company is expected to be part of the asset class "SME" or "Large Corporates". "Equipment finance" is defined as any credit facility used to finance the purchase of machinery or equipment, with the equipment or machinery financed used as collateral. Equipment financing can take many forms, though the traditional methods are via leasing and commercial loans. (A more detailed definition can be found in chapter 6.e). Equipment finance loans can

be recognized through the field *Product_Code*. Also, the calculated field *US_Segment* includes “Equipment Finance” (see chapter 5.b).

6. USER GUIDANCE ON DATA MODEL TABLES

The following chapter gives general user guidance on the various tables in the LGD & EAD database.

The detailed definitions on each data field and its possible entries can be found in the data input output structure (XLS-file). The data input output structure also includes the information whether a certain field is mandatory, optional and/or conditionality mandatory or optional. **Both documents should be read in conjunction, with the data input structure providing the detailed description and this document providing the general guidance.**

a. ENTITY table

The entity table includes static information on the defaulted borrower/obligor. A borrower/guarantor is clearly identified by the ***Entity_ID*** in the Entity Table. It is given by the data-delivering bank and does not have to be the bank's actual internal number but must be the same from period to period to enable Data Agent tracking the Entity.

In case a defaulted borrower has received a guarantee (see below more information on type of guarantees), the information of the guarantor is also stored in the Entity table. That is also the reason why the field is called Entity_ID while in other tables, where only information of defaulted borrowers is stored, the field is called Borrower_ID. The Entity_ID is equal to the Borrower_ID when Entity_Type is 1 or 3. Please check the data input output structure on how the different tables of our data model can be linked.

Important information for data users and modelers

As the entity table contains both defaulted borrowers and the guarantors of those defaulted borrowers, banks should pay attention to properly link the tables. Our data input structure and the data output structure include the technical description on how the different tables can be linked together.

It is also important to know that the data input structure is slightly different than the data output structure. In order to ensure anonymity, the IDs delivered by banks are replaced by so-called DA_ID. To be concrete: Banks are delivering e.g. the field "Entity_ID" and receiving back the field "DA_Entity_ID" which includes a general GCD identifier for all borrowers. The delivering bank can recognize their own borrowers through the field Entity_ID which is only filled for those borrowers which are delivered by the bank itself.

The field ***Default_Status*** includes the information whether the borrower's default has been resolved:

- A borrower is resolved if all facilities (at Loan level) are resolved.
- A borrower is unresolved as long as one facility is still unresolved (i.e. still reported under Event-type 4), despite other resolved facilities.

The field ***Entity_Asset_Class*** informs on the nature (corporate financial, corporate non-financial, state, individual) of the entity (Obligor or Guarantor). Is it not to be confused with the field ***Facility_Asset_Class*** in the loan table which is our major segmentation criteria (see chapter 5.b) and where the give-to-get rule is based on (see chapter 5.e).

Validation Rules ensure that members enter only valid combinations of the fields *Entity_Asset_Class* and *Facility_Asset_Class.* Note: Also the field *Facility_Asset_Class* needs to be the same for all loans of a borrower (disregard the name of the data field).

Entity Asset Class	Name	Description	Applicable Facility Asset Class
1	Corporates	Corporate Entities	1,2,10, 11
2	Corporates Specialised Lending		4,5,6,7,8
4	Banks	Registered Banks	3
5	Guarantors		-
6	Sovereigns		9
7	Central Banks		9
8	Non- Bank Financial Companies	Entities Active in Finance and Investment	3
9	High Net Worth Individuals		11
10	Municipalities		9
11	Federal States & Provinces		9
12	Other Non-Commercial or Administrative Bodies		9
13	Multi-National Development Banks		9

The data-field ***Bank_Or_Financial_Company*** is specific to defaults reported in the asset class "Banks & Financial Companies" (field: Facility_Asset_Class in the Loan table) and informs on the detailed activity of the bank/financial company. All entities in this asset class are expected to show Facility_Asset_Class = 3 (Banks & Financial Companies), Entity Asset Class = 4 (Registered Banks) or 8 (Non-bank financial companies) and Industry = 600 (Financial activities).

	Entity_Asset_Class	Bank_or_FinancialCompany	Facility_Asset_Class	Primary_industry_code
Banks	4	1	3	600
		2		
		3		
		4		
		5		
Non-Bank FinCom	8	6		
		7		
		...		
		18		
		19		

In order to help banks to find the right code for the *Bank_or_Financial_Company* indicator, GCD provides mapping tables from the official industry classifications (NACE, NAICS, SIC, …) to that field (tab "Map Financial Industry" in the data input structure)

The field ***Public_Private_Indicator*** gives insights in the type of the defaulted borrower. Although there are no hard validation rules in place to ensure that, we would expect the following correspondence of this indicator with the asset class fields:

Public Private Indicator	Definition	Expectation	Facility Asset Class	In Entity Asset Class
1 Public	Publicly listed or state owned entities & their wholly-owned subsidiaries	More common, though not exclusively, in:	2- Large Corp, 3- Banks, 9- Sovereign, 10- Public Services	1- Corporate, 4- Banks, 6- Sovereign 7- Central Bank 8- Non bank Fin. Co
2 Private	Equity is fully in private hands	More common, though not exclusively, in:	1- SME 11- Private Banking	1- Corporate 9- High Net Worth Individuals
3 SPV (Special Purpose Vehicle)	specifically created and controlled by a few parties	More common, though not exclusively, in:	4 to 8 Specialised Lending (Ship, Aircraft, Real Estate, Project, Commodities)	2- Corporate Specialised Lending

The fields ***Primary_Industry_Code*** and ***Secondary_Industry_Code*** capture the industry where the defaulted borrower has been operated in. Given the large variety of classifications in use with the banks, it has not been possible to accept the banks' internal codes in the Global Credit Data template. A table of correspondence with the most official classifications is proposed in Data Input Structure. (See in Data Input Structure: Mapping UK SIC, Mapping NAICS, Mapping NACE).

The field ***Guarantor_Type*** must be answered only when the entity is a guarantor (Entity Type = 2 or 3). Note there are 3 categories of "guarantors":

- *Legal guarantor*: entity bound by a legal deed of guarantee,
- *Key party*: whose commercial obligations to the obligor are determinant for the latter's credit,
- *Protection*: obtained (purchased) by the lender from a party not linked to the obligor.

b. Frequently asked questions on the ENTITY table

1. *In work out management, there may be times when a litigation against borrower or guarantor is ongoing for up to 20 years after default. In this instance, the collection of recoveries is technically still "active", however, the likelihood of receiving payments is many times slim or unlikely. When does GCD define a case as resolved vs unresolved: when all loan/facilities to that borrower are fully charged-off/written off or at the time the borrower/guarantor is no longer pursued?*

In general terms, we want to classify only those cases as resolved where the bank delivering data is satisfied that the final financial outcome of the default is known and it is therefore possible to calculate the final LGD without much likelihood of it being changed by subsequent data.

A borrower is only to be regarded as resolved if either the lender puts the borrower back to a performing status or all of the facilities/loans associated with it are resolved. Banks usually have an internal policy saying that a loan is resolved a) if all outstanding is recovered/written-off or b) after x number of years after default. In latter case, the loan is automatically set to resolved and any remaining outstanding amount is written-off. We ask banks to deliver the data according to their **own** definition of resolved.

Note: Although banks have different internal practices as to when they regard a loan / borrower as resolved, our data model allows any bank to apply their own definition when analysing the data as we provide the full underlying cash flow data back!

We are also expecting that these practices converge in some way given the fact that regulators, e.g the EBA, is giving clear guidance on that topic.

155. Institutions should clearly specify in their internal policies the moment of closing the recovery processes. All recovery processes that have been closed should be treated as such for the purpose of the calculation of the observed average LGD.

156. Institutions should define the maximum period of the recovery process for a given type of exposures from the moment of default that reflects the expected period of time observed on the closed recovery processes during which the institution realises the vast majority of the recoveries, without taking into account the outlier observations with significantly longer recovery processes. The maximum period of the recovery processes should be specified in a way that ensures sufficient data for the estimation of the recoveries within this period for the incomplete recovery processes. The length of the maximum period of the recovery processes may be different for different types of exposures. The specification of the maximum period of the recovery process should be clearly documented and supported by evidence of the observed recovery patterns, and should be coherent with the nature of the transactions and the type of exposures. Specification of the maximum period of the recovery process for the purpose of the long-run average LGD should not prevent institutions from taking recovery actions where necessary, even with regard to exposures which remain in default for a period of time longer than the maximum period of the recovery process specified for this type of exposures.

FIGURE 14: EXTRACT FROM THE EBA GUIDELINES ON PD ESTIMATION, LGD ESTIMATION AND THE TREATMENT OF DEFAULTED EXPOSURES (EBA/GL/2017/16 AS OF NOVEMBER 20, 2017)

Workout departments generally transfer the process to a 3rd party group (collections) for any litigations that are ongoing after they internally set the default to resolved, but still expect some payments eventually. In this case facility will be resolved – but any money coming in post resolution will still be recorded in the transaction table. Please consult chapter 14 for more information on how to deal with those so-called “post resolution amounts” in the cashflow balance.

2. *Does GCD check whether the resolution status in this entity table is in line with the resolution status of the associated loans?*

Yes, GCD has implemented a validation rule on that. The defining characteristic of "resolved" borrowers is that all loans are resolved. In our database models this means that we must have for each associated loan a resolution record (i.e. there exists for every associated loan an ***Event_Type*** = 5, named "resolution" in the Loan History table). The validation rules also check for each loan that the ***Loan_Status*** at resolution (***Event_type*** = 5) is acceptable:

3	Partial Write-off
4	Paid in Full Post Default
5	Sold in Full Post Default
6	Complete Write-off
7	Return to Performing
9	Cancelled without usage

For more information on the field Loan_Status please consult chapter 5.e.

3. *Why are there two different asset class fields (Entity_Asset_Class and Facility_Asset_Class)?*

This has historical reasons. In the meantime these two fields are aligned (see table above) and validation rules ensure that. The field ***Facility_Asset_Class*** needs to be the same for all loans of a borrower – this is also ensured by validation rules.

4. *How does GCD ensure the link between asset class and industry for banks & non-bank financial companies?*

The fields Facility_Asset_Class, Entity_Asset_Class, Industry_Code and Bank_and_Financial_Company for banks and non-bank financial companies are interlinked as follows:

	Entity_Asset_Class	Bank_or_FinancialCompany	Facility_Asset_Class	Primary_industry_code
Banks	4	1 2 3 4 5	3	600
Non-Bank FinCom	8	6 7 ... 18 19		

This is enforced by validation rules when banks deliver data. Unfortunately, not all banks have updated their data according to the latest validation rules yet and so not in all cases the data is structured as such. But most of the loans follow that rule. For the remaining, we advise to go on a case-by-case case (looking at all variables) and decide whether to include or exclude in the analysis.

2. *The entity table contains both borrowers as well as guarantors. How does this interlink with the guarantor table and the Guarantee_Indicator in the Loan table?*

Please see FAQ in Chapter 6.i.

3. *What if an entity is operating in more than one industry?*

The GCD data model contains two fields: The *Primary_Industry_Code* and the *Secondary_Industry_Code.*

Banks should fill the primary industry code with the code where the entity is generating the most turnover with. The field is required and GCD provides detailed mapping tables from the SIC, the NACE and the NAICS classifications to the GCD industry codes.
The secondary industry code can be used for any further information.

4. *Is there additional information available on industry other than the 20 GCD industry classifications?*

Currently, the GCD industry classification is the most granular information a bank can get back. Based on requests of several member banks, we are working on a more granular data return. Due to the complex nature and the various industry codes used by our member banks, this will not be productive before H1 2019.

5. *What if a credit default swap has been purchased before default for protection?*

A credit default swap (CDS) is a stretched notion of Guarantor and therefore is added to the data as a guarantor. To be concrete: If a CDS had been purchased by the lender to cover specifically a particular exposure, a separate entity needs to be created (Entity_Type = 2, Guarantor_Type = 9). The amount of the recovery is recorded in the same way as for other guarantees, i.e. in the transaction table (Transaction Type 100 – Source of Payment 300).

c. FINANCIAL table

This table contains 3 required fields (*Entity_Assets, Entity_Sales* and *Entity_Total_Debt*) and one optional field (*Entity_Market_Capitalization*). The requirement of Assets and Market capitalization applies to the Facility_Asset_Classe=1,2,3,4,5,6,7,8 or 10 or Facility_Asset_Class=11 and Entity_Asset_class=1. The requirement for Sales applies to Facility_Asset_Class=1,2,4,5,6,7,8 or 10 or Facility_Asset_Class=11 and Entity_Asset_class=1.

Note all financials provided in this table refer to the consolidated group of which the borrower is part (consolidated or group sales) in the 12-Month period before Financial_Date (see also the definition in the latest input structure).

GCD executives regularly validate the entries in these fields with the definition of Large Corporates and SME (see chapter 5.b for the definition of Large Corporates and SME).

The following proxy values are proposed as help:

- If the information on SALES is not precisely available, you may enter one value below:
  for sales 50 to 100 Million €: enter 75 000 000
  sales 100 to 1 000 Million €: 500 000 000
  sales 1 000 to 10 000 Million €: 5 000 000 000
  sales > 10 000 Million €: 15 000 000 000

- If the information on TOTAL ASSETS is not available, the answer can be an estimate:
  For total assets from 0 to 100 Million €: enter 50 000 000
  total assets from 100 to 1 000 Million €: 500 000 000
  total assets from 1 000 to 10 000 Million €: 5 000 000 000
  total assets > 10 000 Million €: 50 000 000 000

- If the information on TOTAL DEBT is not available, the answer can be an estimate:
  for total debt from 0 to 10 Million €: enter 5 000 000
  total debt from 10 to 100 Million €: 50 000 000
  total debt from 100 to 1 000 Million €: 500 000 000
  total debt > 1000 Million €: 5 000 000 000

d. Frequently asked questions on the FINANCIAL table

1. *How are the fields in the financial table linked to the asset classes defined by GCD?*

GCD defines SME and Large Corporates according to the EUR 50 million turnover threshold specified in the Basel Accord (see chapter 5.b). The information is stored in the field ***Facility_Asset_Class*** and filled by the delivering banks (and <u>not</u> calculated by GCD based on other information e.g. financials, provided). In other words: the field ***Facility_Asset_Class*** is an input field. Many banks do have the Basel II segmentation already available inside their banks and can fill that field directly.

Apart from that, we are collecting balance sheet information in the financial table as banks typically use sales and the total assets as size indicator, either for segmentation or as a risk driver in their model. The fields are filled to the best effort of banks but at the moment not 100% completed.

Note: Both the asset class definition as well as the fields in the financial table refer to "the consolidated group of which the borrower is part (consolidated or group sales) in the 12-Month period before Financial_Date" and not to the financials of the borrower itself.

In our Audit process we double-check the field ***Facility_Asset_Class*** with the Financial table and clarify in case of doubt with the submitting bank.

Note: Older cases might not yet refer to the appropriate consolidated group (but rather on the entity itself) and therefore the database might show cases where the field ***Facility_Asset_Class*** and the values in the financial table are not aligned. To be concrete: the entity might be part of a group where the turnover would make all group companies "Large Corporates" but its own sales or assets might be very low (e.g. because the entity is a very specialized research company or a local subsidiary). Banks should take this into account and treat accordingly when analysing the financial table.

2. *Do banks which use the GCD data re-classify the asset classes (e.g. Large Corporate and SME) in case they have different internal turnover thresholds? If so, can the "entity sales" variable in the financial table be used for that?*

We are aware that some banks use a different or more granular segmentation of their corporate portfolio. In case banks want to use a different definition of e.g. Large Corporates, they could "reclassify" entities to their definition using the information in the financial table. In that case, please consider:

- Both the asset class definition as well as the fields in the financial table refer to "the consolidated group of which the borrower is part (consolidated or group sales) in the 12-Month period before Financial_Date" and not to the financials of the borrower itself.
- Older cases might not yet refer to the appropriate consolidated group and therefore the database might show cases where the field ***Facility_Asset_Class*** and the values in the financial table are not aligned. Banks should take this into account and treat the fact accordingly when analyzing the financial table.

Banks can enter the financials of more than one year (identified by a certain ***Financial_Date***) in the database. Our advice for any reclassification is then to just use one financial data and use the financial date which is the closed to one year before default.

Note: the borrower's turnover can change rapidly and the accounting information is always historical (as it is for borrowers in a live book). For example a borrower's accounting year may finish on 31 December 2015, then their accounts are presented to the bank in June 2016. The bank reviews the borrower in October 2016 and registers the turnover to use in the Basel calculation. At this point the turnover is 2015 year, most of which happened more than 1 year ago.

An alternative to using information in the financial table is to select data based on the borrower level exposure (field: BOR_DEFAULT_AMOUNT_1 or BOR_DEFAULT_AMOUNT_2) and consider this as proxy for borrower size. These fields are 100% completed for every resolved borrower.

e. LOAN table

The field ***Facility_Asset_Class*** is the main segmentation variable of the GCD database (see chapter 5.b) and is also the basis for the give-to-get principle (see chapter 5.e). If a Borrower (i.e.

a borrowing entity) is reported with several loans, all of them MUST show the same ***Facility_Asset_Class*.** Validation rules ensure that.

Members can use the ***Product_Code*** to group loans into a segments which are comparable with the product segment in their bank (see detailed definitions in the data input structure). Note: the field ***Product_Code*** has been introduced in 2016 next to the field ***Facility_Type*** and ***Collateral_Type*** as certain lending practices (asset based lending, equipment finance, reserve based lending, …) refer to a lending purpose and process, not necessarily to a unique group of facility types or collateral types.

Important information on the field Product_Code

The data input structure contains a short definition of the different products codes and includes guidelines what *Facility_Types* and *Collateral_Types*. GCD would typically expect for these products. Below a more detailed description is given which banks should consider when filling out the product code.

1. Definition of Asset-Based Lending

Asset based lending refers to any credit facilities made available to corporate borrowers against clearly identified and diligence eligible accounts receivable, inventory, natural resource reserves, fixed and/or other assets, which in turn support borrowing availability based on a prescribed borrowing base. The primary source of repayment for revolving ABL facilities is the conversion of the collateral to cash over the borrower's business cycle. Loan advances are limited to a percentage of eligible collateral (known as a borrowing base).

Background
ABL structures are preferred primarily for the following reasons:

- Significant liquidity made available based on asset values
- Simplified financial covenant structure
- Attractive pricing
- Significant lender appetite and commitment to the asset class

Typical ABL characteristics

- Primarily comprised of "diligence" collateral including eligible accounts receivable, inventory, natural resource reserves and financial assets
- Routine monitoring and reporting of collateral positions, including specialized applications and systems for this purpose
- Appraisals, field exams and/or engineering evaluations of assets upon origination of credit and/or at subsequent intervals
- Ability to enact or require control/dominion over borrower cash, or similar protections to accelerate repayment, when in default or through other (distress) triggers
- Dedicated teams for either origination, credit underwriting or portfolio management (or all of the above), focused predominantly on ABL portfolios or borrowers

Additional information
The vast majority of an ABL facility borrowing availability (and related facilities in total) must be comprised of credit determined by a borrowing base formula, which includes distinct advance rates. Revolvers are always subject to a borrowing base; other facilities may have a structured advance at inception or related term loans above the asset base. Tier 1 quality deals would be subject to standard/conforming advance rates, while lesser quality deals may have higher non-standard advances, though still ABL structure.

*Link to **Facility_Type** and **Collateral_Type***
Please note the connection to the field Facility type and chose facility type 8091 for Borrowing Base Finance - Revolving Loan and 8092 for Borrowing Base Finance - Term Loans. Details on the Borrowing Base characteristics can be given on collateral level in the Collateral table.

ABL is expected to have collaterals attached. Please fill in this field consistently with the Collateral table. Typical collaterals include accounts receivable (Collateral_Type 200), Inventory (300). Other forms of collateral may be considered which may include: Intangibles (700), Marketable Securities (110,11,112), or Cash/Reserves (100)

2. Definition of Equipment Finance

Equipment finance is defined as any credit facility used to finance the purchase of machinery or equipment, with the equipment or machinery financed used as security.
Equipment financing can take many forms, though the traditional methods are via leasing and commercial loans. The "equipment" we refer to here is normally a capital good, used by the borrower to produce revenue or to assist their business in some way.

Equipment Leasing
Leasing, the most popular form of equipment finance, is an arrangement where one party who owns equipment (the lessor) transfers possession and use of that equipment to another party (the lessee). In exchange for the use of the equipment, the lessee pays rent to the lessor over the term of the lease and might also enter into a pre-agreement to buy or support the value of the equipment at the end of the lease. Typically, 100% of the equipment acquisition cost is financed.

Leasing is set up in many different forms depending on the tax and accounting rules and laws in the country of residence of the borrower and/country of jurisdiction of the collateral. Lease types include:

- Operating Lease- where the lessor (the bank) generally has the equipment on their balance sheet and has some risk on the equipment after the life of the lease (residual value) and the borrower gets to deduct the lease payments from their taxable income (varies greatly by country)
- Finance Lease – where the lessee (the borrower) takes the equipment onto its balance sheet and normally takes the risk on the equipment after the life of the lease (residual

value). The lessee normally deducts the interest on the lease plus depreciation on the equipment from their taxable income (varies greatly by country)

- Other structured leases – many other names and structures are possible with differing ownership of the equipment, rights to tax deduction and risks of residual value.
- Leverage Lease – where an SPV is created to hold the asset and lease it to the end user. The SPV is funded by a mix of debt and equity and may pass on the benefit of large tax deductions to the borrower and to equity holders. The loans to or equity in the SPV should be marked as equipment finance.

Ownership of the equipment by the lessor (the bank) is the normal form of collateral, which enables the bank to repossess the equipment after a missed payment and perhaps some notice, but usually without waiting for a formal receivership or liquidation process.

Equipment Loans
A commercial loan for equipment finance refers to an arrangement where a lender finances the acquisition of equipment by a borrower. Lenders usually finance up to a certain percentage (e.g. 75%) of the equipment cost. The loan is normally repaid in instalments and is satisfied once the borrower repays the lender the principal plus interest.

