Creditreform Rating AG Rating Methodology

NPL Securitizations

Creditreform Rating

Neuss, 20 June 2024
Version 1.0

Creditreform Rating

Table of Content

1 Introduction

This methodology outlines Creditreform Rating AG's (henceforth also referred to as Creditreform or CRA) approach to rating non-performing loan (NPL) securitizations. It provides the parties involved, investors and the wider public with the opportunity of developing a deeper understanding of the mechanisms behind its ratings.

The NPL transaction is built around a special purpose vehicle (SPV) which issues financial instruments (e.g., bearer bonds) to finance the acquisition of a pool of NPL receivables. Depending on the loan's status after default, a distinction is made between non-performing loans and re-performing loans. While "true" non-performing loans are actually delinquent or defaulted, a re-performing loan is already paying under the original or modified loan conditions. This is reflected in the recovery performance in the course of our analysis, such that re-performing loans can be understood as NPLs in this methodology. NPL receivables can be secured or unsecured. A secured loan is collateralized by, for example, residential or commercial properties, while an unsecured loan is usually a credit agreement, consumer loan or liability. This document is therefore intended to be applied in conjunction with our asset specific methodologies (e.g. Auto ABS, Consumer Loans, RMBS etc.). As the underlying receivables of an NPL securitization have already defaulted, a key focus is on the recovery process. The servicer therefore plays a much more important role than in securitizations of other asset classes. Its ability to enforce defaulted receivables is decisive for the amount of cash flows that can be realised in the course of the transaction. In connection with recoveries, seasoning is an important feature of NPLs. Typically, a large proportion of the recovery payments are made at the beginning to middle of the life cycle, while these decrease towards the end. NPL transactions are characterised in particular by volatile cash flows since the NPL recovery payments profiles are irregular, which makes it challenging to ensure sufficient liquidity within the transaction.

The issued financial instruments are generally structured in tranches, which may be senior or subordinated, and are serviced according to a predefined order of priority. The rating of the debt classes is based—among other factors—on the predefined tranching, which takes into account the respective risk profiles. CRA performs ratings on these instruments but does not size the tranches.

CRA NPL ratings are carried out taking into account all available and relevant information in order to quantify the risks of the respective issue. However, the ratings do not constitute a recommendation to buy, sell or hold financial instruments. They are also not legal opinions and do not represent an assessment of the future market values of individual assets or investments.

2 Rating indication and process

2.1 Rating indication

The aim of the rating process is to efficiently and consistently arrive at a reliable and appropriate risk assessment. The approach focuses on the objective of ensuring the quality and integrity of the rating process, avoiding conflicts of interest, and maintaining consistency in our decision-making process.

A team consisting of at least two rating analysts is responsible for the NPL rating. This team of analysts is the client's point of contact throughout the entire rating and subsequent monitoring processes. All data obtained by CRA is treated by the agency with confidentiality. The final authority for the rating assessment is a rating committee.

CRA uses the following rating scale for its structured finance ratings. As the rating system for structured finance (which, among others, includes NPL) differs from the one used for bond and corporate ratings, structured finance ratings will be subscripted with the suffix "sf".

Rating category	Rating	Assessment
AAA $_{sf}$	AAA $_{sf}$	Highest level of credit quality, lowest investment risk
AA $_{sf}$	AA+ $_{sf}$	Very high level of credit quality, very low investment risk
	AA $_{sf}$	
	AA- $_{sf}$	
A $_{sf}$	A+ $_{sf}$	High level of credit quality, low investment risk
	A $_{sf}$	
	A- $_{sf}$	
BBB $_{sf}$	BBB+ $_{sf}$	Highly satisfactory level of credit quality, low to medium investment risk
	BBB $_{sf}$	
	BBB- $_{sf}$	
BB $_{sf}$	BB+ $_{sf}$	Satisfactory level of credit quality, medium investment risk
	BB $_{sf}$	
	BB- $_{sf}$	
B $_{sf}$	B+ $_{sf}$	Moderate level of credit quality, increased investment risk
	B $_{sf}$	
	B- $_{sf}$	
C $_{sf}$	CCC $_{sf}$	Low level of credit quality, high or very high investment risk
	CC $_{sf}$	
	C $_{sf}$	
D $_{sf}$	D $_{sf}$	Insufficient level of credit quality, total loss of investment
NR	Not Rated	Rating temporarily suspended, i.e. liquidation in process