The borrower may own the equipment and have it on their balance sheet throughout the loan, however there are structures where the ownership is given to the lender and returned only after full payment. At the end of the term, the borrower owns the equipment outright.

The Lender normally takes collateral in the equipment by a specific equipment mortgage, lien or charge or by creating an SPV structure to own the equipment and taking collateral over this.

Vendor/non vendor
Where the financing is arranged by the seller (vendor), who is possibly the manufacturer of the equipment then this is called Equipment Financing - vendor (210). The obligor may be either the vendor itself or an end user buyer whose financing is supported by the vendor in some way. Other types of equipment financing are to be treated as type 220 (non-vendor).
If you do not know whether it is vendor or non-vendor then please use type 200

*Link to **Facility_Type** and **Collateral_Type***
While the most common Facility Types used are leases (700 or 710), equipment is often financed by a Term Loan (300) or bridged with a type 100 bridge loan or even a temporary overdraft. Collateral Type will normally be Specific Fixed Assets (type 410) but could also be vehicles (350 or 360) or possibly even equity in a ring fenced transaction (120).

3. Distinction between Asset-Based Lending and Equipment Finance

Where the bank is monitoring and controlling a book of collaterals such as stock or even equipment which is turning over as it is sold and replenished then this should be marked as Product Code 100. The same equipment might then be sold to an end user under a lease or loan arrangement and financed as a type 200, 210 or 220 equipment finance.

The distinction here is that equipment financing is for capital goods while asset based lending is for stocks of goods which are for sale or used in a production process. A truck may be part of the stock of goods of a truck vendor under asset based lending one day and then become a capital good the next day when bought by a manufacturing company

4. Reserve Based Lending (Oil and Gas)

Any credit facility made available to corporate borrowers in the upstream (or exploration and production (E&P) sector. The upstream sector includes searching for potential underground or underwater crude oil and natural gas fields, drilling exploratory wells, and subsequently drilling and operating the wells that recover and bring the crude oil or raw natural gas to the surface. This does not include midstream and downstream.

Link to ***Facility_Type*** *and* ***Collateral_Type***

Reserve Based Lending is expected to have the Oil and Gas Reserves as collaterals attached. Please fill in the collateral table accordingly using the collateral type 810.

The ***Trade_Finance_Indicator***, introduced in 2014, is to mark more reliably data relating to Trade Finance. Facilities to trade are commonplace but defaults are rare and uneasy to spot. This indicator allows consistency checks with other Trade Finance criteria and facilitates selecting and analysing data.

Important information on the field Trade_Finance_Indicator

Two remarks on Trade Finance:

1) the GCD database does not have a separate ***Facility_Asset_Class*** for Trade Finance but the Trade_Finance_Indicator is the easy means to extract a specific Trade Finance dataset (there are supplemental means such as TF exclusive Facility Types or the ***Facility_Asset_Class =*** 8 for Commodities Finance). Trade Finance is expected to be mainly present in the Facility Asset Classes 2 “Large Corporates”, 3 “Banks and FinCo” and 8 “Commodities Finance”.
2) Often in Trade Finance (sometimes in other activities) the risk accepted by the lender is actually not on its customer (the initial obligor) but on a third-party bank, even though the corresponding transactions are still booked for convenience under the former’s name; a default on such transactions may only come from the third-party bank and must be reported under FAC 3 (for the description of these transactions, see specific Facility Types 803 & 813).

Link to ***Facility_Type*** and ***Collateral_Type****:*

The *Trade_Finance_Indicator* will mainly but not necessarily come along with Facility Types 800 801 802 803 804 805 806 810 811 812 813

For each of those “trade finance facility”, GCD has developed a special guidance on how to fill and recognize them.

Both the ***Collateral_Indicator*** as well as the ***Guarantee_Indicator*** must be entered ("Y"= « Yes » for historical data known to have collateral or a guarantee) even though its type and other particulars are unknown. Except for old defaults, complete information on the collateral and/or the guarantor is expected and necessary.

The ***Committed_Indicator*** describes whether a certain loan is committed or uncommitted. Note the field interlinks with the ***Facility_Type***. Certain facility types are per definition uncommitted or committed. The information whether a facility type is committed or uncommitted can be found in the data input structure in the tab "facility_type".

Important information on the field Commited_Indicator

Uncommitted facilities

Some facilities are said to be "uncommitted" (unconditionally cancellable, or effectively providing for automatic cancellation at any time by the bank without prior notice, for example due to deterioration in a borrower's creditworthiness); such facilities are generally on a short term basis or market facilities.

A facility is "uncommitted" either because there is no formal notice of its existence to the beneficiary, or there is a formal notice that it is unconditionally cancellable.

Note: even an uncommitted facility has – should have – an internal limit (see field "Lender_ Limit").

Committed facilities

Conversely, entering YES for ***Committed_Indicator*** means that the facility reported in default was firm (or even "con-firmed").

- Firm: the facility had been notified in writing and the obligor had not been informed of its termination for reason of default.
- Confirmed: not only had the facility been notified in writing but the obligor has been paying a fee on the unutilised portion of the facility to secure its permanent availability.

Remark: this data-field is important for statistics on "draw-down factor": one cannot assume the likelihood of a loan being drawn down, whether committed or not, to be the same.

Link to *Facility_Type*

The link to the facility_type can be found in the data input structure.

The field ***Control_Goods_And_Flows*** details the control procedures attached to the facility and in force at the time of the default.

Important information on the field Control_Goods_And_Flows

Collateral reported in the collateral table implies that the collateral is under the bank's control, by way of registration or at least assignment. This is not adequate to describe situations where the bank has some form of control, though looser than collateral.

In Trade Finance notably, it is the belief of the banks that their risk is to some extent mitigated by the trade; this involves some explicit cash flow generation from a contract to repay the debt, a form of monitoring, and more or less constraining procedures (documentation, sub-limits, checks for each transaction, short-term, uncommitted, etc.).

The bank is invited to report the actual situation at the date of default. Banks will be trusted on their answer since recouping this sort of information is difficult. In particular, the bank will determine the strength or quality of its control according to many factors such as the jurisdiction, the experience, etc.

Validation rules are in place to issue a Warning if this data-field is not completed when:
- Trade Finance Indicator is YES,
- Selected class is Commodities Finance (FAC = 8),
- Selected Facility Type is Trade Finance (FT = 800 802 804 805 806 809 810 812 813),
- Commodity Type is not null

Banks also need to provide the seniority (field: ***Seniority_Code***) of a loan.
By definition a loan is always Pari-Passu unless the lender has made agreements with other lenders to "promote" or "demote" itself to Super Senior or Subordinated/Junior. If unknown the banks can provide an escape clause. The usage of the escape clauses is closely monitored in the audit and should be avoided if possible. For more guidance on how the seniority code links to the rank of the security, see FAQ in chapter 6.f.

About the field Facility_Type:
This data field is complex to deal with because each bank has its own classification of facility types expressing, in all sorts of ways, a combination of product or mechanism, tenor, object and class of obligors, all of which are the subjects of different data-fields in the GCD data-base. When building up their table of correspondence between the GCD list of facility types and their own list, the member-banks are invited to cross-check the overview presented in the data input structure which shows for the various *Facility_types*

- a definition
- the accounting treatment (cash, contingent, Mark-to-Market or Bonds & Equity)
- whether the limit is expected to be committed or uncommitted (see above the information on the field *Committed_Indicator*)
- the term (short, short/medium, medium)
- in which *Facility_Asset_Class* the Facility_Type is expected to appear
- whether it is a trade finance facility (and the *Trade_Finance_Indicator* is expected to be set). Please check for a very detailed guidance on how to fill the trade finance facilities, chapter 15.k
- further explanations

Important information on the field *Facility_Type*
Frequent facility types are: 100 Bridge Loan, 200 = Revolver/Line > 1 year, 210 Revolver/Line < 1 year, 250 Overdraft, 300 Term Loan and 830 = Payment Guarantee & Stand-by L/C *Un-frequent types of facilities:* 840 Payment Finance, 813 Confirmed Export L/C (S&U), 865 Vostro / nostro, 885 CDS, 886 Equity Derivate

f. Frequently asked questions on the LOAN table

1. *Does GCD expect defaulted equity or defaulted bonds to be reported in the database?*

Yes, and those can be recognized in *Facility_Type* = 620 (=Equity), 630 (=Debt/Equity hybrid) or 890 (=Bonds in the Banking book). Please find more information on those types in the data input structure. Note that for those cases the *Seniority_Code needs to be 300 (=Equity).*

The FAQ on the HISTORY table include also guidance on how the exposure of a bond should be reported to GCD.

2. *Is there a way to identify Hedge Fund loans and fund linked products in the dataset?*

Hedge fund loans are loans to a hedge fund. Hedge funds are part of the asset class "Banks & Financial Companies" (Field: *Facility_Asset_Class*) with a *Bank_or_Financial_Company* indicator = 11 (=Hedge Fund).

Fund linked products are loans to an investor with the Hedge fund shares as collateral. GCD's data model only distinguishes between marketable securities (*Collateral_Type* = 110), Treasury Bills (*Collateral_Type* = 111) and non-marketable securities (*Collateral_Type* = 120). A further trill-down is at the moment not possible.

3. *How can guarantees be recognized in the GCD database?*

Please note the following two different situations:

1. If a bank provides a guarantee to a costumer, the guarantee can be recognized by the *facility_type*.
   → See the data input structure, tab "Facility_Type" for an overview and the definition of all available contingent facility types.

   → Please consult chapter 15 on how to enter contingent facilities in the GCD database

2. If a certain loan is subject to a guarantee of another entity, a number of variables on that guarantee/guarantor are collected. A list of all variables to be entered is listed in chapter 6.i.

4. How does GCD handle syndicated loans?

In case a loan is syndicated, GCD collects the following variables:

1. In the LOAN table:
- *Syndicated_Indicator*: Indicates if loan is part of a syndication
- *Lead_Syndicate_Indicator*: Indicates whether the Bank is the lead syndicate or Agent Bank
- *Total_Syndicated_Amount:* Total amount of the syndicated loan
- *Syndicated_Currency:* Currency denomination of the *Total_Syndicated_Amount*

2. In the COLLATERAL table (the case the syndicated deal is collateralized):
- The *Total_Collateral_Value* (as being the collateral value for the syndicate. Note: the field *Collateral_Value* only indicates the amount attributed to the bank itself). For further definition, see chapter 6.k

Please note:
- Expect for these few fields above, all other information provided (outstanding amount, recovery cashflows, collateral values …) need to be provided for the lender's share only!
- the *Syndicated_Currency* does not have to be the same as for the loan itself (field *Loan_Currency* in History table)
- In the output dataset, the *Total_Syndicated_Amount* is converted to EUR. The original *Syndicated_Currency* is provided for information purposes and can be used to transfer the *Total_Syndicated_Amount* back to its original currency. For that reason, the Conversion_Rate_TOTAL_SYNDIC_AMO is provided in the data return.
- Both the *Seniority_Code* and the *Rank_Of_Security* depend on the inter-creditor agreement made between the different parties in the syndication, see next FAQ

5. How are the fields "Seniority_Code" (loan table) and "Rank_of_Security" (collateral table) linked together?

General Comments:
- Rank_of_Security in the collateral table and Seniority_Code in the loan table are independent assessments
- A facility does not become 'more senior' (from a GCD input perspective) simply because it is secured.
- The existence of the security makes the claim 'more senior' economically, but the impact of this is determined by taking the security rank and facility seniority together - this does not necessarily alter the seniority of the facility itself.

Economic Ranking:

Economic Rank	Rank_Of_Security	Seniority_Code
Highest	First Charge	Super Senior
	First Charge	Pari-Passu
	First Charge	Subordinated
	Second Charge	Super Senior
	Second Charge	Pari-Passu
	Second Charge	Subordinated
	Subsequent Charge	Super Senior
	Subsequent Charge	Pari-Passu
	Subsequent Charge	Subordinated
	n/a – unsecured	Super Senior
	n/a – unsecured	Pari-Passu
Lowest	n/a – unsecured	Subordinated

Examples:

1. Unsecured Lending

Bank A lends unsecured on a bilateral basis.
The bank cannot unilaterally promote itself above other creditors so will, by definition, have a facility seniority of Pari-Passu.

Item	Code	Description
Seniority_Code	110	Pari-Passu
Rank_Of_Security		

2. Secured Lending

Bank A lends secured on a bilateral basis and is the only lender who has a claim on this security. The bank holds a first charge and this gives him priority over unsecured lenders. But the priority comes from the Rank Of Security; the facility seniority remains as Pari-Passu.

Item	Code	Description
Seniority_Code	110	Pari-Passu
Rank_Of_Security	110	First Charge

3. Secured Lending – *two bilateral banks*

Bank A lends secured on a bilateral basis and at the time of lending is the only lender who has a claim on this security.
Bank B later also lends on a bilateral basis and takes security on the same asset.
Bank A holds a first charge.

Bank B holds a second charge.
Both banks have priority over unsecured lenders but Bank A has priority over Bank B. But this priority comes from the security rank (first vs second). As bi-lateral lenders the facility seniority for both banks remains as Pari-Passu.

Bank	Item	Code	Description
A	Seniority_Code	110	Pari-Passu
A	Rank_Of_Security	110	First Charge
B	Seniority_Code	110	Pari-Passu
B	Rank_Of_Security	120	Second Charge

4. Unsecured Lending – *syndicated deal*

Bank A and Bank B lend as part of a syndicate on an unsecured basis. Via an inter-creditor agreement between the two banks Bank B agrees to accept a subordinated position relative to Bank A in return for a higher coupon rate.

Bank	Item	Code	Description
A	Seniority_Code	110	Pari-Passu
A	Rank_Of_Security		
B	Seniority_Code	200	Subordinated
B	Rank_Of_Security		

Bank B has taken a subordinated position. Bank A's lending remains Pari-Passu. It could be argued that Bank A should be Super Senior (and Bank B one notch lower at Pari-Passu) and in terms of determining relative rankings it does not make much difference. However, in practice, Super Senior should be seen as a rare outcome and reserved for where a bank has specifically taken steps to achieve a more prominent status above the norm, rather than simply being the most senior relative rank (see example secured lending, syndicated deal).

Creditor	Exposure	Liquidation Proceeds	Final Proceeds
A	1,000	200	400
B	1,000	200	0
Trade Creditor	500	100	100

Note that from a data perspective there is no way to tell that this situation as occurred. It will look like Bank B has submitted a subordinated unsecured facility which may on the face of it look incorrect without a field that says it is party to an inter-creditor.

Note: in the event of insolvency Bank A remains equally ranked to any other unsecured creditor. He has only achieved priority over Bank B as only bank B is party to the agreement with Bank A. Say the exposure for each creditor is as per the table below and say the liquidator pays "20c in the dollar" for unsecured claims. All unsecured creditors are treated equally under insolvency law, but Bank B needs to give his share up to Bank A under the terms of the inter-creditor. This must be taken into account when interpreting the data.

5. Secured Lending – syndicated deal

Banks A, B and C all lend as part of a syndicate on a secured basis with security taken on behalf of the syndicate by a security agent. Bank A provides swap facilities and Banks B and C provide debt. Due to the volatile nature of their exposure, Bank A insists on first priority claims. Bank C agrees to accept a subordinated position relative to Bank B in return for a higher coupon rate on the debt. The legal position is agreed via an inter-creditor agreement.

In this situation the three banks assume three levels of claim on the security. However, this is achieved via their respective facility rankings; Bank A is super senior and Bank C is subordinated, which leaves Bank B as Pari-Passu. Even though they effectively have different ranks of claim on the security proceeds, there is only a single charge on the asset taken by the security agent. Hence all banks would record a first charge.

Bank	Item	Code	Description
A	Seniority_Code	100	Super Senior
A	Rank_Of_Security	110	First Charge
B	Seniority_Code	110	Pari-Passu
B	Rank_Of_Security	110	First Charge
C	Seniority_Code	200	Subordinated
C	Rank_Of_Security	110	First Charge

Note: Depending on the terms of the inter-creditor, any unsecured residual claims after the security proceeds have been allocated may equally be subject to documented priorities between them, or equally they all may rank Pari-Passu to each other (and other unsecured creditors). This level of complexity is too much to incorporate in GCD data and thus the facility rank (for a secured deal) should be based on the secured rankings. It should NOT be set to the assumed rank of any unsecured claim.

g. HISTORY table

The HISTORY table contains information at 5 different points in time, see following picture.

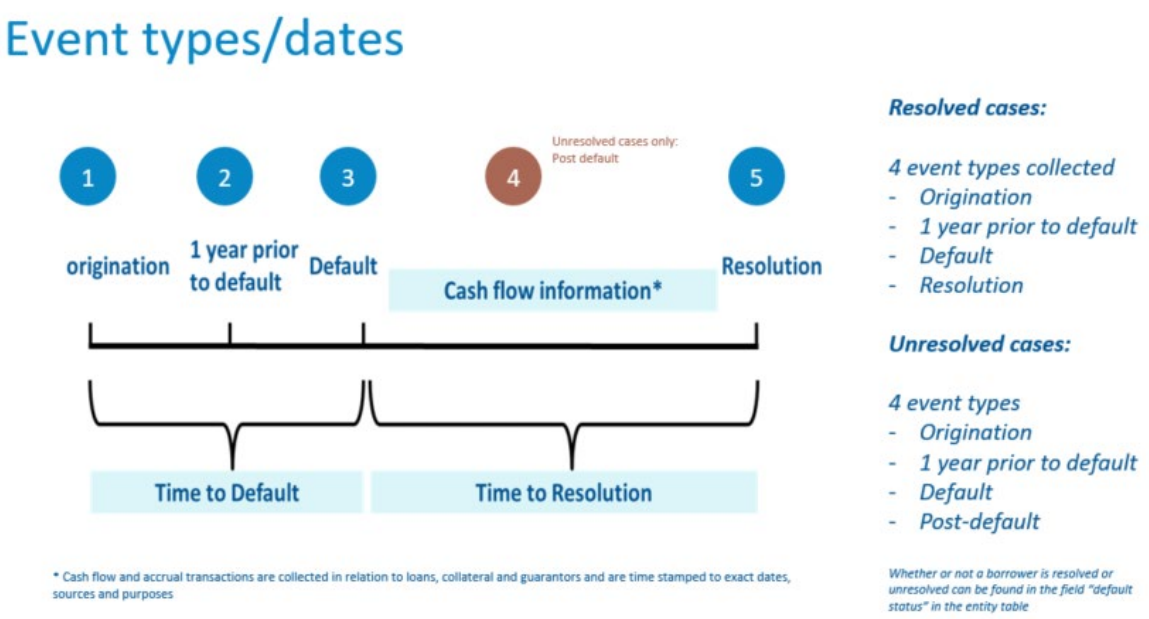


FIGURE 15: EVENT TYPES FOR RESOLVED AND UNRESOLVED CASES

Event Type 4 describes a temporary situation in-between the date of default and its resolution and it is used for unresolved defaults only. Consequently, for any given loan, as time passes, each newly reported Event Type 4 replaces the previously reported one, until finally Event Type 5 replaces the last reported Event Type 4.

The *Event_Date* needs to be entered also into the GUARANTOR, the COLLATERAL and the PRCING table and must be the same as in the LOAN HISTORY table. As a matter of fact, this field is one of the keys to link those tables (next to the Borrower_ID, Collateral_ID/Guarantor_ID and the Loan_ ID). For the exact specification of the "Relation Diagram" to link the tables, please consult the data input structure.

Important information on the event dates

Date of default

Some banks have a policy of transferring their defaulted loans to a specialised department, which records the recovery cash flows only from the date of transfer. However, this date of transfer is generally not the date of default, as per the Basel II definition. These banks are invited to take extra care that they enter the actual date of default and the cash flows (and more generally other data) from that date on.

Although the date of default is entered at facility level, the notion of default is at borrower level! Therefore, it is not accepted that one borrower with several loans shows different dates of default. Validation rules ensure that accordingly.

Date of origination (= Event Date of Event Type 1)

This date is required when date of default > 31/12/2004; if not known and likely to be 5 years before the date of default, enter date = date of default less 5 years.
Note: when opening Event Type 1 to enter the date of origination, other data-fields become required – but can be completed with the escape clause "-1", if the information is not available.

Date of one year prior to default (= Event Date of Event Type 2)

Information about Event type 2 is very useful for EAD analyses. The database allows only one Event Type 2 per loan (same for all events).

The date of Event Type 2 can be any date from 18 months to 6 months* before date of default (including the usual 31st December!).

* is indicative: exceptions are not ruled out.

For loans originated less than one year prior to default, Event Type 1 should be informed with at least the actual origination date and expectedly Limit and LOA (=Loan outstanding amount), and Event Type 2 should be dated one day later and again filled in with (same) Limit and LOA.

Date of Event Type 4 / 5

It concerns the post-default reporting of unresolved loans, so the date is of shifting nature. The last reporting date supersedes the previous one, until it becomes the date of resolution = Date of Event Type 5.

Format of Event Date

Any date needs to be delivered in the format: DD/MM/YYYY

The field *Loan_Status* is about the "performance" or non-performance of the facility and is filled for all event types as follows (validation rules are set up accordingly):

- Event type 1 (=Origination): Loan_Status = 1 = Performing
- Event type 2 (=One Year prior default): Loan_Status = 1 = Performing
- Event type 3 (=Default moment): Loan_Status = 2 = Default
- Event type 4 (=Reporting moment of unresolved default): Loan_Status = 2 = Default

For Event type 5 (=Resolution moment) a choice has to be made as defaults can resolve in different ways. The following table shows how to fill the *Loan_Status* and what values we would expect in the field *Lender_Limit* and the *Loan_Outstanding_Amount* of the HISTORY table as well as what transactions we would expect in the TRANSACTION table. Most of this is also ensured by validation rules.

Resolution of the Default	Loan_Status	Lender_Limit	LOA*	Transactions
Loan remains in the portfolio of banks	7 – Return to Performing **	> 0	> 0	In these cases it is unlikely that no repayments or interest payments have

				been done. In general payments should be there. No write-off amount expected
Loan exits the portfolio of the bank - after full repayment	4 - Paid in Full Post Default	0	0	At least one payment is required and no write offs. Repayments can come from anywhere but not a sale of credit.
Loan exits the portfolio of the bank - after sale of the loan to a third party	5 - Sold Post Default	0	0	Principal Payment with Source_Of_Payment = Sale of Credit required. Banks usually take a write off but not necessarily
Loan exits the portfolio of the bank - After partially written off (some repayments but not from a sale of credit)	3 – Partial Write Off	0	0	At least a Principal Payment and a Write Off needs to be given
Loan exits the portfolio of the bank - after complete write off	6 – Complete Write Off	0	0	A write off transaction of at least the full LOA plus additional cash out post default needs to be present
Loan exits the portfolio of the bank - after cancellation because of no use***	9 - Cancelled without Usage	0	0	No transactions

FIGURE 16 OVERVIEW OF THE FIELD LOAN_STATUS AND ITS INTERACTION WITH OTHER DATA BASE FIELDS

* LOA = *Lender_Outstanding_Amount*
** It only applies to a facility which exits of default because the obligor is back to a sound rating: i.e. the loan is re-instated without loss
** Cancelled without Usage can only be used for Loans that have no outstanding at default (LOA=0 at Event_Type =3)

The fields *Lender_Limit*, *Lender_Outstanding_Amount* and *Lender_Issued_Amount* are linked to the different facility types (see LOAN TABLE) and do correspond to each other as displayed in the table below.

Please note:

- The *Lender_Limit* is limit as communicated to the client resp. the maximum amount the bank is willing to issue to the client for a contingent facility.
- The *Lender_Outstanding_Amount* at Event Type 3 is the historical exposure at default, also OAD (Outstanding At Default), of the case reported: it includes **all principal and past-due Interest at that date**. For a cash facility, it is the actual debit balance at the date of default plus any accrued interest by then.

- *Lender_Limit* is generally expected higher or equal to *Loan_Outstanding_Amount* at origination and 1 year prior to Default, but the reverse is possible
- The *Lender_Issued_Amount* is only applicable for contingent facilities. It is e.g. the nominal amount of Letters of Credit or Guarantees, already issued but not paid out.
    - A contingent facility which has been called (cashed out) by the beneficiary before the date of default, is no longer "contingent" at that date. So this means the loan actually changes in nature from a contingent to cash facility (→ change of facility type)
    - If the contingent loan is partially drawn at the time of default then guidance would be to report it as two loans: one contingent with a limit of the remaining amount that can still be issued and one cash facility which includes the drawn amount.
- *Lender_Outstanding_Amount* at Event Type 1 or 2 or 4 will simply be the debit balance of the internal account monitoring this facility.
- *Lender_Outstanding_Amount* at Event Type 5 (resolution) = 0 in most cases; the case is resolved because entries for recoveries or loss (or waiver) have actually brought the balance of the account to nil. It is not = 0 in the only case of "Return to Performing".
- *Lender_Limit* = 0 is possible at Event Type 3, 4 and 5.
- The case of both *Lender_Limit* and *Loan_Outstanding_Amount* reported equal to 0, at default date (Event Type 3): this is when

    (i) either the facility was granted or implemented after default (i.e. see chapter 15.i on how to recognize that),

    (ii) or, the client had several facilities, some of which un-used have been cancelled at default (banks may choose not to report them).

Field	Event_Type	Cash	MtM	Contingent	Bonds	Comments
Lender_Limit	Origination	> 0	> 0	> 0	> 0	-1 is accepted as an escape clause*
Limit as Communicated to the client	1 Year Prior to Default	> 0	> 0	> 0	> 0	-1 is accepted as an escape clause*
Maximum amount the bank is willing to issue to the client for a contingent facility	Default	0 or > 0	0 or > 0	0 or > 0	0 or > 0	
	Post Default	0 or > 0	0 or > 0	0 or > 0	0 or > 0	
	Resolution	0 or > 0	0 or > 0	0 or > 0	0 or > 0	Only > 0 if Return to Performing
Lender_Issued_Amount	Origination	-	-	> 0	-	
Contingent Amount issued to the client	1 Year Prior to Default	-	-	> 0	-	
	Default	-	-	> 0	-	
Only applicable for contingent facilities	Post Default	-	-	> 0	-	
	Resolution	-	-	0 or > 0	-	Only > 0 if Return to Performing

Lender_Outstanding_Amount	Origination	> 0	0	0	> 0	-1 is accepted as an escape clause*
Cash Outstanding on the client *For Origination: take the first draw*	1 Year Prior to Default	> 0	0	0	> 0	-1 is accepted as an escape clause*
	Default	0 or > 0	0	0	0 or > 0	
	Post Default	0 or > 0	0	0	0 or > 0	
	Resolution	0 or > 0	0 or > 0	0	0 or > 0	Only > 0 if Return to Performing

** The escape clause is only acceptable for Cash and Bonds Facilities and Defaults Prior to 2005*
Mapping to GCD Facility Types is available in the 'Global Credit Data LGD - EAD Platform Data Structure and Validation Guide'

Important information on the field Borrower_Internal_PD and LGD_Rating

Both the Borrower_Internal_PD as well as the LGD_Rating should be the LAST validated PD/LGD BEFORE the event date.
(as one would want to "backtest" the forecasted LGD with the realized LGD eventually).

For further guidance see also our examples in Chapter 15.

h. Frequently asked questions on the HISTORY table

1. *How do banks enter a double default?*

In the statistical, anonymous Global Credit Data database, it is not possible to report a double default on the same borrower. A second default must be treated as a new default (the first has been resolved, before the second occurred!), i.e. must be reported under different IDs for borrowers, loans, collaterals (double defaults are not frequent enough to justify breaking the anonymity rules).

2. *How are post-default facilities entered into the database?*

Lender_Limit and *Lender_Outstanding_Amount* must be "zero" at default date (Event Type 3) in the HISTORY table and the drawing of the facility must be recorded in the TRANSACTION table, with a *Transaction_Type* = "400".

Regarding a facility set up post-default, make sure that it does increase the exposure of the lender on the borrower! A loan granted after default and fully used to repay all or part of a loan granted before default must be regarded and reported as Principal Advance (TT 400) on that same loan. To do otherwise is misleading because it generates a LGD = 0% on the initial loan.

Please consult for more information chapter 15, where we have created a special example on how to input post-default facilities.

3. *How are contingent liabilities entered in the database?*

Please consult for more information chapter 15, where we have created three examples on how to input contigent facilities.

4. *How are mark-to-market liabilities entered in the database?*

Mark-to-Market liabilities (see the table "facility_type" in the data input structure) need to be carefully treated when entered into the GCD database.

Usually, when the deal is caught in the obligor's default, it may go on for some time after the date of default until maturity or a forced termination, and this may or may not result into a claim from the lender on the obligor. The "Financial Claim", i.e. the net amount due, if any, is calculated post default by the lender through netting all positions related to the facility. (No Collateral to select since the exposure is reported net of collateral)

- If the netting ends of "out of money": *Lender_Outstanding_Amount* at event_type 3 (default) = 0 and the claim to be reported by TT420
- If the netting ends up "in the money": There is no claim => no LGD case! Facilities reporting *Lender_Outstanding_Amount* at event_type 3 (default) = 0 and no Financial Claim have their statistical value, even with no LGD calculated on them and therefore still should be reported

MtM movements between default and close out dates do NOT need to be reported, since LGD is calculated on the financial claim. If the default is reported before its final resolution and if there are successive adjustments of the financial claim, use TT420 correspondingly.

Note: When Transaction 420 is reported, it implies a consecutive recovery (Transaction Type 100) or write-off (TT 300) plus misc. (for extra costs).
The recovered amount might be a little tricky to find out: if the "closed-out amount" has been debited from an overdrawn account (even within a pre-default approved overdraft facility), this should not be mistaken for a recovery! In short, it is important for statistical significance, to single out and report the amounts of recovery and loss that are specific to the mark-to-market facility.

Please consult for more information chapter 15, where we have created two examples on how to input mark-to-market facilities.

5. *How does GCD treat losses losses from counterparty credit risk where the price of the underlying moves after the trading counterparty has defaulted*

This question is similar to the previous FAQ. Transaction Type 420 - Financial Claim (also called cristallisation) can be used as the final amount (or a final adjustment of the exposure at default) due by the borrower in default on a mark-to-market facility (concerns defaults by banks and financial market players)

Please consult for more information chapter 15, where we have created two examples on how to input mark-to-market facilities.

6. *How does GCD deal with a default on a counterparties which has an ISDA agreement (incl. CSA annex) with us or another financial counterparty. According to the ISDA agreement upon default a netting will occur on all derivatives between the 2 counterparties and the CSA collateral is taken into account to determine the final claim that one has on the other counterparty. If such a default would be entered into the GCD database would this result in the entering of one line as the netted set or should all individual derivatives with a positive MTM be taken into account?*

Our guidance is to enter this case as one netted line (the definition used in the RWA calculation / regulatory reporting). The only challenge with entering the "netting set" is that banks then need to choose in the field *facility_type* the appropriate entry. CSA netting sets usually consist of more than one type of derivatives. We advise to choose the type with the highest exposure.

7. *What is the limit and outstanding of a bond (facility_type 890)?*

At event type 3:
The nominal amount (face value) of the bond - being the actual claim from the issuer when the bond matures - is regarded as *Lender_Limit* and as *Lender_Outstanding_Amount* at default.

At event type 5:
If the default is considered “resolved”

- and the bond has not been sold or redeemed (as often), then the *Lender_Outstanding_Amount* at resolution moment (event type 5) should be its fair value, which is usually the Mark-to-Market value at that date. In that case, a negative difference between the face value and the MtM value need to be recorded as write-off/loss (TT300) in order to ensure a proper balancing. *Loan_Status* = 7 (=Return to performing).
- and the bond has been sold, the sale price has to entered as *Lender_Outstanding_Amount* at resolution. *Loan_Status* = 5 (= Sold post default)

If the default is reported as “unresolved”, it is not required to report a current value at Event Type 4, but it is possible, though not mandatory, to report a provision, if any (Transaction Type 310).

8. *How should sub-limits be treated ?*

It is (at least it was) not rare, notably in 802/ Transactional Trade Finance, that banks set up a global limit ("umbrella") and sub-limits for specific credit instruments: for Global Credit Data, it is the sub-limit that must be treated as the limit. Report the amount of the sub-limit in Lender Limit (e.g. for each line 802, as for any other facility type, the reporting bank is to enter in "Lender Limit" the sub-limit applicable to the trade transaction/risk instrument reported).

This approach is also consistent with the fact that many times, the pricing and the facility types are different for the different sublimits, and also the recoveries are recorded separately for the different sub-limits.

9. *What if a new loan has been granted to a already defaulted borrower (without that a restructuring has taken place)?*

This situation should be treated similar to a principle advance on an existing loan after default.

To be concrete :

- The new loan to a already defaulted borrower should be never the sole loan from that borrower. The defaulted borrower has already defaulted on other loans.
- Create a new loan_ID for this loan.
- Event type 1 (=origination) + 2 (=1 year prior to default) not required.
- At event_type 3 : *Lender_Limit* = 0 and *Lender_Outstanding_Amount* = 0.
- Default date = date of other loans of borrower
- "Money out" is booked as a principal advance (TT400 in the TRANSACTION TABLE) at the moment it is granted

See also the example in chapter 15.

10. *How should a loan with a positive limit at default moment which is not drawn (neither before nor after default) be treated?*

GCD has changed the methodology in H1 2017 and from that moment on also allows loans with an *Lender_Outstanding_Amoun*t of 0 to be delivered. The treatment in the data model is similar to other contingent facilities which are not used.

To be concrete:

- Use loan status = 9 (=Cancelled without usage)
- No transactions required
- Pricing details expected to be filled in

See also the 2 examples on contigent facilites in chapter 15.

11. *How should the maturity date be delivered, when the defaulted loan has not been extended at default moment? Example : A loan has a maturity date of 30 April 2016, that is the date the loan should be paid in full (bullet repayment). The customer does*

not pay on the maturity date so they default 29 July 2016, after 90 days. The facility was not extended at maturity date. What date should banks report as maturity date?

GCDs expects in this case the legal maturity date (30 April 2016) filled in the field *Maturity_Date.* (GCD has implemented a warning as validation rules that the legal maturity should be later than the default date, but this can be ignored in that specific case).

12. *How should the Loan_Status be filled when the loan went back to performing but also part of the loan (e.g. the interest expected) has been written off (partial write-offs) ?*

A loan that returns back to performing should always receive the *Loan_Status* = 7 (= Return to Performing), regardless if there has been a practical write off or not.

Example:

- Loan outstanding at default: 1000;
- Default is said resolved 6 months later when the Obligor is given back a performing rating
- The loan is rescheduled for 1000 (comparable to a new loan) and charged interest 50 is given up

Report in History:

- At Event Type 3 (31/12/2005), LOA = 1000, Loan Status = 2 (=default)
- At Event Type 5 (30/06/2006), LOA = 0, Loan Status = 7 (=return to performing)

Report in Transaction:

- Type 450 (Interest accrual) = 50, Transaction Date = 30/06/2006
- Type 300 (Write off) = 50, Transaction Date = 30/06/2006

Loan_Status = 3 (= partial write off) should only be used in situations where the loan is no longer in the portfolio at resolution moment, e.g. 80% written-off (TT300) and 20% paid back (TT100).

13. *How should the Loan_Status be filled in case only a part of the loan has been sold and (the remaining part of) the loan went back to performing ("partial sale of credit") ?*

Example:

- Loan outstanding at default: 1000
- 50% of the loan is sold post-default to another party
- Post default interest (50%) has been collected for 25
- Default is said resolved 6 months later when the Obligor is given back a sound rating
- The loan is rescheduled for 500

Logically, one would want to report it as follows in the History table:

- At Event Type 3 (31/12/2005), LOA = 1000, Loan Status = 2 (=default)
- At Event Type 5 (30/06/2006), LOA = 500, Loan Status = 7 (=return to performing)

Logically, one would want to report it as follows in the Transaction table:

- Type 450 (Interest accrual) =50, Transaction Date = 30/06/2006
- Type 100 (Principal) = 500, Transaction Date = 30/06/2006, Source of Payment: 700 (Sale of Credit)
- Type 200 (Interest) = 25, Transaction Date = 30/06/2006, Source of payment = 100 (=Borrower's Cashflow)
- Type 200 (Interest) = 25, Transaction Date = 30/06/2006, Source of payment = 700 (Sale of Credit)

However, currently the combination of a "(partial) sale of credit" in the TRANSACTION table and a "return to performing" status in the LOAN table is not allowed by the validation rules, as we usually accept that after the credit sale banks don't have the loan in their book anymore.

So if the bank still have an ongoing relationship with the borrower who returns to performing and the loan still on their books with a positive outstanding amount at resolution , we recommend they either

- use the Loan Status 7 and either choose another Source of Payment (e.g. 100)
- split the loan in two to reflect the partial sale.

Workaround 1:

Report in History table:

- At Event Type 3 (31/12/2005), LOA = 1000, Loan Status = 2 (=default)
- At Event Type 5 (30/06/2006), LOA = **500**, Loan Status = 7 (=return to performing)

Report in Transaction table:

- Type 450 (Interest accrual) =50, Transaction Date = 30/06/2006
- Type 100 (Principal) = 500, Transaction Date = 30/06/2006, Source of Payment: 100 (Borrower's cashflow)
- Type 200 (Interest) = 25, Transaction Date = 30/06/2006, Source of payment = 100 (=Borrower's Cashflow)
- Type 200 (Interest) = 25, Transaction Date = 30/06/2006, Source of Payment: 100 (Borrower's cashflow)

Workaround 2: Split the original loan in two loans of EUR 500 each, creating two Loans IDs.

i. GUARANTOR table

If a certain loan is subject to a guarantee, the following information of the guarantee is available in the GCD database

- **ENTITY table**: Basic information on the guarantor / key party including the *Guarantor_Type*
- **FINANCIAL table:** Financials of the guarantor/key party
- **LOAN Table:** *Guarantee_Indicator* set to "Y (=Yes)"

- **GUARANTOR table:** Rating of the guarantor (Moodys, Fitch, S&P, Internal), Guarantee Percentage (=percentage of the limit which could be actually claimed) and Guarantee Call Percentage (=indicator whether guarantee has been called) at different point in time
- **TRANSACTION table** (see chapter 6.n for more information)**:** The amount of the recovery can be found in TT100 (Principal payment) and Source_Of_Payment = 300 (Guarantor). The field *Guarantor_ID_Payment* contains the ID of the relevant guarantor.

Required information vs. optional information:

- Banks must enter "Y" (Yes) for historical data known to have a guarantee, even though the type of guarantor and other particular information is unknown.
- The minimum required information is a *Guarantor_ID* (necessary to track recoveries obtained from the guarantor), the *Guarantee_Indicator* and the recovery amount (TT100 , Source_Of_Payment = 300) in case the guarantee has been called.
- Financial information, Ratings, *Guarantor_Type*, *Guarantee_Percentage* and *Guarantee_Call_Percentage* are optional but recommended.
- Linking the ENTITY table and the GUARANTOR table:
    - Data input structure: The field Entity_ID in the ENTITY table corresponds with the field Guarantor_ID in the GUARANTOR table
    - Data output structure (=data return): The field DA_Entity_ID in the ENTITY table corresponds with the field DA_Guarantor_ID in the GUARNATOR table

The GUARANTOR Table is linked to the HISTORY table. This allows reporting information on the guarantor at each event reported for the loan (e.g. the rating of the guarantor at each event date) – but does not make it mandatory. The information requested in the Guarantor Table should be entered first at the date of default (Event Type 3) and then at any other event date, if available and different.

It is recommended to enter 100 % as *Guarantee_Percentage*, unless there is another exact figure, or you know for sure that it is NOT 100 %. The figure is generally known since origination and not subject to change later on.

The field *Guarantee_Call_Indicator* is mandatory at Event type 4 or 5 – it should be left blank at event type 1,2 or 3.

There is no field about the date of maturity of the guarantee (if any)! It is assumed that the guarantee is valid at the time of default. If, post default, the lender misses unwillingly the maturity date, it has not to do with the obligor.

j. Frequently asked questions on the GUARANTOR table

1. *What if a credit default swap has been purchased before default for protection?*

A credit default swap (CDS) is a stretched notion of Guarantor and therefore is added similar to the data than a guarantor! To be concrete: If a CDS had been purchased by the lender to cover specifically a particular exposure, a separate entity needs to be created (Entity_Type = 2, Guarantor_Type = 9). The amount of the recovery is recorded in the same way as for other guarantees, i.e. in the transaction table (Transaction Type 100 – Source of Payment 300).

2. *GCD requires that members report guarantees, i.e personal guarantees. How is this information is used for LGD? Generally, there is not a high reliance on personal guarantors.*

Guarantees are important to draw the full picture of a deal structure and understand where the risk truly is. In modelling e.g., you would in certain cases substitute the borrower's risk by the guarantor's risk. Reliance depends on who the guarantor is.
Most guarantees in GCD are corporates that are group related. These of course have a high risk of if the borrower defaults to default as well and therefore do not reduce the risk. There are other guarantor types like banks (not often) or sovereigns (e.g ECA guarantees). ECA guarantees are a common feature for example in project finance and therefore important.
For personal guarantees, we assume these are for a small enterprise if the owner guarantees with his private belonging, however we would not expect to have them often for other asset classes. They could reduce the risk because the manager/owner is 100% committed.

3. *Can a certain guarantor also be the guarantor for more than one borrower?*

Yes, that is possible. The guarantor need to be added only once to the ENTITY table with entity_type = 2 or 3 and then linked through the Guarantor_ID to the GUARANTOR table and – in case of a payout on the guarantor – to the TRANSACTION table. .

k. COLLATERAL table

The COLLATERAL table includes the details on the collaterals in the loan structure.

Each unique collateral must be reported with one unique Collateral_ID

- A collateral can collateralise multiple loans (f.i. a ship collateralizes a term loan and a guarantee)
- Several collaterals can collateralise one loan (f.i. two ships collateralise one term loan)

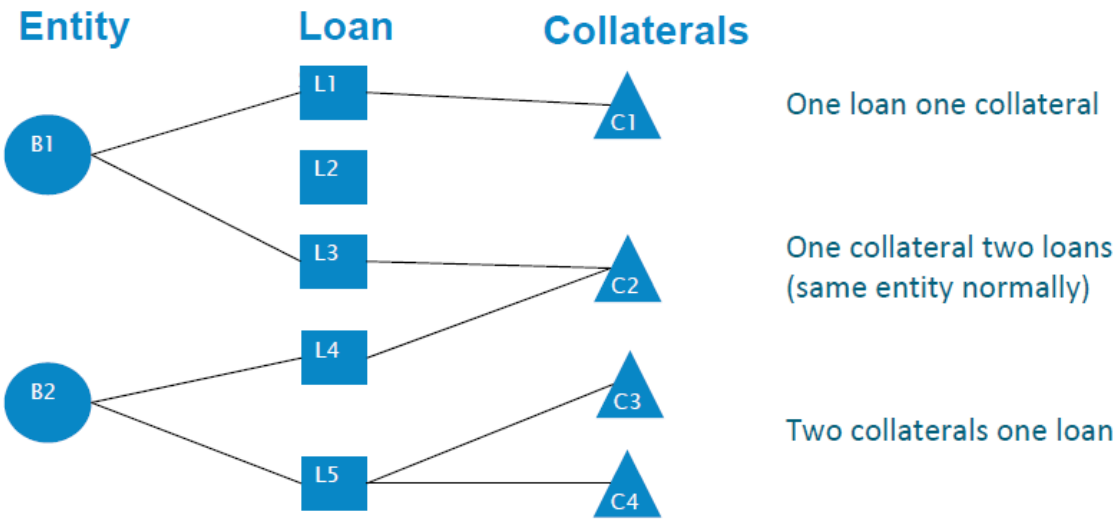


FIGURE 17: LINK BETWEEN THE ENTITY TABLE, THE LOAN TABLE AND THE COLLATERAL TABLE

Important information on the link between the ENTITY, LOAN and COLLATERAL table
A collateral can be link to many loans but should not be linked to more than one borrower If a collateral is linked to multiple borrowers then it must be reported with as many collateral_IDs as it has links to different borrowers (f.i. a ship collateralizes two borrowers: Collateral_ID = 1 collateralizes Borrower 1 and Collateral_ID = 2 collateralizes borrower 2)

The collateral information is added per different event types / dates (see chapter 6.g on the various event dates embedded in GCD's data model). The collaterals must have the same characteristics per *Collateral_ID* (i.e. a ship will always be a ship) for all event types/dates:

- All Collaterals
  Collateral_Type, Rank_Of_Security, Collateral_Country_Of_Jurisdiction
- Ship, Aircraft, Real Estate and Project Collaterals
  Year_Of_Construction, State_Of_Completion, Contractual_Revenue_Indicator, Nature_Of_Contract
- Ship / Aircraft / Real Estate / Commodities / Project Collaterals
  - Ship: *Ship_Use, Ship_Size, Ship_Size_Units*
  - Aircraft: *Aircraft_Type, Engine_Manufacturer, Engine_Type, Number_Of_Engines*
  - Real Estate: *Real_Estate_Type, Real_Estate_Class, Real_Estate_Post_Code, City, State, Real_Estate_Location, Owner_Occupied_Status*
  - Commodity: *Commodity_Type, Commodity_Hedged_Indicator*
  - Project: *Project_Type, Project_Finance_Technology, Project_Life_Coverage_Ratio, Loan_Life_Coverage_Ratio, Project_Tail*

Note: The *Rank_of_Security* is required information for any collateral; if ever the lender would happen to have a first rank and a second rank on the same collateral, it would be necessary to

report this as 2 different Collateral with different IDs, and likely a different value. For further guidance on how the Rank_Of_Security and the seniority of the loan are linked together, please consult the FAQ chapter of the loan table (chapter 6.e), where detailed examples are provided.