2.2 Data requirements and preliminary analysis

As a first step, CRA analyses the relevant NPL securitization structure and gathers pertinent information, including on the economic, business, and legal environment. Documents and portfolio data shall be provided by or on behalf of the originator or servicer. In addition to the parameters of the transaction and data on the composition of the pool, CRA requests historical performance data. Depending on the type of underlying assets, loan-level data, including details on the collateralisation of receivables, shall also be provided. CRA requires tables with information on the use of funds, the downstream structure and historical data, in particular on recoveries of comparable portfolios in static vintage format, but also on defaults and loss, if available. If CRA considers the data obtained through the request insufficient, proxy data may be used to augment it if appropriate. We strive to review both the structure of the collateral pool as well as the historical performance of similar pools.

Furthermore, information related to the originator and servicer of the transaction is analysed, as is that of other counterparties. Depending on the scope of the documents provided, plausibility checks are made and, so deemed appropriate, legal opinions will be requested.

2.3 Management meeting

In the management meeting, the rating analysts discuss the transaction with representatives of the arranger (and, possibly, other parties involved) based on their review of the submitted data and documents. Generally, we raise both qualitative and quantitative issues. CRA's questions may concern: The allocation of responsibilities, operational procedures, and organizational structure; the credit standing of the parties relevant to the transaction; the historical track record and performance; the tools and capacities in-place with respect to portfolio management, servicing, debtor management and work-out processes. The quality of collateralization as well as debtor protection in the context of the rules and contracts for mitigation of the risk involved in complex, multilevel NPL securitization transactions are discussed. The rating analysts may also inquire about issues more closely related to the NPL securitization's structure (e.g., planned hedging instruments, external credit enhancements, or loss and liquidity reserves). If the rating is unsolicited, there may be no management meeting.

Rating committee

In a rating committee, the team of analysts assigned to the rating presents their findings. Subsequently, the committee determines the rating, taking into account the results of the quantitative and qualitative analyses. Lastly, CRA publishes the rating—following its classification and commissioning—as either "private" or "public". Ratings with a regulatory background must be commissioned as "public", which

means it must be disclosed to the ESMA authority, although such designation does not imply the rating must be published.

3 Rating methodology

A rating for an NPL securitization consists of several analytical steps. In addition to examining structural, legal/regulatory and operational risks, it includes, in particular, an analysis of potential recovery amounts and the timing of expected cash flows based on the liabilities of the loan contracts in the portfolio to be securitized. The information and assumptions drawn from the analyses will be subjected to various stress scenarios in a cash flow model to examine the stability of the transaction under circumstances of economic stress. Details specific to the transaction such as revolving periods, trigger events, internal and external credit enhancements, swaps, etc. are taken into consideration. The results of the cash flow studies are subsequently condensed and included in the rating assessment.

In a typical transaction, a SPV invests the funds raised through the issuance of bearer bonds or other financial instruments (or sometimes via other means such as borrowing) in the purchase of the originator's/seller's NPL receivables. In the case of a "true sale" of the receivables, the SPV becomes their owner with rights of disposal. During the workout process, the servicer is responsible for cash flow management and debt collection. The servicer subsequently transfers the cash flows to the SPV. If the transaction incorporates trustees, they will monitor cash flows in the interest of the investors and will usually hold the accounts as well.

3.1 Transaction features and structural risks

3.1.1 Legal considerations at the issuer level

CRA conducts a thorough assessment of the risks associated with the transfer of the receivables to the issuer and evaluates the legal structure of the issuer. Key considerations in this assessment include determining whether there is a "true sale" of the pool of assets from the originator to the SPV. In addition, CRA examines provisions beyond a true sale that protect the SPV from the originator's insolvency, such as separation agreements In addition, CRA will review the SPV to ensure that it contains valid and enforceable features designed to prevent its own insolvency, including limited recourse, non-petition and subordination criteria.