Banks provide GCD with a collateral value per event date / type:

- Definition field *Collateral_Value*: collateral value pledged to your bank (lender), gross value before haircuts.
    - In case of multiple loans attached this value should be the same per {Collateral_ID, Loan_ID} combination!
    - Note: this value represents the portion of asset which could be claimed by the lender for its sole benefit (t (i.e. net of any priority or other lenders' claim). This is the value that one would compare to the related loan (or loans) to calculate a cover percentage.
- Definition field *Total_Collateral_Value*: total value of the collateral, only to be filled in case collateral is pledged to multiple lenders, must be gross value before any haircuts
- *Total_Collateral_Value*, if relevant, must be reported at the same events as for Collateral Value.
- The *Total_Collateral_Value* is expected to be higher than the *Collateral_Value.*
- It is recommended to report a *Total_Collateral_Value* when the Lender shares the collateral with other lenders. But the field should NOT be misused/mistaken for cases where one collateral is securing several loans.
- The source of the valuation (indicated in *Collateral_Valuation_Type*) must be the same for *Collateral_Value* and *Total_Collateral_Value*.

Important information on the collateral valuation date

The unique keys of the COLLERAL table are {Borrower_ID, Loan_ID, Collateral_ID, Event_Date}: this implies that the valuation date is related to the event date: a maximum of 4 valuations can be entered.

The valuation date needs to be prior to the event date. (Other situations pass the validation rules but will trigger a warning).

The *Collateral_Value* must be reported (specific amount and date of valuation expectedly different of the date of event) at Origination, 1 Year prior to Default, Default and Resolution, or one of these events at least.

- If only the valuation at origination is available, this information can be entered at origination and then repeated at the other 2 events. (Note: the valuation_date should not change then)
- If the bank has only one Collateral Valuation to report, it may do it also just under Event Type 3 (default) but it must enter a genuine date of valuation
- At event type 4 and 5, please report the estimated value if the collateral is not sold and the sale value if the collateral has been sold (see following box).
- The change in value of a collateral between origination and default, if known, is a fact important to report (whether a decrease or an increase!).

Important information in case the collateral is sold

In case the collateral is sold:
In the Collateral Table:

- GCD requires that the *Collateral_Value* to report at event type 5 (resolution) is the sale value of the collateral, i.e. the factual value at which the collateral has been sold.
- *Collateral_Sale_Indicator* in the Collateral table has to be set to 1 = (Sold)

In the Transaction Table

- The *Collateral_Value* is expected to match with the amount reported in the TRANSACTION TABLE under Source_Of_Payment = 200 (Sale of Collateral) or 210 (Book Value of Collateral).
  → Attention: in case one collateral collateralized various loans, only the share which is attributed to a specific loan is stored in the TRANSACTION table (which is at loan level). So the *Collateral_Value* at resolution in case of sale is the **sum** of the "transaction amounts" of the sold collateral over the various loans
- *Liquidated_Collateral_ID* in the TRANSACTION table is expected to be equal to the *Collateral_ID* in the collateral table where *Collateral_Sale_Indicator=1*.

Collateral valuation example:

- ❑ Lender A and Lender B both have an equal pledge to Collateral One for Borrower B1. Value just prior to default is 5 MLN EUR
- ❑ Lender A has two loans, Loan X and Loan Y with an outstanding of 1.2 MLN and 0.8 MLN at default, Collateral One is attached to both loans
- ❑ At resolution collateral One is sold for 4 MLN, Lender A gets 2MLN and Lender B gets 2 MLN from the sale
- ❑ Loan X and Loan Y are repaid by the sale of the collateral for lender A: *how much does each loan get?*
- ❑ Allocation to be done by the banks based on own methods or policies. Possible Options:
  - Limit Weighted
  - Outstanding Weighted
  - Facility Type (riskier facility type gets more)

Data Input for Lender A:

History Table

Borrower_ID	Loan_ID	Event_Type	Event_Date	Loan_Status	Lender_Limit	LOA
B1	Loan X	3	1-7-2010	2	1,200,000	1,200,000
B1	Loan X	5	1-5-2015	4	0	0
B1	Loan Y	3	1-7-2010	2	800,000	800,000
B1	Loan Y	5	1-5-2015	4	0	0

LOA = Lender_Outstanding_Amount

Collateral Table

B_ID	Loan_ID	Collateral_ID	Event_Date	CV_Date	CV	TCV	CSI
B1	Loan X	Collateral A	1-7-2010	5-5-2010	2,500,000	5,000,000	
B1	Loan X	Collateral A	1-5-2015	1-5-2015	2,000,000	4,000,000	1
B1	Loan Y	Collateral A	1-7-2010	5-5-2010	2,500,000	5,000,000	
B1	Loan Y	Collateral A	1-5-2015	1-5-2015	2,000,000	4,000,000	1

B_ID = Borrower_ID
CV_Date = Collateral_Valuation_Date
CV = Collateral_Value
TCV = Total_Collateral_Value
Collateral_Sale_Indicator

Transaction Table

B_ID	Loan_ID	Transaction_Date	TT	Source_Of_Payment	TA	LCI
B1	Loan X	1-5-2015	100	200	1,200,000	Collateral A
B1	Loan Y	1-5-2015	100	200	800,000	Collateral A

B_ID = Borrower_ID
TT = Transaction_Type
TA = Transaction amount
LCI = Liquidated_Collateral_ID

This example uses outstanding weighted to calculate the amount Loan X and Y get from the proceeds of Collateral A
For simplicity the Origination and One Year Prior to Default Events are not given here

The field ***Collateral_Minimum_Cover_Ratio*** refers to the Collateral Cover ratio mentioned in the loan contract, if any (like a covenant). The information requested in this field is not a calculation after 2 other fields in the template! It is historical information, expectedly valid and unchanged from time of origination onwards! The banks are invited to report this, whenever possible, because it is useful for modelling of collateral recovery, particularly in Specialised Lending. The ratio should be consistent with figures reported in "Entity Assets" or "Total Syndicated Amount" or "Lender Limit" at Origination.

Important information on specific collateral types

The following data-fields apply to several collateral types (Collateral_Type = 420, 430, 500, 910):

- *Year_of_Construction:*

For Real Estate, Aircraft or Ship, it should be the year of completion and delivery. Old buildings could be marked with a proxy year just 50 years before today (this does not prevent entering even 300 years before, for heritage buildings).
For Project Finance: indicate year of start – rather than completion

- *State of Completion:*
  A consistency-check for this field and *Year_of_Construction* is implemented: If *Year_Of_Construction* is filled, *State_Of_Completion* can be left empty.

- *Contractual Revenue Indicator:*
  It is one way to describe the contract which generates the cash-flow of the project – e.g. with the Off- taker. It refers specifically to the number of years remaining, at the time of default, on the contract securing the revenue of the project; it does not refer to the Asset life, which may well exceed the contracted revenue life.

- *Debt Service Coverage Ratio:*

Another way to describe the contract which generates the cash-flow of the asset or the project, it is the % of debt covered by the revenue obtained from the contracting party (Ship Charterer, Aircraft lessee, Key Party in Project, Tenant of building property).
A major ratio in Project Finance; it can be filled in at various Event Types (origination, 1 Year prior to Default, Default).

For Project Finance, please consult the special guidance in chapter 15.

I. Frequently asked questions on the COLLATERAL table

1. *How should collateral be entered in the database in case they are added only after the default event?*

In that case the information on the collateral should be only entered for event type 5 =resolution (resp. event type 4 = post-default for un-resolved defaults) and not for event type 3 =default.

2. *We have a Collateral A attached to a certain Loan X. That Loan X has four different Event Types in the History table : Event Type 1 in 2006, Event Type 2 in 2011, Event Type 3 in 2012 and Event Type 5 in 2015. For the Collateral A Event Types, we only have Event Type 3 and Event Type 5 at the moment. Does GCD accept such a delivery?*

Yes. The collateral information (collateral value) is mandatory on event type 3 and mandatory on event type 5 in case the collateral has been sold. Collateral information on event type 1 and 2 is optional.

Note: the COLLATERAL table itself is optional and could be left empty completely. We advice to use this option ONLY at the onboarding phase and consequently fill the collateral table with at

least the mandatory fields as these fields are crucial for the assessment of loss data. In cases were even a mandatory field (such as the collateral_value at event type 3 for a collateralized loan) is not available, the escape clause (fill -1 in the field) can be used.

3. *What granularity level does GCD expects for the field "Postal_Code"?*

The field *Postal_Code* collects information on the collateral location on a **broader** area (not pointing to one specific address)

Our GCD data portal expects and accepts 4 digits in this field. If that is not possible for banks to deliver GCD expects City and State details. Please keep in mind that these fields are optional, but with a specific give-to-get rule. Only banks filling the field *Postal_Code with a miimum of 80%,* will get data back for that field.

4. *What if a certain real estate collateral (real estate portfolio) is spread over different locations with different postal codes?*

We usually would expect one location for a certain real estate collateral as the various buildings in a portfolio can also be sold separately. If needed, banks can combine certain assets, but then all collateral information (location, type, owner occupied status, …) should be similar.

5. *Does GCD collect any covenant information ?*

Covenants are conditions in a loan document where a borrower agrees to do or not do certain things. This can include maintaining financial ratios (liquidity etc.), limiting the amount of debt borrowed (gearing etc.), maintaining a certain amount of cash in the bank, not changing the type of business etc. etc. The purpose of these covenants is so the bank can see that the borrower remains in the same financial condition as when the loan was granted. The effect of a borrower breaking (breaching) a covenant is that the bank has the right to default the loan and ask for repayment. While covenants may help preserve the value of the borrower's balance sheet and hence preserve the value of some assets which have been secured as collateral, a covenant is not of itself a collateral.

One very popular covenant is called a "negative pledge". This is a promise by the borrower not to give collateral to other banks. It is not a collateral and hence is not on our collateral list. However, many collaterals have associated fields describing covenants or procedures to support collateral values.

m. PRICING table

Pricing Information as a whole is not required. Several fields in this table are indicated as Required Data Elements, simply to ensure relational database integrity.

Note: the information in this table is NOT used to calculate an economic/discounted LGD (see chapter 16 for more information on the calculation of this LGD). However, this data could be useful to all banks willing to implement their own analyses with a currency-adjusted discount rate.

n. TRANSACTION table

Global Credit Data uses detailed transaction types to account for any changes in outstanding between Default and Resolution or Default and Post Default

Transactions are classified:

- Money In: Reduces the outstanding
- Money Out: Adds to the outstanding
- No Influence: has no influence on the outstanding

TT	Description	Money In / Out / No Influence	Explanation
100	Principal Payment	Money In	Repayment of Principal, reduces outstanding
200	Interest Payment	Money In	Repayment of Interest, reduces outstanding
250	Recorded Book Value	Money In	Bank seizes ownership of the collateral, book value reduces outstanding
299	Post Resolution Payment	No Influence	Any payment post resolution, not taken into account in balancing and LGD calculations
300	Write Off	Money In	Write Off reduces the outstanding
310	Provision	No Influence	Only for unresolved defaults, estimation of the loss, no influence
400	Principal Advance	Money Out	Additional drawings post default therefore adds to the outstanding
410	Cash Out on Contingent Liability	Money Out	Post Default Cash Drawings on contingent facilities, adds to outstanding
420	Financial Claim	Money Out	Reflects the close out costs for a MtM facility, adds to outstanding
450	Interest Charged	Money Out	Interest charged to the client, adds to the outstanding
480	Fees and Commissions Received	Money In	Payments made for fees and commissions charged, reduces outstanding
490	Fees and Commissions Charged	Money Out	Any fees and commissions charged, adds to outstanding
500	Legal Expenses	Money Out	Any legal expenses, adds to outstanding
600	Administrator/Receiver Fees	Money Out	Any administrator/receiver fees, adds to outstanding
700	Liquidation Expenses	Money Out	Any specific liquidation expenses, adds to outstanding
800	Other External Work Out Costs	Money Out	Other costs for the work out, adds to outstanding

TT = Transaction_type

Detailed explanation of each of the transaction types can be found in the 'Global Credit Data LGD - EAD Platform Data Structure and Validation Guide'

Note: Two of the transaction types above have no influence on the amount outstanding

- TT 310: A provision is not a write-off/ charge off nor is it a "transaction"! The transaction type 310 has been only introduced to report the provision in case the submitted loan is unresolved ; it reflects what the bank foresees as possible loss. This information disappears when the Default is transferred to Resolved.
- TT299: Post-resolution payment. This transaction type is reserved for cashflows which happened after the resolution moment and therefore do also not explain the difference between the "Lender_Outstanding_Amount" at default moment (event type 3) and at resolution moment (event type 5)

The **transaction types 400** relates to loan / payments post default. Please consult our special example in chapter 15 to understand how post-default payments are treated in the GCD data model.

The **transaction types 410** relates to contingent facilities and is used to mark the change, post-default, of a contingent exposure into a cash exposure. The amount paid out to the beneficiary (of the L/C or the guarantee) reduces by that much the obligation of the lender. Please consult our special example in chapter 15 to understand how contingent facilities are treated in the GCD data model.

The **transaction type 420** relates to Mark-to-Market facilities. The financial claim (also called "cristallisation") is the final adjustment of the exposure at default due by the obligor in default on a mark-to-market facility (the final claim, if any, of the bank against the obligor after netting all exposures and collaterals at their market value on date of liquidation). Please consult our special example in chapter 15 to understand how mark-to-market facilities treated in the GCD data model.

The **transaction type 450** is introduced for any interest charged or chargeable by the lender to borrower) post default. By definition, interest due before default is deemed also part of the Exposure At Default.
Note: Interest Accrued is not part of the calculation of LGD, whether economic or nominal, but it is necessary in the validation rules on the cash flow balance (for more information on the Cash flow Balance Rules, see chapter 14) :

- If Interest has been collected post default (included in TT 100 or 200), TT 450 is necessary → Without it, the recoveries are nominally higher than the exposure.
- If Interest Accrued has been charged (entered by TT 450) but not collected, it must be written-off (TT 300); otherwise the cashflows don't balance. .

Transaction type 480 & 490: Fees and Commissions Charged, Fees and Commissions Received .These are extra fees and commissions perceived post default on additional services. If such fees have been perceived (entered by TT490 which is a credit entry), they must be "balanced" by TT 480 (debit entry), for the above mentioned cash flow validations.

Transaction type 500-800: these work-out costs (Legal expenses, Administrator or Receiver fees, Liquidation expenses, Other external cost) are all external, i.e. involving cash out from the lender, and are actually charged to the obligor. They increase its debt.

- Estimated internal workout cost is not to be reported (workout procedures and their internal cost vary too much among the banks, making their reporting of no use).

- Not all defaults involve external workout cost: therefore no indication is assumed to mean €0.

- External Workout Costs recovered can be attributed to TT100.

- If (large) Work-out cost is entered but nothing has been collected to cover it, an equivalent write-off should be entered, for balance purpose.

Transaction type 250 has been introduced for those cases where debt is converted into shares or into the direct ownership of what was formerly the collateral (re-possession). GCD expects in there the value at time of conversion– often reported as the resolution time. The amount will be the value reckoned by the lender in its books for the "new" asset, whether shares or building or ship, etc, and will be correspondingly the amount credited to the obligor in reduction of the debt.
In case the former collateral is later sold to a third party for a different value, use

- TT250 for the amount adjusting (+ or -) the initial entry or
- TT 229 in case the sale takes place after the official resolution moment.

Example:
initial value of collateral at time of conversion: EUR 1000 → book TT250 = 1000
actual sale of collateral at time of sale to third party: EUR 800 → adjust TT250 or 299 = - 200

The field transaction type corresponds with another field "Source_of_payment" which states the source of the cash-flow (see the data input structure for more information on this field).

o. Frequently asked questions on the TRANSACTION table

1. *What do banks do if they do not have all information (e.g. all transactions) available any longer for old default cases?*

Banks might have some very old default cases where they know the exposure at default and the write-off amount, but do not have access any longer to a solid record of cash flows post default.

In those case, we suggest to enter two records in the transaction table
1) Record write off amount as TT300
2) Record cash flow that came in (=difference between exposure at default and write-off) as TT100 with Source_of_Payment -1 (=unknown):

As transaction date proxy, banks may use then the resolution date, but need to be aware that this approach would affect the economic LGD (for more information on the calculation of various LGD's by GCD see chapter 16).
As this is considered an exception, please contact a GCD Executive before the submission.

2. *We see that the cash flow data needs to be submitted per loan. Under what circumstances can the delivery be grouped together to one delivery per borrower?*

GCD Data has to be delivered at loan/facility level. However, in some cases, the information necessary for the LGD estimation may be collected by institutions on a portfolio rather than on an individual basis. The strategy of recovery could be at borrower level rather than at loan level. Below a guidance on how to split at loan level the strategy of repayment/recovery:
We could have two different cases:

1. For SME, if the facilities are similar secured, facility type could be 900 (Aggregate Exposure) and no further split are necessary. GCD monitors that this will be exceptional.
2. For other Facility Asset Classes:

Example:

- Borrower with 2 loans (Loan A and Loan B)
- Defaulted on 22/03/2015, Event_Type=3 Exposure outstanding = 1000
- Event_type=4 incoming=100

- Loan A outstanding amount = 300
- Loan B outstanding amount = 700

If the information are available and the recovery is recorded on a specific loan then it has been submitted under that loan. If this information is not available, we recommend to split the recovery in proportion of the outstanding amount (if there are costs at borrower level they need to be splitted up as well).

Recovery=30 under Loan A and
Recovery=70 under Loan B.

3. *Is it relevant for GCD if the loan (of a defaulted borrower) is still accruing interest or not?*

GCD collects this information, because that gives an idea about the account risk profile for the, but this is not mandatory. Accrued interest can be recorded in transaction table under TT450.

If the *accrued interests are excepted but not yet collected, that amount should be part of the loss and it has to be recorded as write off (TT300).*
Example:
Outstanding Amount=300
Acrrued interest=20
TT450=20
if paid TT200=20
If not paid TT300=20 (Write off)
Outstanding Amount total =300

History

Loan_ID	Event_Type	Event_Date	Loan_Status	Lender_Limit	LIA	LOA
Loan A	3	1-6-2014	2	10,000,000		8,000,000
Loan A	5	1-6-2015	5	0		0

LIA = Lender_Issued_Amount
LOA = Lender_Outstanding_Amount

Transaction Table

Loan_ID	Transaction_Date	Transaction_Type	Transaction_Amount
Loan A	31-12-2014	450	400,000
Loan A	31-12-2014	200	400,000
Loan A	31-12-2014	100	2,000,000
Loan A	1-6-2015	450	150,000
Loan A	1-6-2015	200	150,000
Loan A	1-6-2015	100	6,000,000

Transactions:
Money In: 2,000,000 + 6,000,000 + 400,000 + 150,000 = 8,550,000
Money Out: 400,000 + 150,000 = 550,000
LOA at Default: 8,000,000
LOA at Resolution: 0

4. *What exactly means "court-controlled" in the field "Transfer_To_Court"?*

GCD does not have an extensive list of situations which fall under the definition of "court-controlled". During a workout procedure of a defaulted client, many situations can arise where the court does eventually have to rule and those situations should be considered as "court-controlled".

One example named by a bank:
The bank has the right to start an auction procedure if the client cannot meet its obligations to the bank. As part of the auction procedure it is possible that before the auction starts the bank

receives a private offer from a third party via the auction notary on the property. In some cases the bank believes this offer will exceed the offers from the auction and accepts it. However, following national law, one constraint in the purchase agreement is that the court in preliminary relief proceedings must approve the purchase agreement.
→ As the court has direct influence on the outcome, such a transaction should be regarded as court-controlled.

5. *Why is the field "Transfer_To_Court" part of the transaction table? Can a loan be court-ruled more than one?*

A bank can take court action on one loan or multiple loans, but you also (in theory) take court action only on one collateral and therefore end up in court on 2 different dates for the same loan if the bank has 2 collaterals.

6. *Does GCD collect only direct costs or also indirect costs associated with the workout of a defaulted borrower? Does it make a difference if the costs are charged to the client?*

GCD only collects direct costs in the TRANSACTION table (transaction type 500 to 800) which are charged to the client and increase the exposure to the client.

Assume some legal costs in a dispute with a defaulted client and 3 different scenarios:
1. The costs are fully paid by the customer
2. The costs are paid by the bank and the bank charges it to the customer
3. The costs are paid by the bank and the bank does not charge it to the customer. The cost go directly through the P&L process.

The first scenario does not need to be reported as it has no impact on the bank's loss. The second scenario is the typical case and need to be reported as TT 500. The third scenario has no impact on the cash flow after default for this specific client, and therefore, there is no need to record it either.

Also indirect costs are not collected. Indirect costs are general costs (e.g. the time costs of a restructuring department in general) directly paid through the P&L of a bank. They are not charged to the customer and many banks do not allocated them back to the transactions. They usually are an add-on in their LGD models.
Here the quote from a method survey conducted by the IIF in 2014, where 34 international banks have participated:

"*Half of the banks make an overall estimate of the indirect costs (internal collection and processing costs) while the other half do a more detailed cost collection each year and then allocate it to the cases. Only one bank attempts an actual internal time cost allocation to each case based on time spent. One interesting alternative method used by another bank is to see the indirect costs as a component of the discount rate and therefore not necessary to separately identify*."

Note any substantial costs need to be also reflected in the write-off in case they are not paid by the client to ensure a proper balancing of the loan.

7. *Cash cover and receivable pledges: If there is a recovery of these kinds of collateral, which "Source_Of_Payment" should be used?*

Please use "Sale of collateral" as source of payment

7. USER GUIDANCE ON THE CASH FLOW BALANCE

a. Introduction

Two of the most important validation rules concern the balancing cash flow sequence (Validation rules TRAN039/040). Banks deliver the outstanding loan amounts at different points in time, more concretely for the date of default and the date of resolution. For the period in between, the recovery period, the entire record of cash flows, including costs, interest, etc are reported in the TRANSACTION table. GCD checks if the cash flows balance to the amount of their booked loss. Only 5% underpayment and 10% overpayment is allowed. If the cash flow does not balance for a given loan, the validation rules will trigger an error and banks need to investigate and balance the transaction entries to pass the validation.
After complying with the automated validation rules that triggered an error message, banks can commit their data. Only if all errors are removed GCD accepts the data on the portal.

Summary:

- Balancing of all transactions for a given loan is essential
- Over- or Underpayments can cause Recovery Rates or LGDs that are too low or too high
- Validation Rules TRAN039 and TRAN040 ensure only balanced loans accepted
- A band with between -5% and 10% is acceptable

Formula applied to the cashflow balance:

$$\frac{\text{Money In} + (\text{LOA at Resolution or LOA at Post Default}) - \text{LOA at Default} - \text{Money Out}}{\text{LOA at Default} + \text{Principal Advance} + \text{Cash Out on Contingent Liability} + \text{Financial Claim}}$$

A loan is fully balanced if the numerator is 0
Calculation works on both resolved and unresolved loans

b. Examples

1. Cash

- Defaults on 1-6-2014 with Limit of 10 MLN EUR, LOA of 8 MLN
- Client repays 2 MLN on 31-12-2014, Limit lowered to 6 MLN, Client repays interest on time (500 bps)
- Loan Sold on 1-6-2015 for full 6 MLN

History

Loan_ID	Event_Type	Event_Date	Loan_Status	Lender_Limit	LIA	LOA
Loan A	3	1-6-2014	2	10,000,000		8,000,000
Loan A	5	1-6-2015	5	0		0

LIA = Lender_Issued_Amount
LOA = Lender_Outstanding_Amount

Transaction Table

Loan_ID	Transaction_Date	Transaction_Type	Transaction_Amount
Loan A	31-12-2014	450	400,000
Loan A	31-12-2014	200	400,000
Loan A	31-12-2014	100	2,000,000
Loan A	1-6-2015	450	150,000
Loan A	1-6-2015	200	150,000
Loan A	1-6-2015	100	6,000,000

Transactions:
Money In: 2,000,000 + 6,000,000 + 400,000 + 150,000 = 8,550,000
Money Out: 400,000 + 150,000 = 550,000
LOA at Default: 8,000,000
LOA at Resolution: 0

Balancing

$$\frac{8{,}800{,}000 + 0 - 8{,}000{,}000 - 800{,}000}{8{,}000{,}000 + 0 + 0 + 0} = \frac{0}{8{,}000{,}000} = \text{Balanced}$$

2. Contingent

- Committed Limit 15 MLN EUR; Issued Amount 10 MLN EUR;
- Defaults on 1-6-2014, no cash outstanding
- Post Default a cash drawing of 2 MLN EUR
- Client repays 2 MLN on 1-6-2015

History Table

Loan_ID	Event_Type	Event_Date	Loan_Status	Lender_Limit	LIA	LOA
Loan A	3	1-6-2014	2	15,000,000	10,000,000	0

Loan A	5	1-6-2015	4	0	0	0

LIA = Lender_Issued_Amount
LOA = Lender_Outstanding_Amount

Transaction Table

Loan_ID	Transaction_Date	Transaction_Type	Transaction_Amount
Loan A	31-12-2014	410	2,000,000
Loan A	1-6-2015	100	2,000,000

Transactions:
Money In: 2,000,000 Money Out: 2,000,000 = 2,000,000
LOA at Default: 0 LOA at Resolution: 0

Balancing

$$\frac{2{,}000{,}000 + 0 - 0 - 2{,}000{,}000}{0 + 0 + 2{,}000{,}0000 + 0} = \frac{0}{2{,}000{,}000} = \text{Balanced}$$

3. Mark to Market

- Committed Limit 10 MLN EUR; Defaults on 1-6-2014
- Closed out on 31-12-2014, close out costs 2 MLN
- Client repays 1.5 MLN on 1-6-2015, remaining is written off (0.5 MLN)

History Table

Loan_ID	Event_Type	Event_Date	Loan_Status	Lender_Limit	LIA	LOA
Loan A	3	1-6-2014	2	10,000,000		0
Loan A	5	1-6-2015	3	0		0

LIA = Lender_Issued_Amount
LOA = Lender_Outstanding_Amount

Transaction Table

Loan_ID	Transaction_Date	Transaction_Type	Transaction_Amount
Loan A	1-6-2014	420	2,000,000
Loan A	1-6-2015	100	1,500,000
Loan A	1-6-2015	300	500,000

Transactions:
Money In: 1,500,000 + 500,000 = 2,000,000

Money Out: 2,000,000
LOA at Default: 0 LOA at Resolution: 0

Balancing

$$\frac{2{,}000{,}000 + 0 - 0 - 2{,}000{,}000}{0 + 0 + 0 + 2{,}000{,}0000} = \frac{0}{2{,}000{,}000} = \text{Balanced}$$

c. Frequently asked questions on the cashflow balance

1. *How to deal with payments received post resolution? How to ensure that the cashflows are balanced in that scenario?*

Example: Assume a loan USD 5,000,000 outstanding at time of default with the following cash flows after default moment (note: the write-off moment (TT300) is earlier than the recovery amounts):

TRANSACTION_DATE	TRANSACTION_AMOUNT	TRANSACTION_CURRENCY	TRANSACTION_TYPE
31/10/2005	5,000,000	USD	300
30/04/2006	1,000,000	USD	100

GCD is checks whether the cash flow is balanced with the following calculation:

	TT100	Principal	$ 1,000,000	
	TT200	Interest Payment		
	TT250			
	TT300	Charge-off	**$ 5,000,000**	**10/31/2005**
	LOA Event 5		$ -	
		Sum	**$ 6,000,000**	
Minus	OAD		$ 5,000,000	
	TT400	Principal Advance		
	TT410	Cash out on contingent facility		
	TT 420	Financial claim		
	TT450	Interest Charged		
	TT500	Legal Expenses		
	TT600	Administrator/Receiver Fees		
	TT700	Liquidation Expenses		
	TT800	Other External Workout Costs		
		Sum	**$ 5,000,000**	
Divided by	OAD		$ 5,000,000	
	TT400	Principal Advance		
	TT 410	Cash out on Contingent facility		
	TT420	Financial Claim		
		Sum	$ **6,000,000**	
		Balance Cashflow_ Excess Formula		17%
		Excess Cash Flow (charge-off recovery at time of liquidation)	***$ 1000,000***	***04/30/2006***

As the validation rules only allow an excess cashflow of max. 10%, we advice the banks to do the following:

Option 1:

- Book the post-resolution amounts as TT 100 (already done, see example above)
- Net the original write-off amount with the additional money received.(adjust from 5 mil to 4 mil). Adjust the resolution date at 04/30/2006

Option 2:

- Book the post-resolution amounts as TT299. TT299 is not part of the cashflow balancing test and therefore the loan would balance. In our LGD calculation we are not including post resolution cashflow. However banks can apply their own calculation and include the post resolution cashflow if they want to.

For post resolution costs there is no appropriate transaction type, so only option one could be applicable (book the cost as costs, adjust the write off amount and adjust the resolution date accordingly).

2. *Is the cashflow balance also calculated for unresolved defaults?*

Yes, the cashflow balance is both calculated for resolved and unresolved cases.

Example:

- Borrower with 1 loan
- Defaulted on 22/03/2015 , Exposure outstanding = 100
- Reporting date: 22/02/2017, Exposure outstanding = 60, Provision = 50

→ The following entries are expected in the HISTORY table:

- *Lender_Outstanding_Amount* at event type 3 = 100
- *Lender_Outstanding_Amount* at event type 4 = 60

→ The following entries are expected in the TRANSACTION table:

- TT100 (principle payment) = 40
- TT310 (provision) = 50

→ Balancing formula:

$$\frac{\text{Money In} + (\text{LOA at Resolution or LOA at Post Default}) - \text{LOA at Default} - \text{Money Out}}{\text{LOA at Default} + \text{Principal Advance} + \text{Cash Out on Contingent Liability} + \text{Financial Claim}}$$

= (40 + 60 – 100) / 100 = 0%

3. *What if the banks had significant expenses (e.g. legal costs) and those are not recovered by the client? Would the bank then need to adjust the write-off amount for that to allow the cashflow to balance?*

Yes, see the guidance on the transaction type 500 to 800: "These work-out costs (Legal expenses, Administrator or Receiver fees, Liquidation expenses, Other external cost) are all external, i.e. involving cash out from the lender, and are actually charged to the obligor. They increase its debt.

- Estimated internal workout cost is not to be reported (workout procedures and their internal cost vary too much among the banks, making their reporting of no use).

- Not all defaults involve external workout cost: therefore no indication is assumed to mean €0.

- External Workout Costs recovered can be attributed to TT100.

- If (large) Work-out cost is entered but nothing has been collected to cover it, an equivalent write-off should be entered, for balance purpose."

In case the legal expenses are not charged to the client, they form mostly part of the banks "indirect costs" and are not reported to GCD (see FAQ on the transaction table)

This applies to both resolved and unresolved cases.

4. *What if a defaulted borrower has missed out on a significant interest payment? How is that properly booked to ensure balance?*

In case the missed interest payment happened before default, the amount should be part of the outstanding amount at event type 3.

In case the missed interest payment happens after default, the amount

- should be booked as TT450: Interest charged. At resolution moment - in case the client was not able to pay the interest eventually - the amount is part of the write-off (TT300).
- Alternatively, the bank can also decide to not book the TT450. In that case the missed payment interest payment is also not part of the write-off amount.

Banks should decide which methods fits best to their internal systems.

For unresolved cases or for cases where the borrower goes to back to performing at resolution moment, the missed interest payment should be part of the outstanding amount at event type (4 for unresolved cases, 5 for resolved cases).

8. Specific Examples

a. How to input Standard Cash Facilities

Situation:

- Committed Limit 10 MLN EUR; Originates at 1-10-2000;
- First Draw 6 MLN;
- 8 MLN outstanding at 1 year prior to default
- Defaults on 1-6-2014 with LOA of 8 MLN
- Client repays 2 MLN on 31-12-2014, Limit lowered to 6 MLN, Client repays interest on time (500 bps)
- Loan Sold on 1-6-2015 for full 6 MLN

History Table

Loan_ID	Event_Type	Event_Date	Loan_Status	Lender_Limit	LIA(*)	LOA(**)
Loan A	1	1-10-2000	1	10,000,000		6,000,000
Loan A	2	31-12-2013	1	10,000,000		8,000,000
Loan A	3	1-6-2014	2	10,000,000		8,000,000
Loan A	5	1-6-2015	5	0		0

(*) LIA = Lender_Issued_Amount
(**)LOA = Lender_Outstanding_Amount

Notes:

- Cash Facility: therefore LIA is empty
- Loan Exits portfolio: therefore Limit and LOA are both 0 at resolution
- Loan_Status = 5: Sold Post Default

Transaction table

Loan_ID	Transaction_Date	Transaction_Type	Transaction_Amount
Loan A	31-12-2014	450	400,000
Loan A	31-12-2014	200	400,000
Loan A	31-12-2014	100	2,000,000
Loan A	1-6-2015	450	150,000
Loan A	1-6-2015	200	150,000
Loan A	1-6-2015	100	6,000,000

Transactions:
100 – Principal Payment at 31-12-2014: accounts for the repayment of the principal
200 – Interest Payment: repayment of the interest charged
450 – Interest Charged: interest charged post default

100 – Principal Payment at 1-6-2015: Sale of the loan and must be reported with Source_Of_Payment = 700 (Sale of Credit) and Price_Of_Credit = 1 (6 MLN/6 MLN – 100% in full decimals = 1)

b. How to input Contingent Facilities (case 1)

Situation:

- Contigent Facility such as Performance Bond, Letter of Credit, …
- Committed Limit 15 MLN EUR;
- Issued Amount 10 MLN EUR; Originates at 1-10-2000;
- Defaults on 1-6-2014, no cash outstanding
- Post Default a cash drawing of 2 MLN EUR
- Client repays 2 MLN on 1-6-2015

History Table

Loan_ID	Event_Type	Event_Date	Loan_Status	Lender_Limit	LIA (*)	LOA(**)
Loan A	1	1-10-2000	1	15,000,000	10,000,000	0
Loan A	2	31-12-2013	1	15,000,000	10,000,000	0
Loan A	3	1-6-2014	2	15,000,000	10,000,000	0
Loan A	5	1-6-2015	4	0	0	0

(*) LIA = Lender_Issued_Amount
(**)LOA = Lender_Outstanding_Amount

Notes:

- Contingent Facility: therefore LOA is 0
- Loan Exits portfolio: therefore Limit, LIA and LOA are all 0 at resolution
- Loan_Status = 4: Paid in Full Post Default

Transaction Table

Loan_ID	Transaction_Date	Transaction_Type	Transaction_Amount
Loan A	31-12-2014	410	2,000,000
Loan A	1-6-2015	100	2,000,000

Transactions:
410 – Cash Out on Contingent Liability: cash drawing on the contingent facility
100 – Principal Payment at 1-6-2015: accounts for the repayment of the post default cash drawing

Notes:

- If a contingent facility (e.g. a guarantee) has been paid out by the lender (by the debit of a cash account) before the obligor has gone in default, it is no longer outstanding as a guarantee at the date of default!

c. How to input Contingent Facilities (case 2)

Situation:

- Committed Limit 15 MLN EUR;
- Issued Amount 10 MLN EUR; Originates at 1-10-2000;
- Defaults on 1-6-2014, no cash outstanding
- No drawings Post Default
- Loan is cancelled on 1-6-2015

History Table

Loan_ID	Event_Type	Event_Date	Loan_Status	Lender_Limit	LIA(*)	LOA(**)
Loan A	1	1-10-2000	1	15,000,000	10,000,000	0
Loan A	2	31-12-2013	1	15,000,000	10,000,000	0
Loan A	3	1-6-2014	2	15,000,000	10,000,000	0
Loan A	5	1-6-2015	9	0	0	0

(*) LIA = Lender_Issued_Amount
(**)LOA = Lender_Outstanding_Amount

Transaction Table

Loan_ID	Transaction_Date	Transaction_Type	Transaction_Amount

Notes:

- Contingent Facility: therefore LOA is 0
- Loan Exits portfolio: therefore Limit, LIA and LOA are all 0 at resolution
- Loan_Status = 9: Cancelled without usage
- Loan is cancelled , no transactions

d. How to input Contingent Facilities (case 3)

Situation:

- Letter of Credit for 10 MLN EUR outstanding when Obligor defaults on 31/12/2005;
- Origination date: 1-10-2013

- L/C is paid out for 8 MLN EUR on 31/03/2006; balance 2 MLN EUR not called when L/C matures on 30/06/2006;
- default is resolved on 31/12/2006 with a loss of 8 MLN EUR:

History Table

Loan_ID	Event_Type	Event_Date	Loan_Status	Lender_Limit	LIA(*)	LOA(**)
Loan A	1	1-10-2000	1	10,000,000	10,000,000	0
Loan A	2	31-12-2004	1	10,000,000	10,000,000	0
Loan A	3	31-12-2005	2	10,000,000	10,000,000	0
Loan A	5	31-12-2006	3	0	0	0

Note:

- Loan Status 3 = Partial Write off

Transaction Table

Loan_ID	Transaction_Date	Transaction_Type	Transaction_Amount
Loan A	31/03/2006	410	8,000,000
Loan A	30/06/2006	300	8,000,000

Note: If commissions have been perceived, they can be reported under Transaction 480 on the debit side and Transaction 490 on the credit side

e. How to input unfunded participations

Unfunded participations are similar to guarantees and other contingent exposures and therefore are treated in the data model in the same way.

f. How to input Mark-to-Market Facilities (case 1)

Introduction

Mark-to-Market liabilities (see the table "facility_type" in the data input structure) need to be carefully treated when entered into the GCD database.

Usually, when the deal is caught in the obligor's default, it may go on for some time after the date of default until maturity or a forced termination, and this may or may not result into a claim from the lender on the obligor. The "Financial Claim", i.e. the net amount due, if any, is

calculated post default by the lender through netting all positions related to the facility. (No Collateral to select since the exposure is reported net of collateral)

- If the netting ends of "out of money": *Lender_Outstanding_Amount* at event_type 3 (default) = 0 and the claim to be reported by TT420
- If the netting ends up "in the money": There is no claim => no LGD case! Facilities reporting *Lender_Outstanding_Amount* at event_type 3 (default) = 0 and no Financial Claim have their statistical value, even with no LGD calculated on them and therefore still should be reported

MtM movements between default and close out dates do NOT need to be reported, since LGD is calculated on the financial claim. If the default is reported before its final resolution and if there are successive adjustments of the financial claim, use TT420 correspondingly.

Note: When Transaction 420 is reported, it implies a consecutive recovery (Transaction Type 100) or write-off (TT 300) plus misc. (for extra costs).
The recovered amount might be a little tricky to find out: if the "closed-out amount" has been debited from an overdrawn account (even within a pre-default approved overdraft facility), this should not be mistaken for a recovery! In short, it is important for statistical significance, to single out and report the amounts of recovery and loss that are specific to the mark-to-market facility.

Example:

- Committed Limit 10 MLN EUR; Originates at 1-10-2000;
- Defaults on 1-6-2014
- Closed out on 31-12-2014, close out costs 2 MLN; "out of the money"
- Client repays 1.5 MLN on 1-6-2015, remaining is written off (0.5 MLN)

History Table

Loan_ID	Event_Type	Event_Date	Loan_Status	Lender_Limit	LIA(*)	LOA(**)
Loan A	1	1-10-2000	1	10,000,000		0
Loan A	2	31-12-2013	1	10,000,000		0
Loan A	3	1-6-2014	2	10,000,000		0
Loan A	5	1-6-2015	3	0		0

(*) LIA = Lender_Issued_Amount
(**)LOA = Lender_Outstanding_Amount

Notes:

- MtM Facility: therefore LIA is empty and LOA is 0
- Loan Exits portfolio: therefore Limit and LOA are both 0 at resolution
- Partially Written Off: Loan Status = 3

Transaction Table

Loan_ID	Transaction_Date	Transaction_Type	Transaction_Amount
Loan A	1-6-2014	420	2,000,000
Loan A	1-6-2015	100	1,500,000
Loan A	1-6-2015	300	500,000

Transactions:
420 – Financial Claim: Accounts for the close out costs, must always have a transaction date of date of default
100 – Principal Payment: accounts for the repayment of part of the close out costs
300 – Write Off (Charge Off): the write off of the remaining claim

g. How to input Mark-to-Market Facilities (case 2)

Situation:

- Committed Limit 10 MLN EUR; Originates at 1-10-2000;
- Defaults on 1-6-2014
- Closed out on 31-12-2014, closed out "in the money": client receives 0.4 MLN

History Table

Loan_ID	Event_Type	Event_Date	Loan_Status	Lender_Limit	LIA(*)	LOA(**)
Loan A	1	1-10-2000	1	10,000,000		0
Loan A	2	31-12-2013	1	10,000,000		0
Loan A	3	1-6-2014	2	10,000,000		0
Loan A	5	1-6-2015	9	0		0

Notes

- MtM Facility: therefore LIA is empty and LOA is 0
- Loan Exits portfolio with positive close out: Limit and LOA are both 0 at resolution
- Loan Status 9: Cancelled without Usage

Transaction Table

Loan_ID	Transaction_Date	Transaction_Type	Transaction_Amount

Transactions:
Loans is cancelled, no transactions

h. How to input a restructuring after default

What happens

- During a default the restructuring department often restructures the loans that are in default into "new" loans

Analysts however want to know what happened to the original loan that went into default

The solution

- Always restructure back to the original loan(s) that went into default: *limits, outstanding and payments*
- Also applicable in case of transfer payments
- This can be one-to-many, many-to-many or many-to-one (see example)