Our understanding of the presence and effectiveness of such structural characteristics will feed the subsequent quantitative analysis. Note that the transaction documents (term sheet, prospectus, related contracts, etc.) and related legal opinions and documents are the focus of our inspection. These documents are typically prepared with the involvement of specialized lawyers. CRA forms an opinion

about them, but no additional legal examination will be conducted. If potential risks related to the transaction's legal structure become apparent, the analysts will state these in their assessment. However, it is important to note that such statements do not constitute a legal opinion of CRA. In addition to transaction-specific legal risks, we examine regulatory risks more broadly. Findings will be taken into account in our issue rating.

3.1.2 Jurisdictions / regulatory framework

Transaction-specific jurisdictions are analysed regarding their effectiveness for loan restructuring, workout processes and foreclosure on debtors, such as consumer protection and personal bankruptcy laws. An efficient regulatory framework and bureaucracy may favour higher recoveries, faster access to collaterals and faster collections. However, consumer protection may in contrast also impede recoveries and future portfolio performance.

In addition, the servicer must prove that it complies with legal and regulatory obligations and demonstrate the establishment of processes to ensure and monitor compliance.

3.1.3 Credit enhancement

While credit enhancement forms a key part of typical NPL transactions, it can be provided by a wide variety of means. Hence, the credit enhancement features discussed in the following cannot be considered all-encompassing. If other credit-enhancing mechanisms are present in a transaction, CRA will also consider their performance implications. When the assets exceed the outstanding amount of a specific class of notes by virtue of subordination that provides some protection for that particular class against losses on the assets. Related sources of credit enhancement may be overcollateralization, account pledges (e.g. through a letter of credit), and reserve funds (e.g. liquidity reserves or first loss reserves). Due to the high volatility of payment flows, reserve funds are a central element of NPL securitizations. They are intended to offer sufficient liquidity in the event of shortfalls in recovery payments and to ensure that payment obligations to the noteholders can be met.

In addition to enhancement mechanisms, there are also liquidity enhancement instruments that do not affect credit enhancement. Liquidity lines provide cash that can be used to pay interest or costs due in the event of a shortfall. However, these liquidity lines are senior to the rated notes in terms of the priority of payments, so these funds do not provide additional enhancement. Another example of NPL securitization is interest reserves funded by collections.

Due to the highly uncertain nature of cash flows in typical NPL transactions (which may be affected by idiosyncrasies such as overburdened bankruptcy courts), the provision of liquidity facilities tends to be more important than in performing-asset transactions.

3.1.4 Order of priority

Generally, professional transaction documents carefully delineate how available distribution amounts will be allocated to interest and redemption payments on the different classes of notes as well as to other obligations of the issuer (e.g., taxes). CRA will review the relevant provisions meticulously, as these will greatly influence the assumptions and settings made for the quantitative cash flow model. In some transactions, the seniority of one class of notes may not hold in every state. Instead, redemption payments may be sequential in some states, while in others, they may be pro-rata. Sequential amortisation of NPL transactions is considered particularly advantageous for senior tranches due to the unpredictable nature of cash flows for this asset class. Triggers, as discussed in more detail below, are a tool used to control and alter the order of priority.

3.1.5 Trigger

Triggers define events that cause an increase in the enhancement level of the transaction. The event is typically defined in relation to a specific threshold reflecting poor performance of the asset pool or deteriorating economic conditions. Well-designed triggers reduce the requirements for further collateralization mechanisms as well as the risk involved in the transaction. Determining the extent to which a trigger serves to protect investors from a deterioration of the quality of the asset pool is therefore clearly relevant to the rating process. Typical for NPL transactions are performance triggers, which set the actual realised recovery in relation to the expected recovery assumed in the business plan. Further examples of trigger events are the realisation of other defined performance ratios, a decline in the credit standing of the originator or servicer, a breach of contractual obligations (covenants), the deterioration of existing collateral (credit enhancement) and liquidity reserves that are below a predefined limit.

The consequence of a trigger breach varies from transaction to transaction. In the context of NPL transactions, the occurrence of a breach of a performance-based trigger may occasionally result in a transition from pro rata to sequential amortisation, the cessation of cash payments to equity tranches, or the deferral of interest on subordinated notes. If a counterparty fails to maintain a specified credit rating, it might constitute a breach that triggers a collateral requirement or a replacement of the counterparty.

CRA studies the triggers and their implications (as defined in the transaction documents) carefully and considers them when deriving quantitative results.

3.1.6 Eligibility criteria

Transactions with a revolving period or prefunding will most likely involve eligibility criteria. The parties initially agree on quality criteria to limit the purchase of receivables based on particular characteristics,

which significantly affects the risk profile of the receivables pool. Additionally, concentration limits related to the total portfolio can also be defined and must be complied with during the transaction's term.

The seller must adhere to eligibility criteria, guaranteeing compliance when adding new receivables to the portfolio. Typically, the seller compensates for any breaches by either repurchasing non-conforming receivables or providing a suitable substitute or remedy. Non-compliance can trigger events like early note redemption. These criteria aim to reduce risk from an investor's perspective.

In general, eligibility criteria relate to seasoning of the receivables, court of jurisdiction and legal framework, status and enforceability of the receivables, limits on the concentration of individual debtors, geographical concentration, and in addition may also relate to the priority of the loans/claims or the loan-to-value ("LTV") ratio.

In analyzing a transaction's structure, CRA evaluates the eligibility criteria and portfolio restrictions for their risk-mitigating impact. These criteria also feed into the empirical analysis to establish base assumptions, often setting minimum thresholds for these parameters.

3.1.7 Revolving period

NPL securitizations typically have a revolving period for purchasing receivables, during which redemption payments to investors are often reduced or omitted. This reinvestment is contingent on new receivables meeting specific criteria to prevent performance decline in the receivables portfolio (refer to "Eligibility criteria" section). To mitigate these risks, certain trigger events are defined. CRA's quantitative cash flow model accounts for the revolving period, as it can impact the weighted average life (WAL) and periodic cash flows. This, in turn, affects credit enhancements and tranche stability against defaults and losses.

3.2 **Counterparties and operational risks**

3.2.1 Servicer

The servicer's primary function within the structure is the managing, processing and collecting of payments of the underlying assets and the distribution of these collections to the next level of the structure (e.g. trustee, distribution account). Due to the non-performing nature of the underlyings, the servicer must monitor and actively manage an NPL much more closely in order to achieve the highest possible recovery than with performing asset classes. CRA therefore analyses the servicer's collection approach and business model, which contains in particular information on recovery expectations and timings as well as detailed information on the purchase price. In addition to the servicing processes and

receivables management, human and technical resources constitute important aspects of CRA's due diligence. Therefore, we focus particularly on the servicer's expertise of management, local market knowledge, experience in collection processes and the know-how in judicial proceedings. The assessment of servicer operating risks also takes into account the type of payment and debt collection and capacities of cash management, as well as an assessment of the capacity of IT systems involved in debtor management and the quality of internal controlling. Valuable indications related to future performance can be derived from historical data regarding servicing performance and by examining business practices.

A servicer's default during a transaction may have undesirable consequences for the transaction. First, following a servicer default, the forwarding of cash flows from the pool of receivables to the issuer may be delayed. That might pose a challenge from a liquidity perspective. Second, and more importantly, a default of the servicer may give rise to commingling risks, as discussed in the following.

If CRA considers the servicer to be below average in servicing standards and practices or its creditworthiness, it will thoroughly evaluate if plans to mitigate a servicer default are in place (e.g., the existence of a back-up servicer). A back-up servicer may not provide a comparable service due to different collection approaches. Therefore, it is important to consider the potential impact on the future performance of the portfolio.

3.2.1.1 Work-out process

The workout process is a servicer specific feature, which has affected the servicer's specific track record in the past and is therefore important for forecasted performance. We review internal processes in order to determine key elements of an NPL lifecycle and reserve the right to adjust performance forecasts in light of potential changes of these key elements.