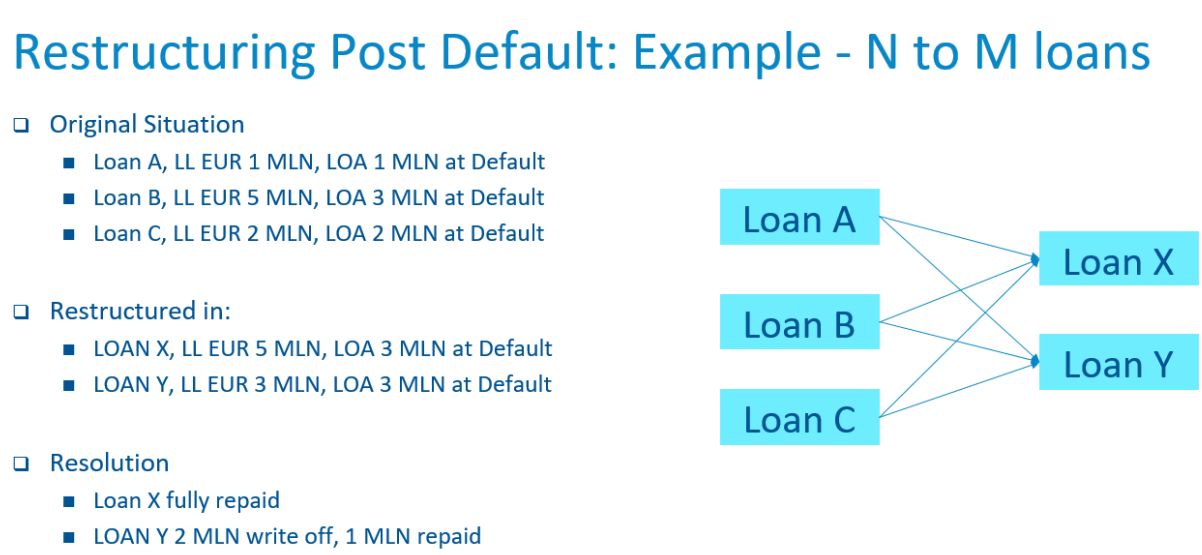


FIGURE 18: RESTRUCTURING POST-DEFAULT

History Table

Loan_ID	Event_Type	Lender_Limit	Lender_Outstanding_Amount
Loan A	3	1,000,000	1,000,000
Loan A	5	0	0
Loan B	3	5,000,000	3,000,000
Loan B	5	0	0
Loan C	3	2,000,000	2,000,000
Loan C	5	0	0

Transaction Table

Loan_ID	Transaction_Type	Transaction_Amount

Loan A	100	333,333
Loan A	300	666,667
Loan B	100	3,000,000
Loan C	100	666,667
Loan C	300	1,333,333

Notes:

- Allocate cash flows back to original loans taking into account as much as possible terms of the loans, i.e. seniority, collateralisation, etc., and characteristics of the restructuring.
- Fresh money, after default, is accounted by Transaction Type 400 (not relevant in this example)

Note: If banks have the data available, they should also report the COLLATERAL table and the PRICING table at event type 5 also for the original loan. To be concrete: If Loan B replaces loan A, banks should enter the collateral/pricing information on Loan B under Loan A. For example if the bank has a collateral under loan A and then it is transferred to loan B, then it is sold this should be reported under the collateral under loan A.

i. How to input post default facilities

What is a Post Default Facility

- ✓ Are used when extra money on new loans is granted Post Default
- ✓ Their origination is by definition post default
- ✓ Are never the sole loan from one borrower
- ✓ Usually happens to "help" the borrower survive the default period and eventually end up "Return Performing"
- ✓ How to register
- ✓ No origination and 1 YR PTD Event
- ✓ Default date = default date of the other loans of the borrower
- ✓ Lender Limit = 0 and Lender Outstanding Amount = 0 at default
- ✓ Principal Advance (TT400) accounts for the money out at the moment it is granted

Post Default Loans are excluded from any validations on presence of Origination and 1 YR PTD Events

Example:

- Borrower goes into default at 1-4-2014 with Loan A for 20 MLN
- Post Default on 1-10-2014 Loan B is granted for 10 MLN and completely drawn
- During default Borrower repays half of Loan A and half of Loan B, including interest (200 bps)
- Borrower goes Return to Performing on 1-6-2015 with both loans but with a smaller credit line

History Table

Loan_ID	Event_Type	Event_Date	Lender_Limit	Lender_Outstanding_Amount
Loan A	1	1-10-2000	20,000,000	20,000,000
Loan A	2	31-12-2013	20,000,000	20,000,000
Loan A	3	1-4-2014	20,000,000	20,000,000
Loan A	5	1-6-2015	10,000,000	10,000,000
Loan B	3	1-4-2014	0	0
Loan B	5	1-6-2015	5,000,000	5,000,000

Notes

- Loan B does not have an Event_Type = 1 and 2
- Loan B has the same default date as loan A but a Lender Limit and LOA of 0

Transaction Table

Loan_ID	Transaction_Date	Transaction_Type	Transaction_Amount
Loan A	31-12-2014	450	400,000
Loan A	31-12-2014	200	400,000
Loan A	1-6-2015	100	10,000,000
Loan B	1-10-2014	400	10,000,000
Loan B	31-12-2014	450	50,000
Loan B	31-12-2014	200	50,000
Loan B	1-6-2015	100	5,000,000

Transactions:
100 – Principal Payment: accounts for the repayment of the principal
200 – Interest Payment: accounts for the repayment of the interest charged
400 – Principal Advance: this accounts for the money granted on the Post Default Facility → note the date
450 – Interest Charged: accounts for the interest that is charged post default

j. How to input project finance deals

Introduction

Project Finance focuses on raising funds to finance a Special Purpose Vehicle (SPV) with no assets other than the project and project-related contracts and permits. The SPV has a single business activity from which the providers of the funds look to the cash flow from the project as the primary source of repayment. Project Finance is used to finance a wide range of projects such as electric power plants, offshore oil projects, mines, factories, telecommunications systems etc. The project company has access to credit sources that may otherwise not be available to the sponsor and involves complex structures that maximise expertise whilst limiting and transferring risk. The common credit characteristic of all project finance loans is the reliance on a specific asset to generate cash flow as the sole source of principal and interest payments.
The parties involved in a project finance transaction usually involve the sponsors, the lenders, the construction contractors (EPC), operations and maintenance contractors (O&M) both of whom may act as sponsors and supply additional equity to the project. Suppliers of raw materials

and end buyers may enter into long-term agreements (supply or offtake contracts) thereby adding to the predictability of the cash flows.

Lenders accept a significant portion of the risks involved in constructing and operating a project and receive the best possible security in the project assets. A perfected security interest or a fixed charge protects the project from other creditors of the borrower. In the event of a default, security interests allow the lenders to realise on the collateral by selling the asset to the highest bidder.

Project finance is an efficient and necessary way for governments and private companies to fund capital intensive and strategically important industries. Where underlying business risk is relatively predictable with stable resilient cashflows, this funding is successful and essential to support economic activity. Projects are structured to withstand volatile market and performance risks with principal and interest repaid over a longer time horizon than traditional corporate loans. Thus, typical structures feature key mitigants that seek to reduce the loss in event of default and the probability of default occurring. Covenants, including forward looking covenants increase the projects ability to retain cashflow and act as early-warning signals of tightening liquidity positions and pending default.

Input in the collateral table

This section details the key project finance data that is collected in the Collateral Table: the project itself is seen as the collateral to the lenders (they control it through a set of legal means combining debenture, ownership of the SPV – special purpose vehicle -, mortgage on the land and plant, assignment of proceeds, etc.).

All Project Finance assets reported (as defined by Facility Asset Class=7) must have at least one project reported as collateral i.e. choosing Collateral Type=910 in the Collateral Table. The following key data items must then be provided to describe the underlying project and related cashflows that drive LGD:

1. Project Type
2. Collateral Value
3. Project Finance Technology
4. State of Completion
5. Year of Construction
6. Nature of Contract
7. Contractual Revenue Indicator
8. DSCR
9. LLCR
10. PLCR

The *Collateral_Value* for a project finance collateral type is the total value of expected cash flows from the project and should represent the value of the project via internal assessment of future cash flows as at the event date. This is calculated in base case financial models by the banks and is calculated by a NPV of future cash flows at the CFADS line.

Collateral Value = NPV (CFADS over Project Life)

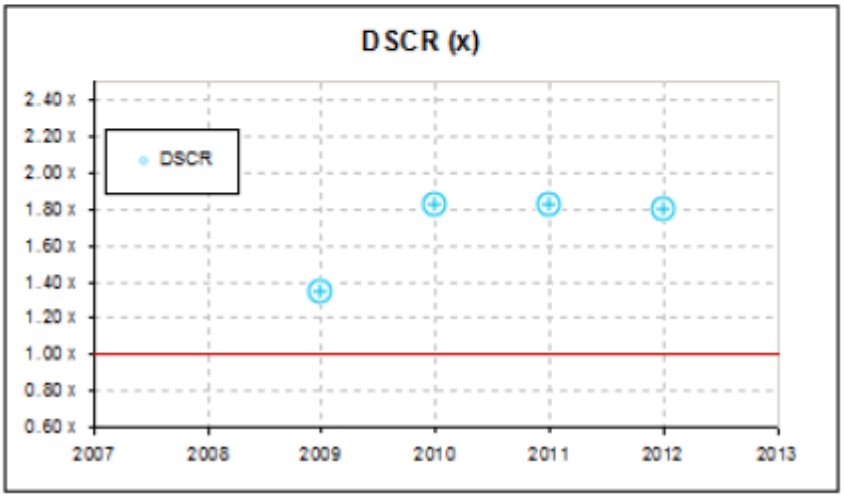
Project Life is considered to be appropriate as the concession term is contracted and hence the full concession life's cash flows should be available to be used in any forecast valuation. Any reduction of the forecast period will be too conservative. The life of the project usually extends beyond the life of the project debt and varies depending on the project type but does not extend beyond the useful life of the asset unless the forecast includes appropriate provision for capital expenditure to renew or refurbish that asset. Projects use the concession life and for deals where there is no concession, the asset life or a shorter period based on fuel/offtake contracts is used. For a resources project the reserve life or project life is used. Project Life is determined by the underlying project due diligence and the views of specific experts from the Bank in assessing the underlying transaction. Project Life is also assessed by the Independent Technical Experts or Engineers based on the generally accepted useful life of the underlying technology.
Collateral Value can also be provided from external market valuations.

Debt Service Coverage Ratio (DSCR)
Coverage tests are an important structural mechanism to protect the project from deterioration. If coverage tests are failing, Cash flows are locked and distributions are withheld. Projects usually have high debt service coverage ratios based on robust, stable Cash flows that are likely to withstand a variety of potential scenarios. Thus the DSCR can be an indicator of the level of expected recovery from a project during default.
The DSCR is defined as the Cash Flow Available for Debt Service (CFADS) divided by the scheduled interest and principal payments. The ratio captures the level of cash flow of the project available to meet debt service obligations whilst measuring the project's cash flow generation ability. A ratio of 1.00x would thus mean that the project cash flows are equal to total debt service in the period. A ratio below 1.00 would mean the debt service cannot be fully paid from the project cash flows.
The DSCR ratio should include any Debt Service Reserve Account balances (DSRA) which act as a buffer for cashflows and can be used where cashflows are below those levels required service debt.

Period Start	1-Jan-09	1-Jan-10	1-Jan-11	1-Jan-12
Period End	31-Dec-09	31-Dec-10	31-Dec-11	31-Dec-12
Construction				
Operations				

CFADS vs Debt Service

Year: Calendar	2009	2010	2011	2012
Interest	4,406	3,403	2,337	1,204
Principal	16,056	17,060	18,126	19,259
Total Debt Service	20,462	20,462	20,462	20,462
CFADS	27,438	37,382	37,259	36,758
Debt Service	20,462	20,462	20,462	20,462
DSCR	1.34 x	1.83 x	1.82 x	1.80 x



DSCR submitted should best reflect the level of cash flow cover as at the Event Date of which the collateral is submitted (i.e. one year prior to default, at default etc.) and should be one of the following:

1. Most recent actual DSCR as per project financial statements (usually provided on a quarterly basis)
2. Base case DSCR as per financial base case model (this will require access to the base case model if the most recent ratio is not documented in annual credit review files)

CFADS is calculated by netting out

- Revenue,
- Operating Expenditure (OpEx),
- Capital Expenditure (CapEx),
- Debt & Equity Funding,
- Tax and Working Capital Adjustments.

The annual Cash flow Waterfall below clearly demonstrates the calculations.

Period Start	1-Jan-09	1-Jan-10	1-Jan-11	1-Jan-12
Period End	31-Dec-09	31-Dec-10	31-Dec-11	31-Dec-12
Construction				
Operations				
Cashflow				
Revenue				
Spot Sales	73,265	88,685	88,732	88,532
Interest Income				
Total	73,265	88,685	88,732	88,532
OpEx				
Variable OpEx	(24,968)	(27,958)	(35,158)	(35,584)
Fixed OpEx	(1,500)	(1,500)	(1,500)	(1,500)
Total	(26,468)	(29,458)	(36,658)	(37,084)
CapEx				
Expansion CapEx	(8,000)	(8,000)	(3,000)	(3,000)
Exploration CapEx	(4,500)	(4,500)	(2,500)	(2,500)
Total	(12,500)	(12,500)	(5,500)	(5,500)
Cashflow before Funding	34,297	46,727	46,574	45,948
Funding				
Debt	-	-	-	-
Equity	-	-	-	-
Total	-	-	-	-
Corporate Income Tax	(6,859)	(9,345)	(9,315)	(9,190)
Working Capital Adjustments				
CFADS	27,438	37,382	37,259	36,758
Debt Service				
Interest	(4,406)	(3,403)	(2,337)	(1,204)
Principal	(16,056)	(17,060)	(18,126)	(19,259)
Total	(20,462)	(20,462)	(20,462)	(20,462)
Cash Available to Equity	6,975	16,919	16,797	16,296

Nature Of Contract & Contractual Revenue Indicator

Nature Of Contract must reflect the key party that is purchasing the output from the project. The Contractual Revenue Indicator will capture the length of this contract between the project and the purchaser- this is usually defined as an 'Offtake Agreement'. A project may have multiple key parties that provide some sort of support/guarantee to the project in the form of 'Nature Of Contract' i.e. a security that cash flows are contracted to a specific offtaker e.g. government offtake, local authority, etc.

The customer is the key party who is willing to purchase the project's output, whether the output be a product (electrical power, extracted minerals, etc.) or a service (electrical power transmission or pipeline distribution). The goal for the project company is to engage customers who are willing to sign long-term, offtake agreements.
These agreements and customer must be reflected here in nature of contract and selected as above. If multiple offtakers exist the lender can choose '500-Multiple Companies/Tenants'.

The length of the contract reflected in 'Nature Of Contract' must be indicated by the 'Contractual Revenue Indicator'.

Both of these fields should be completed in unison referring to the same contract.
Contractual Revenue Indicator should be used to describe the contract – e.g. with thtaker which generates the cashflow of the project. It refers specifically to the number of years remaining, at the time of default, on any contract, which secures the revenue of the project; it does not refer to the Asset life, which may well exceed the contracted revenue life.

Project Tail

The 'project tail' as a new fields approved by Methcom. This reflects the project tail i.e. the time difference, in years, between the end of the planned debt amortisation and end of the operating period. A longer tail period would be expected to result in high cash flow recoveries) as this is relevant when looking at LGD and recovery of cash flows. **The project tail must be reported in number of years i.e. 5 etc.**
A reserve tail for resources may also be included here (i.e. where the lenders have ignored say 25% of the proven resources). However this must be converted to years.

Loan Life Cover Ratio (LLCR)

LLCR is a measure of the number of times the cash flow over the scheduled life of the loan can repay the outstanding debt balance. An LLCR of 2.00x means that the Cash flow Available for Debt Service ("CFADS"), on a discounted basis, is double the amount of the outstanding debt balance. An LLCR of 1.00x means that the CFADS, on a discounted basis, is exactly equal to the amount of the outstanding debt balance.
The LLCR is calculated as:
LLCR = NPV [CFADS over Loan Life] / Debt Balance b/f
The LLCR must be reported to two decimal places as per the DSCR I.E. 1.05.

Project Life Cover Ratio ("PLCR")

PLCR is similar to the LLCR and is the ratio of the net present value of the cash flow over the remaining full life of the project to the outstanding debt balance in the period.
The PLCR is calculated as:
PLCR = (NPV/CFADS over Project Life/ (Debt Balance b/f)
The PLCR must be reported to two decimal places as per the LLCR & DSCR I.E. 1.05.
Unlike the LLCR where the CFADS is calculated over the scheduled life of the loan, the cash flow for PLCR is calculated over the "Project Life".

k. How to input and recognize trade finance facilities

Trade finance signifies financing for trade, and it concerns both domestic and international trade transactions. A trade transaction requires a seller of goods and services as well as a buyer. Banks and financial institutions can facilitate these transactions by financing the trade.

The ***Trade_Finance_Indicator***, introduced in 2014, is to mark more reliably data relating to Trade Finance. Facilities to trade are commonplace but defaults are rare and uneasy to spot. This indicator allows consistency checks with other Trade Finance criteria and facilitates selecting and analysing data.

Two remarks on Trade Finance:

1) the GCD database does not have a separate ***Facility_Asset_Class*** for Trade Finance but the *Trade_Finance_Indicator* is the easy means to extract a specific Trade Finance dataset.
2) Often in Trade Finance (sometimes in other activities) the risk accepted by the lender is actually not on its customer (the initial obligor) but on a third-party bank, even though the corresponding transactions are still booked for convenience under the former's name; a default on such transactions may only come from the third-party bank and must be reported under FAC 3 (for the description of these transactions, see specific Facility Types 803 & 813).

The *Trade_Finance_Indicator* will mainly but not necessarily come along with certain *Facility_Types*. For further information, see the tab "facility_type" in the data input structure which lists all facilities and whether or not we expect them to be related to Trade Finance.

Whatever the category, selecting the facility type requires answering 2 questions about the nature of the risk at the time of default (the default being the focus of our attention!):
Q 1: was the risk on the trading entity client of the lender, or a third party, often another bank?
Q 2: was the risk "contingent"? i.e. booked on- or off-B/S at the time of default?

To answer Q 1, there are 4 situations of risk on another bank:

- confirmation of Letter of Credit (export L/C): see FT **813**
- negotiation without recourse of documents under export L/C: see FT **803**
- discount of usance, i.e. differed payment as per terms of export L/C: see FT **803**
- purchase, without recourse, of receivables or bills accepted by another bank: see FT **803**.

813 Confirmed Export L/C Note: this is a contingent facility at the time of default!
The lender has confirmed to its client beneficiary of a L/C issued by a bank, generally but not systematically from another country, that it will pay that L/C upon presentation of the required documents, without recourse. The actual risk is on the L/C opening bank, not on the client of the confirming bank - even if the transaction is booked under the client's name! Thus, the party in default under this facility is the opening bank; hence it comes in FAC 3 "Banks".
The facility includes open and silent confirmations (this difference in procedure relates probably to the identity of the opening bank and will be translated in its rating or "pd").

If a confirmed L/C has been reported in default, the next question is what has happened post default, within the validity of the confirmation:
If either the beneficiary has not presented the required documents or it has presented documents not complying with the terms of the L/C, the confirmation risk did not materialise and has been "waived" at the end of its validity period (see Transaction Type "Waiver");
If the beneficiary has presented complying documents, the confirming bank has paid out their value (or discounted the usance if the L/C included such differed term of payment), which must be marked in the cash-flow by Transaction Type 410 (see further below), followed by whatever has been recovered eventually from the opening bank.

803 Bill Accepted by Bank

This Facility Type is reserved to the 3 cases where the risk is, at the time of default, in cash out and on another bank, even though the underlying commercial deal is with the client trader:

- negotiation without recourse of documents under export L/C,
- discount of usance, i.e. differed payment as per terms of export L/C,
- purchase, without recourse, of receivables or bills accepted by another bank.

Thus, 803 is the same risk as 813 but it was already at the "cash" stage when the default has occurred.

The party in default is the L/C opening bank or the bank or institution which has endorsed the bill. This comes in FAC 3 "Banks".

When the answer to Q 1 is "client = obligor", the answer to Q 2 "contingent or not" is:
Contingent facilities: **807** and **808** for Guarantees, **810** and **812** for Letters of Credit
Cash facilities: **800**, **802**, **804**, **805**, **809**.

807 TF Bid or Performance Bond
808 TF Other Payment Guarantee

These 2 new Facility Types are reserved to Trade Finance related guarantees and replace the former single Facility Type 811 Trade related Payment Guarantee.

It is felt, though not demonstrated, that bid and performance bonds are not necessarily called upon after a default, while the others guarantees are more likely to be called; the distinction should help for further discussion and investigation at CCF and Observed loss levels;

Bid Bond comes along a tender for a commercial contract concerning in most cases the delivery of large quantities of goods of "commodity" nature. Performance Bond comes along the contract itself, once obtained and signed. Like all guarantees, it implies a payment from the issuing bank only if the trade does not go its normal way to final execution and settlement.

Other Payment Guarantees in Trade Finance will be:

- the very usual "Shipping Guarantee": a guarantee issued by the bank that allows the trader taking possession of goods from the ship company before presenting the Bill of Lading;
- any other payment guarantee issued by the bank of the seller or the bank of the buyer to mitigate a lack of document or a discrepancy in the documents that would block the normal execution and settlement of the trade by the parties;
- guarantees issued in the course of the trade to customs, warehouses, etc.

Other Payment Guarantee includes the "Stand-by Letter of Credit", so-called because it is meant to dispense the parties involved in a repetitive and fast trade to open a L/C for each transaction; such Stand-by L/C is indeed a guarantee if something went wrong.

Other Payment Guarantee in Trade Finance does not normally include those issued to diverse beneficiaries such as landlord, utility company, tax office, etc… (to report in **830**).

The above guidelines call for 2 clarifications:

- though 807 & 808 are only for TF, please tick YES the Trade Finance Indicator;

- like for any form of guarantee, the most frequent situation should be that it was a contingent liability when the default occurred: see Lender Outstanding Amount for Guarantees

In case of a "Line of guarantees", apply the Transactional Trade Finance methodology: open as many lines 807 and 808 as necessary to report separately the outstanding guarantees at the date of default and the unutilised but committed balance of the limit, if any.

810 Trade Related Documentary Credit or Letter of Credit payable at sight:
812 Trade related Documentary Credit (L/C) at Usance or Letter of Credit payable at usance
The L/C instrument is frequent in Trade Finance though not exclusive to it.
It is called often Import L/C because it is opened by the bank of the buyer (or "importer") and that bank is liable to pay upon presentation of certain documents complying with the terms of the L/C and evidencing that goods or services purchased by the obligor have been delivered. In the situation of default to report to GCD, the reporting bank is the opening bank and the obligor is its client, on whose request the L/C has been opened.
Subject to review by the member-banks and further analysis, the experience of GCD seems to be of few L/Cs caught in default. This may be due to the fact that most L/Cs are short-term instruments paid out as soon as the goods concerned have been delivered to their transporter. As a result, few L/Cs in their "contingent" phase get caught in the obligor's default. This applies as well to L/Cs at Usance, which are less frequent than at Sight.

It is frequent that an import L/C is post-financed by a short-term advance (see FT **802**). However, when reporting a default with L/C in **810** or **812**, the terms of post-financing do not matter – TT 410 says enough! If the post-financing were reported separately under another FT, it would distort the data-base (duplicate risk and L/C apparently repaid).

Traditional cash lines

801 ECA Export Finance:
Obligor: the obligor is not the lender's usual customer but the buyer of the latter, which is why the loan is often called "Buyer credit". Depending notably of its country of residence, the obligor may be a state or a state-owned bank or entity, or a private company; i.e. FAC may be 2, 3 (banks and financial companies), 4 (Ship Fi), 5 (Aircraft Fi), 7 (Project Fi), 8 or Sovereign (FAC 9 or 10). Buyer credits in FAC 4, 5 or 7 are not Trade Finance, whilst Buyer credits in FAC 2, 3 or 8 may be seen sometimes as relevant to Trade Finance. Their separate reporting in 801 will allow in any case a distinct analysis.
Maturity: such loans are generally on a medium term basis (which again is out of TF scope).
Guarantor Type: albeit named "ECA Export Finance" an ECA guarantee is not mandatory; the types of guarantor expected in the GCD data-base on such loans may be, singly or simultaneously, Government agency and Private ECA, plus Key party. It is suggested to report separately "Government" (code 5) which covers the political risk and Private ECA (code 6) which covers the commercial risk.
Key party: it is also recommended to report in "Supplier" (code 13) the original client of the lender, especially if this party is also in default.

The facility should be entered under 801 for its full amount, and not only the insured part. The % of insurance should be entered in the Guarantor section.
Collateral: apart from reserves (code 100), a collateral is not usual but possible.
Other facilities: it is not usual that the obligor of such loan is granted other facilities by the lender, though overdraft, specific guarantees or forex are possible.
A shorter form of export finance by the bank to its usual customer should be reported in Facility Type 805.

802 Transactional Trade Finance
Trading companies – commodities specialists or any business implying a lot of import or export - often obtain from their banks a transactional facility, which includes many or all the credit instruments serving their trade flow. Within the limit of the transactional facility, there may be sub-limits with specific conditions for LCs, open account, borrowing base (or financing of its usual constituents), bill with Trust Receipt, pre-sold, unsold but hedged, storage, margin calls, etc. In other words, in this facility type, there may be simultaneously, at authorisation level and at utilisation level, several different banking instruments or "products" corresponding to various transactions in progress. (By "transaction", we mean here a trade transaction reflected in the books of the lender). Conversely, whatever its name at the bank, GCD recommends that an exposure in default relating to a transaction funded within such line shall be reported under Facility Type 802.
However, it is not acceptable to report in one figure the global outstanding amount at default of a Transactional Trade Finance line. Further detail on the specific transactions outstanding under this line at the time of default is indispensable for the statistical analysis of the historical defaults reported to GCD. This will be done by combining the data-fields Facility Type, Lender Limit and Umbrella Limit.

Recommended methodology for 802:
It is described by way of an example:
A Transactional Trade Finance facility was authorised up to 100 000 €, including 5 sub-limits:
70 000 € for L/Cs, 30 000 € for post-finance (with T/R), 40 000 € for Receivables Finance,
20 000 € : Shipping guarantees, 15 000 €: Performance Guarantee, 5 000 €: margin calls.
At the time of default, the total utilisation of the facility was 95 000 €, broken down in:
10 000 € for 2 L/Cs opened, 30 000 € post-finance in 3 bills, 30 000 € for 3 receivables,
13 000 € for shipping guarantees, 8 000 € for 1 Performance guar, 4 000 € for 1 margin call.
Guidelines: for contingent risks, use the appropriate Facility types, for cash risks, use FT 802;
The sub-limits are the real Lender Limits;
Report as much as possible by transaction (operation); segregate at least by product;
Do not include transactions where the client is no longer the obligor (e.g. bills purchased).
Mark each line with TF indicator = YES.

Transaction	LOAN ID	Facility Type	Combined Limit	Lender Limit	LOA Default	Comment
L/C 1	ID 1	810	100 000	70 000	2 000	If not used report TT900 in transact.
L/C 1	ID 2	810	100 000	70 000	8 000	If paid out report TT410 + loss etc

T/R 1	ID 3	802	100 000	30 000	8 000	Report individual maturity, collateral if any etc.
T/R 2	ID 4	802	100 000	30 000	12 000	
T/R 3	ID 5	802	100 000	30 000	12 000	
Receivable 1	ID 6	802	100 000	40 000	10 000	Report value of receivable in collateral
Receivable 2	ID 7	802	100 000	40 000	5 000	
Receivable 3	ID 8	802	100 000	40 000	15 000	
Ship Guar 1	ID 9	808	100 000	20 000	6 000	Report TT900 in transaction if waived
Ship Guar 2	ID 10	808	100 000	20 000	7 000	
Perf Guar	ID 11	807	100 000	15 000	8 000	
Margin Calls	ID 12	802	100 000	5 000	4 000	Might be a cash collateral on other line

A more simple and perhaps more frequent case could be a line for L/Cs and post-finance for 100 000 € without sub-limit. At the time of default, 1 L/C was opened and 3 6-months post-financing advances were outstanding. Proposed reporting is:

Transaction	**LOAN ID**	**Facility Type**	**Combined Limit**	**Lender Limit**	**LOA Default**	**Comment**
L/C 1	ID 1	810	100 000	100 000	20 000	Not used report TT900 in Paid out report TT410 + loss etc
T/R 1	ID 2	802	100 000	100 000	15 000	Report individual maturity, collateral if any etc.
T/R 2	ID 3	802	100 000	100 000	25 000	
T/R 3	ID 4	802	100 000	100 000	17 000	

Please refer to **810/812 Letters of Credit** for specific recommendations regarding the calculation of Observed Economic Loss.

804 Prepayment Finance
On request of its client – who remains the obligor, the lender grants an advance to the supplier of the goods before they are shipped or delivered.

If a L/C has been opened, it may contain specific terms, sometimes called “the red clause”, allowing an early drawing under L/C. In practice, the lender and the obligor would impose some form of control of the goods being produced or stored before shipment.
The lender may have obtained some extra form of guarantee or collateral from the obligor. For certain commodities, an ECA cover is also possible.

Example: a 50 000 € L/C was 40% used by “red-clause” at the time of default:

Product	LOAN ID	Facility Type	Combined Limit	Lender Limit	LOA Default	Comment
L/C 1	ID 1	810	50 000	30 000	30 000	Further drawings post default in TT410
Advance	ID 2	804	50 000	30 000	20 000	Do not duplicate drawings under L/C 1

Reporting the L/C makes possible the calculation of Observed credit conversion but more complex the calculation of the Observed economic loss.

805 Pre-export Finance
The bank extends a loan to its customer (the obligor) specifically related to a commercial order received by the latter – backed by a letter of credit from the ordering party’s bank or without L/C if the ordering party enjoys high credit. This facility means full exposure on the obligor; the reimbursement is fully contingent on the performance of the obligor to deliver and to get paid according to the terms of payment of the contract.
This facility is intrinsically unsecured – a collateral, if any, comes from a separate agreement on some particular asset of the obligor. Note that an assignment of proceeds of the order is not a collateral *stricto sensu*. The L/C received or a credit insurance related to the issuer of the order - is none either.
What makes this facility particular and separate (at the lender’s) is that it is tailored on the size and date of the order received by the obligor. Various data-fields in the GCD data-base, notably in Collateral or Guarantor/Key Party, allow giving more background information.

Asset based lines

800 Receivables Financing
The lender is financing a certain percent (advance rate) of receivables held by the obligor on its own customers. This is with recourse: the bank has the right to ask the obligor for refund in case of unpaid receivables. The bank is informed of the detail of the outstanding invoices (thus of the corresponding trade) and these should be payable exclusively to the obligor’s account with the bank (assignment of proceeds).
Purchase of receivables, Factoring, Ownership-based Finance, Bills Finance are NOT part of 800! They all imply another obligor to the lender than its usual client.

Collateral: since the presence of receivables is intrinsic to this facility, it should be reported under collateral type 200 "Accounts Receivable"; the advance rate is also expected in "Collateral Minimum Cover Ratio": financing 80 % of receivables equals 125% CMCR.
The receivables may really be regarded as collateral if the assignment comes together with notification and acknowledgement. Without this, as often, it is "imperfectly secured"! Confirm this – or not – by answering the data-field Control of Goods & Flow.

The facility (and others next to this one) might be secured by additional or different collaterals: a General Charge on all assets or a mortgage / pledge. Report them separately.
Credit insurance is treated in Guarantee (the insurer should be reported as a Guarantor, code 6, 7 or 8 in Guarantor Type). If the Credit insurance is for a specific percentage, it can be reported in Guarantee Percentage. Note that the credit insurance does not interfere with the notion of recourse for the lender; obviously, the credit insurer is not substituted in the lender's right of recourse, and the lender keeps its right of recourse for that portion of credit, if any, not covered by the credit insurance.

809 Borrowing Base Finance
This form of finance is quite frequent, notably in North America. It is relevant mainly but not only to Trade Finance.

Applicable methodology to Facility Type 809:
Facility Type: form of finance where the bank (or syndicate of banks) keeps a close control of the current assets (inventories and receivables) of the obligor and restricts the amount of finance to a portion of their value. The facility agreement determines how the assets are valued, the timing and periodicity of control, and the cash flow procedures (variables such as the Advance Rate on the value of assets or the "Dominion of Funds" which is a lock box managed by the bank receiving all payments arising from the collection of the A/R and out of which the bank deposits net proceeds to the obligor account).
This facility type is available for any asset class (FAC); depending of the asset class of the obligor and the maturity of the facility, it may be relevant to Trade Finance:
- if the obligor is SME or Large Corp AND the maturity is less than 1 Year, it is TF;
- if the obligor is SME or Large Corp AND the maturity is more than 1 Year (some sectors such as entertainment finance typically associate a BB structure with term debt), it is not TF;
- if the obligor belongs to - for instance - Real Estate Finance (FAC = 6), it will not be relevant to Trade Finance but to ... Real Estate Specialised Lending.
Please tick YES the Trade Finance Indicator, when appropriate.

Collateral Type: selecting BBF 809 will commend to select Collateral Type A/R 200 AND Inventory 300 (for the part contractually eligible to the BB), plus any other security that may have been obtained from the obligor such as CRE, specific equipment, etc).

Collateral Value: the value of the Borrowing Base at the Date of Event (an information necessary at the date of default to analyze the recovery versus outstanding at default, and at 1 Year prior to Default to analyze EAD).

Total Collateral Value: if the facility is syndicated, the Collateral Value is the share of value attributable to the reporting bank, whilst Total Collateral Value is the total value of the BB for the syndicate.

Monitoring: the Borrowing Base implies a periodical recalculation of the value to determine the amount of finance. Though the periodicity is contractual, it will tend to accelerate (and scrutiny will strengthen) when the obligor's financial situation becomes tighter. The WG sees not much value in asking for the periodicity of BB calculation.

Date of last BB Audit (i.e. full control of inventories and receivables) before default: for analytics, this information is more useful than periodicity. See Date of Last BB Audit.

Structured lines

806 Structured Inventory Finance
It is NOT a direct loan to the obligor but an equivalent situation where the bank becomes the owner of the goods (i.e. buys them) and has arranged simultaneously the re-sale of the goods by way of a forward contract, put option, or similar contract. The goods are obviously of an easy to market type. There has been and there can be different terms and conditions, which, however tight, did not prevent a few defaults in the past.
Although the title of the facility speaks for itself, it would be expected to report it under a specific Entity Id, since the obligor is not the same as for the other facilities mentioned above.

Note that a default on Commodities REPO should not be reported in 887 but in 806 (see Trade Finance facilities).

LOA for Facility Type 802/ Transactional Trade Finance
Recommended methodology: create a new line 802 and report the outstanding exposure of each trade transaction (several trade transactions can be reported together if they are similar enough to each other: for instance: several L/Cs are opened but not negotiated at the date of default and they all concern the same type of commodity, under the same sort of control by the bank).

Reporting trade transactions in default will never be an easy exercise, resting on automatic data downloading! Only separately reported and enough detailed observations may produce meaningful loss analytics!

The LOA is required at Event Type 3 (Default) and Event Type 5 (Resolution); the information on LOA at ET3 is greatly enhanced by the information on LOA at ET2!

9. USER GUIDANCE ON THE DATA RETURN

a. Overview of the various calculated LGDs

Global Credit Data (GCD) members do not provide LGDs as an input field to the database but the underlying raw information such as outstanding amount at default or resolution and cash flows during the default. GCD calculates realised LGDs by following different methodologies approved by the METHCOM. Bank's own methodologies as well as regional regulatory requirements might result in different calculation methods which member banks are able to realise on the raw data they receive back.

All variants follow the same basic definition

$$\boldsymbol{LGD} = \frac{Economic\ loss}{Default\ Amount}$$

$$Recovery\ Rate = 1 - LGD$$

GCD provides the following options for LGD and Recovery Rates.

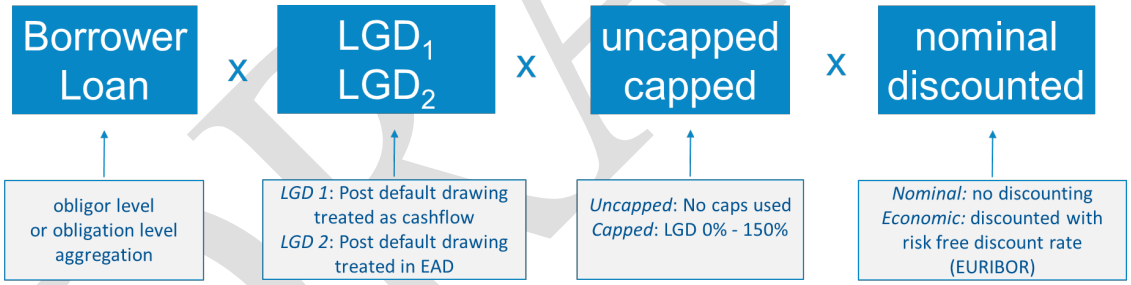


FIGURE 19: DIFFERENT LGD CALCULATIONS IN THE GCD DATABASE

Firstly, there are two different aggregation levels. All facilities can be treated separately or aggregated at borrower level. GCD recognises that there are different aggregation levels used by its members and therefore provides calculations on both levels.

Secondly, GCD provides an option on how to treat advances after default. Based on whether members include or do not include advances in their EAD/CCF estimations, they can consistently use LGD1 or LGD2. In LGD1 the advances are included in the loss calculation (nominator) only. In LGD2 advances are included in the default amount calculation (denominator) as well.

Furthermore, the LGD range is considered. GCD provides an uncapped, unfloored option but also a version where a floor of 0% and a cap of 150% is applied.

Finally, there are the following options for nominal or discounted LGDs:

- Nominal - An LGD calculation without discounting

- Risk-Free - Discounted with 3-months EURIBOR. If the loan defaulted prior to the Euribor introduction (January 4th 1999), the 3-months LIBOR is used

As different regulators have established different discount rate requirements, the LGDs for the defaults in the GCD database can also be calculated based on the cash flows and a different discount rate (e.g. fix discount rate) or individual discount rates. Contractual interest rates are collected in the PRICING table and banks wishing to use them for discounting do have the option. A higher discount rate has a more pronounced effect on LGD for longer workout cases with high recovery rates, where the quantum being discounted is higher (see GCD Discount Rate Study2 for more details).

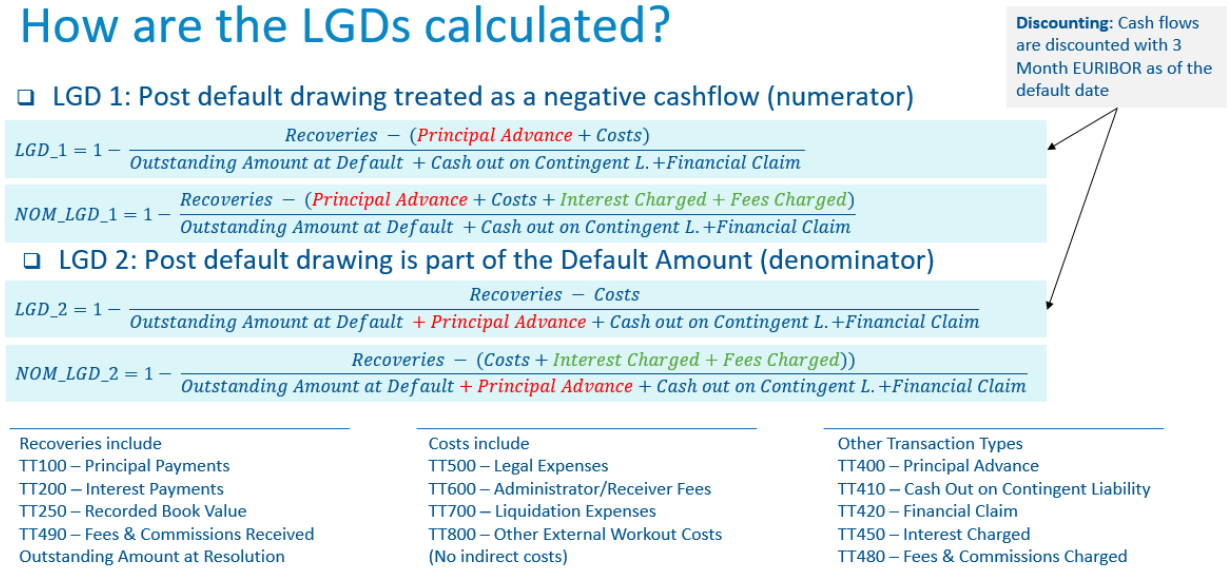
b. Difference between nominal LGD and economic LGD

LGD refers to the calculation where the discounted cash flows are used. The discount rate used is the risk-free rate, more concretely the 3 months EURIBOR as at the default date.

Nominal LGD is calculated in the same way but using nominal, undiscounted cashflows.

How are the LGDs calculated?

The following chart shows how the different LGD as calculated:



Notes:

[2] The Study "A theoretical and Empirical Analysis of Alternative Discount Rate Concepts for Computing LGDs using Historical Bank Workout Data is available on the GCD Website.

- The variables are both calculated on borrower/obligor level as well as on loan/obligation level. The values on obligor level are provided back in the ENTITY table. The values on obligation level are provided back in the LOAN table.

- The detailed definition can be found also in the data output structure.

- GCD also provided the intermediary steps back to banks (i.e. the numerator and denominator used in the LGD calculation)

Why are the nominal and discounted LGD formulas different?

Imagine a simple default case:

- A client defaults with 100USD outstanding, yearly interest rate of 5%. No principal advances (LGD 1 and LGD2 are the same)
- The client pays back principal and interest after one year in default.
- Using the calculation formulas from the previous page both nominal and discounted LGD are 0. The discount rate used is the same as the interest rate on the loan, i.e. 5%

loan outstanding		100	USD		
interest rate		5%	yearly		
default date		31/12/2015			
Transactions		Nominal cash flow		Discounted cash flow	
interest charged (TT450)	Dec-16	5	USD	4.7619	
Principal payment (TT100)	Dec-16	100	USD	95.2381	
interest payment (TT200)	Dec-16	5	USD	4.7619	
Nominal LGD calculation		***0***	*(interest charge included)*		
Discounted LGD Calculation		***0***	*(interest charge taken out)*		

Note that this in a conceptual example. Real values will vary because of the risk-free discount rate applied.

Logic note:
Both nominal and discount methods try to deal with the payment of interest by the borrower. In the nominal method, we offset the interest received (or not) with the interest charge booked in the accounts of the bank (accrued interest). In this way a full payment of principal and interest results in a zero LGD.
In the discount method, we offset the interest received (or not) with a time value of money charge by discounting all cash flows to the date of default. If the discount rate = the interest paid then we have a zero LGD.

c. Other calculated variables

Cure
(field: *CURE* in the LOAN table and *BOR_CURE* in the ENTITY table*)*

GCD member banks have agreed on the following definition of cure: A default having time to resolution < 1 year, no write-off and no collateral sale or guarantee call. All these items are collected separately as inputs in the data template and the cure is calculated by GCD.

Time to Resolution
(field: *TIME_TO_RESOLUTION* in the LOAN table*)*

The time to resolution is the period between default and resolution. Both dates are input fields in the database (date of Event type 1 and Event type 3 in the HISTORY table)

Time to Recovery
(field: *TTREC* in the loan table and *BOR_TTREC* in the ENTITY table*)*

The term "Time to Recovery" puts a weight of the amount of the cashflow on the timing. It is defined as the cashflow weighted average period between default and cashflow. The following picture visualises the concept. The cash flow weighted time or average year of cash flow represents the weighted average of all relevant points in time between default and resolution where cash flows took place. Time to Recovery is by definition lower or equal to Time to Resolution.

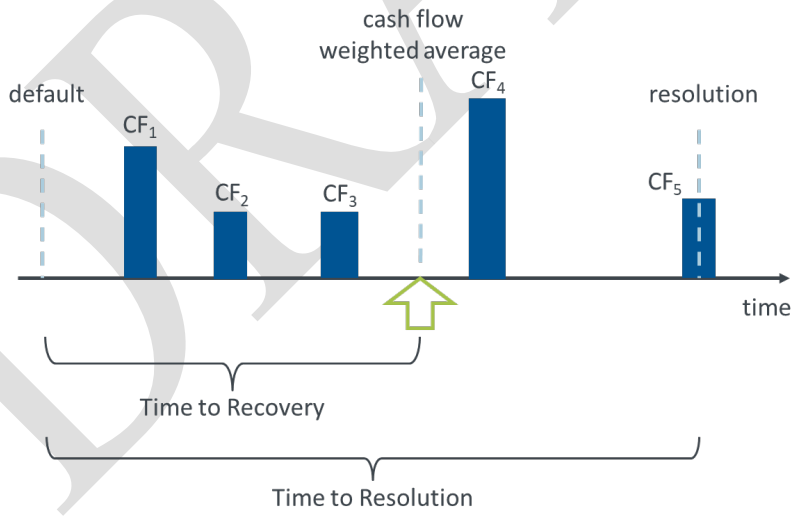


FIGURE 20: CONCEPT OF TIME TO RECOVERY AND TIME TO RESOLUTION

1. *Incomplete Portfolio: How to deal with old member data?*

When a member bank resigns from the association and/or from a data pool (asset class), the most recent defaulted years that they have submitted must be incomplete as those banks do no longer participate to submit/update their defaults in the future.