In general, the recovery process can be divided into (i) a pre-judicial and (ii) a judicial stage. Often, the servicer starts the first process only followed by the second, in case of no success. One of the servicer's tasks is to assess in which cases a court should be involved and in which cases such a procedure would be disadvantageous.

Pre-judicial foreclosures are a servicer's specialty, which often require fewer expenses and result in faster and higher (net-) recoveries, whereas judicial processes may require additional outlays (e.g. court fees) and will typically result in slower and lower recoveries.

The impact of loan restructurings can also be analysed by type of underlying and will have an impact on assumptions.

3.2.1.2 Alignment of interest

Given the high degree of discretion that servicers have in managing NPL portfolios, it is important to ensure that their interests align with those of investors. This will serve as an adequate instrument to prevent the servicer from taking excessive risks and will contribute positively to the rating assessment. To achieve this, variable performance fees should be used instead of flat fees, and the servicer should have a first-loss participation in form of junior tranches or equity.

3.2.2 The Originator

The originator—usually a bank or other financial institution—is the initiator of the underlying NPL securitization. He might sell the receivables to the servicer or directly to the issuer for refinancing purposes. For CRA, the underwriting standards of the originator are a key characteristic. Acceptance and quality criteria that need to be met by the underlying loan contracts, documentation requirements, and scoring processes are examined and included in the rating. It is worth noting that our assessment of the originator serves a dual role. For one, it is relevant to our portfolio analysis (e.g. recovery performance is often related to the geographical location). For another, it helps us uncover potential counterparty risks (e.g., to gain insights into the likelihood of issues with regulatory compliance or failures concerning representations and warranties). Sometimes, however, the transaction is not initiated by the seller of the receivables. In such cases, the servicer often acts as the originator by combining and securitising receivables from different external sellers.

3.2.2.1 Representations & Warranties (R&W)

Portfolio purchase agreements between seller and buyer usually contain “Representations and Warranties” that ensure a minimum level of quality of the underlying receivables. Among other things, we check whether receivables are:

1. originated during the normal business of the seller
2. legally binding and enforceable
3. free of netting rights against the seller
4. have a sufficient level of documentation
5. are unencumbered with third party rights

In our rating process, we will either review samples of contracts to those points or rely on independent third party reviews.

Furthermore, we consider any violation of R&W to result in the seller being obligated to repurchase the sold receivables. We evaluate the creditworthiness of the seller in terms of its ability to repurchase significant amounts of sold receivables and the impact this has on the transaction.

3.2.3 Investment risk and acquisition risk

In specific transactions, NPL portfolios may be purchased from tenders or revolving negotiations with sellers, which exposes the transaction to the investment capabilities of the servicer. Investment risk can also increase in a changing market environment. The result may be an increase in purchase prices of portfolios or declining portfolio quality, which may affect future portfolio performance adversely. Acquisition risk on the other side describes the risk that no debt portfolio meeting the eligibility criteria is available for sale at the time of purchase.

Accordingly, we will analyse recent market developments and will adjust forecasted performance, where appropriate.

3.2.4 Set-off risks

Set-off refers to the legal process of netting financial claims and obligations between two or more entities, either of which may be a business or a person. Within the context of NPL securitizations, a situation in which set-off can occur is when the debtor of a purchased loan receivable holds deposits with the seller (or originator or servicer). If the seller defaults, the debtor may be able to declare a set-off of his claim against the seller versus his liability from the loan, in turn reducing the outstanding principal amount of the purchased loan receivable.

In evaluating set-off risks, CRA will take into account the likelihood of the seller defaulting, mitigating structural features such as a set-off reserve account (if present), and the pertinent legal environment.

3.2.5 Commingling risks

Commingling risk defines the risk that payments of debtors are made to the collection accounts of the originator or servicer and may not be separated from a general insolvency estate in case of an insolvency. This may lead to a loss of a portion of some period's collections and a substantial delay of cash flows. Here, possible mitigations can be credit downgrade trigger or lock-box accounts with (a restricted) access of the originator or servicer.