In order to recognize those « portfolios », GCD has decided to flag the data which could be « time-biased » by this effect (without revealing the identity of the lender) .

Definitions :

- Former member: a member bank resigned from the association and is no longer part of any of the data pool(s)
- Non-participating member: Current active member of the association but no longer participating in a certain data pool (=asset class)

GCD flags all borrowers which have defaulted **in the last 3 years** in such an incomplete portfolios (portfolio of a former member and a former asset class/datapool participants). The information is returned back to banks in the field *Incomplete_Portfolio* and banks have then the option to filter those borrowers out in their RDS creation.
The field « Incomplete_Portfolio » contains only borrowers/loans with short time to resolution which might be affected by the resolution bias.

The exact logics is : Per data pool, tag all defaults from former or non participating member where the default date is between the last event date that they have submitted for a resolved case and three years prior to that date.

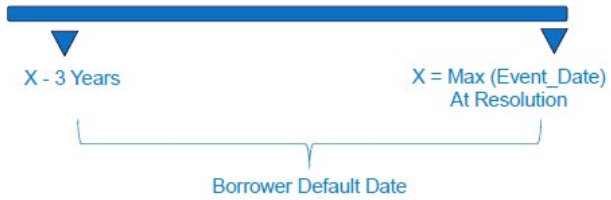


FIGURE 21: TAGGING MECHANISM FOR FORMER MEMBER DATA

Example :

Former or non participating member last submission date is April 30 2015. For a given data pool loans, the latest resolution date is January 31st 2015. Tag logic would tag all the resolved loans with default date between January 31st 2012 and January 31st 2015.

Figure 22: Tagging mechanism for former member data

Background on why this flag has been introduced :

- Tagging only the potential time bias data for a former or non participating member bank would not reveal the entire portfolio of that member.

- Members are already well aware that data from recent years of default are likely to be incomplete and are able to deal with this through either rejecting or adjusting such data (e.g. data from 2013/14/15 year defaults in the 2015 December data set). Members are however not able to identify the incomplete data from prior years, submitted by former or non participating member.
- Therefore Methcom has decided to tag such data only after 3 years have elapsed from the date of default affected.
- The initial tagging has been applied in 2016. Now, GCD waits 3 years after a member exits the association/data pool for a tagging to be considered.

d. Frequently asked questions on the LGD calculations

1. *What currency are the values in the data delivery and how can I convert these back to the original value?*

All currency values (Limit, Outstanding, Cash Flows ….) in the data return are in EUR. Banks do deliver the information in the original currency and GCD is transferring those to EUR amounts by applying the FX rate at the date of the default.

Any user can calculate the original value back by multiplying the value in the database (e.g. the field *Lender_Outstanding_Amount* in the LOAN table) with the FX rate in the *Conversion_Rate* field in the LOAN table.

Currency fields:

Table	Field	Definition
Financial	Financial_Currency	The currency denomination of the Entity Financials same currency for all financial figures
Loan	Syndicated_Currency	Currency denomination of the Total Syndicated Amount
History	Loan_Currency	Loan Currency
Collateral	Collateral_Value_Currency	Collateral Value Currency
Collateral	Total_Collateral_Value_Currency	Total Collateral Value Currency
Transaction	Transaction_Currency	Transaction Currency

Applicable conversion rate fields:

Table	Field	Definition
Financial	Conversion_Rate	Conversion Rate for Financial Currency
Loan	Conversion_Rate	Conversion Rate for Loan Currency
Loan	Conversion_Rate_TOTAL_SYNDIC_AMO	Conversion Rate for Syndicated Currency
History	Conversion_Rate	Conversion Rate for Loan Currency
Collateral	Conversion_Rate	Conversion Rate for the Collateral Value
Collateral	Conversion_Rate_Total_Coll_Val	Conversion Rate for the Total Collateral Value
Transaction	Conversion_Rate	Conversion Rate for Transaction_Currency

2. *Calculation of Economic LGDs: Does GCD first transfer the cashflow into EUR and then discount the cashflow? Or is the cashflow in the original currency discounted?*

GCD transfers first the cashflow into EUR by applying the FX rate at date of default and then discounts the cashflow by applying the 3-month EURIBOR interest rate at the date of default to the cashflow.

3. *Calculation of Economic LGDs: Why are there negative LGDs in the dataset?*

GCD calculates various different economic LGDs. All of these calculations use a discount rate being the 3-month EURIBOR (effectively risk free) rate at the date of default. If there is a 100% principal recovery and the borrower pays all interest and the interest paid by the borrower is higher than the interbank rate (which it normally is) then in these circumstances there will be negative LGD shown. These cases are quite common as "cures" represent up to 40% of the database.

There are several possible solutions for banks to deal with this data:

- The LGD can be capped and floored.
- Banks can calculate the LGD themselves using a higher discount rate (many do this).
- Banks can remove all "cured" cases, using either the PECDC definition or using a nominal recovery rate of 100% and model these cases separately.

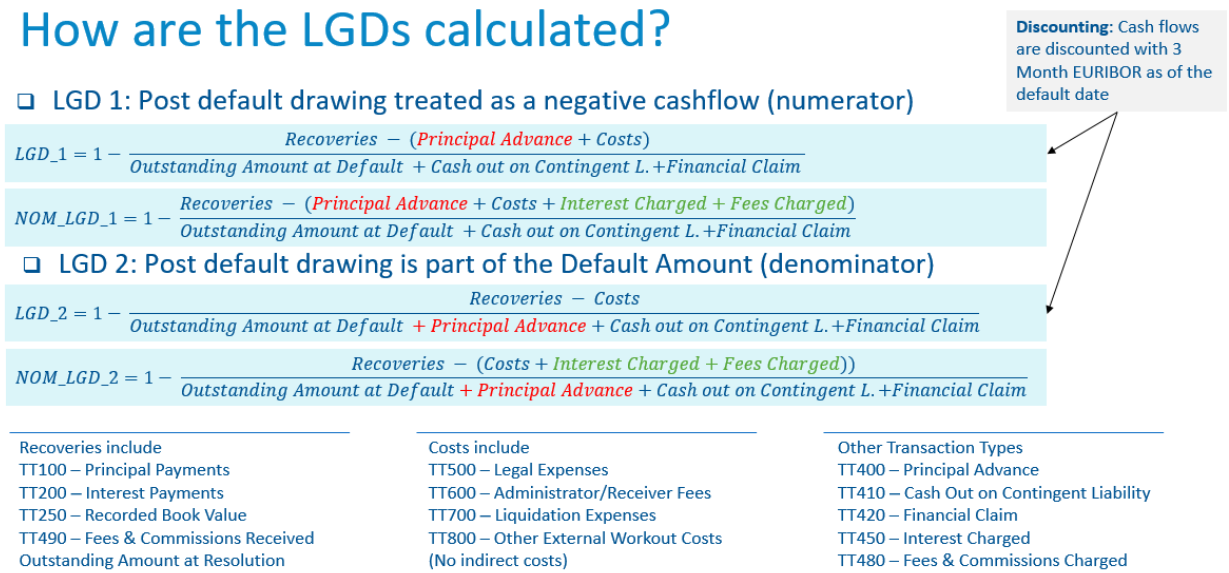
4. *Are the LGDs calculated both for resolved as well as unresolved defaults?*

No, the LGD are only calculated for resolved defaults.

However, GCDs collect for unresolved defaults all information up till the reporting date and banks can themselves calculate an LGD for unresolved based on the information available and applying their own methodology of an LGD for unresolved cases.

5. *Does GCD also calculated an LGD for contingent facilities?*

Yes. GCD is calculating an LGD in case there has been a cash out on the contingent facilities (TT410). See formula below.



6. *Can call rates for contingent facilities be calculated with GCD data?*

Yes, the call rate on a contingent facility can be calculated as follows:

Call Rate = "Cash out on contingent facility (TT410)" / "Lender_Issued amount"

Note: Loan status = 9 (cancelled without usage) indicates that a contingent facility has not been called. But also other loan status could imply that a contingent facility has not been called (e.g. return to performing, sold post default, partial write, …). That's why we recommend to use the transaction type 410 to analyse whether a contingent facility has been cashed-out.

7. *TT450 and TT480 are not part of the economic LGD calculation. Why are they part of our data model then?*

Interest charges and fees and commissions charges are part of the nominal LGD calculation.

Banks also need to balance any interest payment received (TT200) with the amount charged (TT450) in order to ensure a cashflow balance in the data portal . The same holds for fees and commissions.

Banks are free to use the information in their own LGD calculation if wanted. Note: in the economic LGD calculation the interest payments are offset by the discount rate.

Note also that not every facility type requires an interest charge or fee/commission charge.

e. Creating a Reference Data Set (RDS)

Why and how to create an RDS?

GCD provides members with the full "raw" data set when returning data to members after the validation and auditing process. No filtering or data cleansing is done. Banks are advised to create a reference data set (RDS) from the full data set which is a subset of observations from the full data set (borrower, loans, collateral) that should resemble the referenced portfolio. The RDS can be used for modelling the credit risk of a portfolio, benchmarking a portfolio and validation or calibration of a model for a certain target (referenced) portfolio. This RDS should have two qualities: representativeness and data quality.

The creation of a RDS is the key success factor for using pooled data.

Representativeness of data

Many regulators have set standards[3] or guidelines for data to be used in credit risk estimation models. Such guidelines cover both internal and external data. In both cases the data used needs to be representative of the target portfolio during the proposed measurement time. Even internal data from a different time period, jurisdiction or sub-portfolio should be assessed for representativeness.

The total GCD defaulted borrower data set is composed of data from the banks who have chosen to be GCD members. These banks' geographical lending footprint, loan and borrower types as well as collateral practices are merged in the database. Due to the size and long time series of the database and the contributions from banks of many countries, the data set could be seen as broadly representative of an average bank, however more accurately it represents the average of GCD member banks, weighted towards the largest member banks who provide most data.

No standard GCD RDS

The purpose of creating an RDS is to match as closely as possible the risk conditions of a target portfolio of a single bank. Therefore, a single standard RDS could not possibly suit all users.

In the remaining paragraph, we list some possible filters which should be considered by any user working with GCD data.

Unresolved cases: Can the LGD outcome be calculated?

Loss Given Default is most accurately calculated on closed (resolved) cases, where the outcome is anything from full repayment to complete loss, or something in between. Although GCD collects unresolved cases, the ultimate LGD cannot be calculated until the default is resolved.

Nethertheless, banks have developed various methodologies to also include unresolved defaults and can incorporate those in their RDS as well, if wanted.

[3] Some examples of regulatory requirements for representativeness include:
BCBS: Basel II §417, §450 and §448
European CRR: Articles 174, 179 and 185
UK PRA Internal Rating Based Approach (SS11/13) Article 10.12
EBA Guidelines on PD Estimation, LGD Estimation and Treatment of Defaulted Exposures Section 4.2.2.19
ECB's Targeted Review of Internal Models (TRIM): Section 6.2, paragraph 57 (d)(iii) and Section 2.1
US Federal Reserve: SR11-7

Year of default: How to avoid the resolution bias

An important distinction should be identified and accordingly addressed with respect to cases with a short workout period when calculating LGD. Generally, a short workout period is related to lower LGD. In the most recent years short workout period cases are naturally overrepresented. Hence, including all the default years might lead to an unrealistically long-term average LGD.

This is also important if cures are treated separately as per the GCD definition, cures are resolved within the first year from time of default whereas non-cure cases can exhibit a much longer time to resolution. This is known as resolution bias. Therefore, when creating an RDS it is advisable to address the resolution bias by restricting the defaults to those with a reasonable window time for workout processes to conclude.

The decision on this filter, like all RDS filters, should be left to the discretion of users and be aligned to what is representative of their own portfolio.

Some further guidance:

- For the GCD dataset the average observed workout period is two years. To address the resolution bias caused by cured cases, it is it is reasonable to restrict data points to defaults up to and including 2014 (2015, ..) when the latest default year available is 2017 (2018, …).
- A filter is applied on the lower end of the time series in addition to the filter on the upper end. Although the earliest entry in the GCD database dates back to 1983, for some banks it is difficult to deliver all the data elements required to identify cured cases for older defaults consistently with newer defaults. Such data may still be useful for driver analysis but the lower reported cure rate can tend to bias the resulting pre-2000 data such that the reported LGD is higher than it would have been in a full data set. Where an absolute level of the resultant LGD is important, defaults that occurred prior to 2000 should be excluded.

Small default amount: Are small default amounts relevant?

Default amounts in the GCD database range from zero (e.g. for uncalled contingent facilities) to several hundreds of millions of Euro. For an appropriate setup, banks are advised to compare the default amount structure to their internal portfolio.

Incomplete portfolio: How to deal with former member bank data

When a member bank resigns from the association and/or from a Data Pool, the most recent defaulted years that they have submitted must be incomplete as they would no longer participate to submit/update their defaults. The incomplete data contains only cases with a short time to resolution which might be affected by the resolution bias. Therefore, the last three years of data of former member banks are marked in the field *Incomplete_Portfolio*. Banks have the option to filter those cases out in their RDS.

Validation rules: How to deal with older data

As described above, GCD applies a series of validation rules during the submission process which prevents inconsistent or incomplete data from being accepted automatically. This is the major data quality insurance that protects the database. The validation rules are updated and amended as required by our members for every submission. That said, some entries were integrated into the database before certain validation rules had been implemented. Those entries can still be part of the database if not updated by the member bank.

GCD's policy is to not remove any data as it may still contain useful information. However, for any benchmarking exercise, data points with errors that affect the integrity of the database (e.g. the event date at default must be the same for all facilities of a given borrower) or the correct calculation of LGD (e.g. balancing the cash flow between the transaction and the history table) should considered to be excluded.

Number of facilities per borrower: How to deal with facility weighting effects

An additional filter for the obligation level could be added. Borrowers with many loans might cause overweighting. There are e.g. outliers with over 200 loans and these lower the overall average LGD due to the bimodal left skewed shape of the distribution. These are verified loan constructions which relate to specific commercial circumstances including multi-family housing with one home per apartment or equipment finance with one loan per vehicle in a fleet. Inclusion of these would overweight the importance of a single collateral. Therefore, for more homogeneity, a filter on borrowers with e.g. 10 or more facilities could be applied at obligation level.

f. Frequently asked questions on using the data

1. *My data return has significantly changed from last time (# defaults per asset class, LGD values, etc).? What could be the possible reason for that?*

In principle there are 4 reasons that the database changes over time:

1. Banks submit new defaulted loans (or replace unresolved defaulted loans with resolved loans)
2. New member banks start delivering to the data base (Note: If banks are leaving the data consortium, then their data will stay in the database but it will just not be updated any longer)
3. Banks changing the data: GCD is working with its members on improving the data quality in every submission cycle.
4. Banks do get back a different data set then last time based on the "give-to-get principle"

Generally, we don't expect that a resolved case which has once been submitted to GCD will change. However, in rare situations banks have further insights in later submission cycles or detect data errors and therefore update the data. We recommend therefore to always use the most recent dataset for any analytics.

2. *How does GCD define secured and unsecured?*

GCD does not have a central definition of "secured" and "unsecured". Banks can apply their own definition based on the dataset GCD is providing.

One common way to define unsecured - and this definition is approved by Methcom in the latest Large Corporates LGD report - is to regard an "unsecured" loan as a loan if there is no collateral attached to it (Field *Collateral_Indicator* in the LOAN table = N). A borrower is unsecured if none of its facilities has a collateral attached to it. Otherwise the loan/borrower is secured.

Alternatively, further criteria could be applied to like a minimum LTV threshold or only considering certain collateral types for a loan being secured. The information for those criteria is available in the GCD database as well.

The guidance to banks for filling the *Collateral_Indicator* is: "Y" if there is any collateral available, independently of the LTV or the type of collateral.

3. *The data does not contain the Loan-to-value (LTV) ratio of a collateralized loan. Can the data be used to calculate a LTV?*

Yes, the data allows to calculate for each loan. Note: the LTV is not a data input but can be retrieved as follows from the data:

LTV = "Lender_ Limit" / "Collateral value"

It can be calculated at various event types, e.g. 1yr prior to default or at default moment.

As 1 loan/facility can be secured by more than one collateral, a methodology to deal with that needs to be applied for that as well. For example:

- Step 1: for one collateral types shared between multiple facilities, re-split "collateral value" based on field "lender_limit"
- Step 2: for a loan/facility, calculate the attached collateral value as the sum of re-calculated collateral values from the above step for all collateral types

Some comments:

- Banks would usually expect a positive correlation: the higher the LTV, the higher the LGD. However, though a strong driver, LTV is not everything.
- The reason for high LGD in low LTV classes can range from the collaterals being second lien or collaterals being sold for much less than the value prior to default. Some other drivers also influence the outcome such as Property type, Property location, Rental contract and tenant strength, Cash flow buffers, etc. Also with very high LGDs, there are usually another mitigating factors (such as guarantees) in place which can lower the final LGD.

- When analysing LTV/LGD relationships, banks could consider in their RDS to apply a cap to the LTV to control for outliers (e.g. LTV > 2) and taking out small exposure or collateral values

4. *The industry code does not contain Oil & Gas. How can this segment be further analysed?*

The Oil & Gas segment in banks can include different types of financing structures:

- **Reserved-based lending:** Any credit facility made available to corporate borrowers in the upstream (or exploration and production (E&P) sector. The upstream sector includes searching for potential underground or underwater crude oil and natural gas fields, drilling exploratory wells, and subsequently drilling and operating the wells that recover and bring the crude oil or raw natural gas to the surface. This does not include midstream and downstream. Reserve Based Lending is expected to have the Oil and Gas Reserves as collaterals attached (*Collateral_Type* = 810) .

  → Select for *Product_Code* = 300 (Reserved-based Lending) in the LOAN table
  → Note: this field is newly introduced in H1/2018

- **Project Finance:** Project Finance focuses on raising funds to finance a Special Purpose Vehicle (SPV) with no assets other than the project and project-related contracts and permits. The SPV has a single business activity from which the providers of the funds look to the cash flow from the project as the primary source of repayment.
  → Filter for *Facility_Asset_Class* = 7 (Project Finance) in the LOAN table and *Project_Type* = 100 to 300 in the COLLATERAL table.

- **General finance:** Any facility with oil & gas reserves as collateral
  → Filter for Collateral type = 810 (Oil & Gas Reserves – Mines) in the COLLATERAL TABLE

A	B	C
Collateral_Type	Description	Definition
100	Cash/Reserves	Cash in bank accounts in any currency in any bank
105	General Collateral	
110	Marketable Securities	Shares, bonds and similar exchange listed securities
120	Non-Marketable Securities	Shares, bonds and similar unliste or untraded securities
200	Accounts Receivable	Trade debtors (not loans to directors or intercompany)
300	Inventory	Stocks of raw materials, work in progress or finished goods
350	Cars	Moter vehicles for personal transport (e.g. salesmen's cars)
360	Commercial Vehicles	Trucks, trailers and similar land vehicles for goods transport
400	All Assets Charge or Debenture	Charge over the full balance sheet of the borrower, including stocks, debtors and
410	Specific Fixed Assets	Where the charge covers only certain named and identified assets of the borrower,
420	Ships	Floating objects for commercial goods, people and materials transport and
430	Aircraft	Flying objects for commercial goods, people and materials transport and similar.
440	Other Object for Object Finance	Usually a large piece of equipment such as a train or oil refinery which are
500	Real Estate	Collateral Value mandatory
600	Stock of Subsidiary (Capital Stock)	Shares owned in a subsidiary company
700	Intangibles	Balance sheet items with or without named value, such as goodwill, tax timing
800	Commodities Under Trade	e.g. oil, frozen orange juice etc.
810	Oil and Gas Reserves - Mines	This is the right to extract minerals, oil or gas from a certain place where they are
900	Telecom Networks	This is the infrastructure for running fixed line or wireless commercial telephone
910	Projects	The underlying financed object in a project finance transaction. May or may not
980	Life Policies	Insurance policies paying out on the death or at a certain age of an insured
999	Other	All other types of collateral: try not to use this and instead place the collateral in

Project_Type	Description
110	Energy Non-renewable: Extraction – On-shore & Off-shore
111	Energy Non-renewable: Extraction – Off-shore
112	Energy Non-renewable: Extraction – On-shore
120	Energy Non-renewable: Transport - Pipelines, Terminals, Networks
130	Energy Non-renewable: Production – Gas/Coal fired Power plants
140	Energy Renewable: Production – Wind, Solar, Hydro
141	Energy Renewable: Production – On-shore Wind
142	Energy Renewable: Production – Off-shore Wind
143	Energy Renewable: Production – Solar
144	Energy Renewable: Production – Hydro
200	Upstream Reserves (No production)
250	Upstream Carbo Industry: Refinery
300	Mining & Assimilated: Ores, Raw materials
400	Industry-Manufacturing: Steel, Chemicals, Pulp & paper, etc
500	Infrastructure for Transportation: Toll-roads, Airports, Ports, Rail system, etc
510	Transportation: Rolling Stock, Containers
600	Telecom: Cables, Networks
700	Environment: Networks, Re-treatment for Water, Waste, etc
800	PPP/PFI: Education, Health, Social Services, Prisons, Defense -Telecom
900	Intangibles, Rights: Media, Movie and alike

5. *When analysing the data we see that some borrower have defaulted on very small amount but later we had large recovery values. What could be the reason for that?*

A bank paying out money after the default, needs to book these as principal advances (transaction type 400) and not as the outstanding at default. The recovery of the post-default principle advance is booked similar to any other recovery (mostly transaction type 100). This might lead to a situation where the outstanding at default is significantly smaller than the recovery values.

In GCD reference dataset creation, we suggest banks to consider excluding small default amounts (e.g. Lender_Outstanding_Amount <100K EUR for Large Corporates). Banks should base the filter on their own experience.