Following the sale of the receivables to the issuer, the servicer typically will receive collections on the receivables in its bank accounts. These funds are subsequently passed on to the issuer as part of the regular business process. However, following the bankruptcy of the servicer, it is conceivable the funds collected on behalf of the issuer are not transferred but commingled with the insolvency estate of the

defaulted servicer instead. CRA will assess such commingling risks, taking into account the likelihood of a servicer bankruptcy, potential mitigating structural features, as well as jurisdiction-specific legal aspects.

3.2.6 Dilution Risk

Dilutions are ex post reductions of the original invoice amount and arise from rebates, bonuses or disputes. Generally, dilution risk is of subordinated importance within NPL portfolios, since claims against debtors are already mature and disputes might have been resolved. However, younger batches of NPL assets may still hold significant portions of dilution risk, which may be reduced by the purchaser's pre-purchase due diligence and the quality of the originator's client records. Additionally, repurchase agreements and a strong credit profile of the originator mitigate risk.

3.2.7 Other counterparty risks

In addition to the analysis of counterparty risks related to the originator, servicer, and seller, CRA assesses the creditworthiness and experience of the swap counterparties, collateral providers, appointed account banks, and trustees. Here, we endeavour thoroughly examining all dependencies on the counterparties involved. Counterparty risks arising, e.g., due to the provision of derivatives, credit lines, or financial guarantees constitute risks beyond the credit risk of the pool of receivables. We therefore consider a review of the solvency and credit quality of counterparties such as account banks, guarantors, insurance companies, swap counterparties, and trustees to be an integral part of the rating process.

3.3 Asset analysis and credit risks

To determine the credit quality of the underlying, CRA evaluates both current and historical data (aggregated or at loan-level, macroeconomic- and issuer-specific performance data) while taking into account the eligibility criteria. We seek to understand the collateral characteristics of the pool that shape the magnitude and pattern of collection performances. Several quantitative and qualitative parameters of the portfolio are derived from data, such as its granularity, exposure to interest and FX risk, geographical concentration, seasoning, purchase price discounts, and, if relevant, credit enhancements such as LTVs or debt-to-income ("DTI") ratios, etc. CRA then derives rating-specific assumptions on expected recovery rates of the portfolio throughout its lifespan relative to the purchase price. As the timing of collections may be critical to the servicing of interest and principal payments, we make a conservative assumption about the schedule of collections based on historical data. The findings of the analysis concerning the qualitative and quantitative factors serve as input for the subsequent cash flow analysis (see also section 3.4).

In our preliminary data request, we expect an appropriate data history about recoveries, dilutions, etc. The evaluation of the historical data concerning asset quality and portfolio performance is carried out considering that the quality of the data obtained is sufficient. In addition, if the data is comparable with individual or portfolio's planned future investments, the evaluations based on this data can be used to derive the base case assumptions. CRA will use comparative data drawn from a variety of sources if sufficient manager or originator-specific data is not available.

3.3.1 Data Adequacy

The data used in our analysis include the following information:

1. Loan-by-loan/batch-by-batch data of the current portfolio (if relevant)
2. Loan-by-loan/batch-by-batch data of historical performance of relevant portfolios of the servicer
3. Business plan/ financial model of the servicer

The data provided should cover a sufficient time period for reliable forecasts and the portfolio characteristics must be comparable with the transaction's eligibility criteria.

In addition, we might review the originator's sales ledger and client records for completeness, quality and accuracy of the information. A detailed list of the required information can be found under: **Fehler! Verweisquelle konnte nicht gefunden werden.**.

3.3.2 Portfolio performance analysis

Analyses of the historical performance of the NPL portfolio constitute an essential step in forecasting or estimating future cash flows of an analysed NPL asset pool. The approach is based on deriving assumptions on expected future performance from a historical track record. The assessment of the historical performance of assets and potential collateral allows us to derive appropriate performance assumptions, extrapolate expected trends and construct base cases that serve as input parameters for further quantitative analyses.

Historical performance data is usually provided in the form of static pools ("vintages"). These are related to a specific date and are often provided on a monthly or quarterly basis. Static data sets are particularly suitable for forecasting the performance of new portfolios or similar assets.

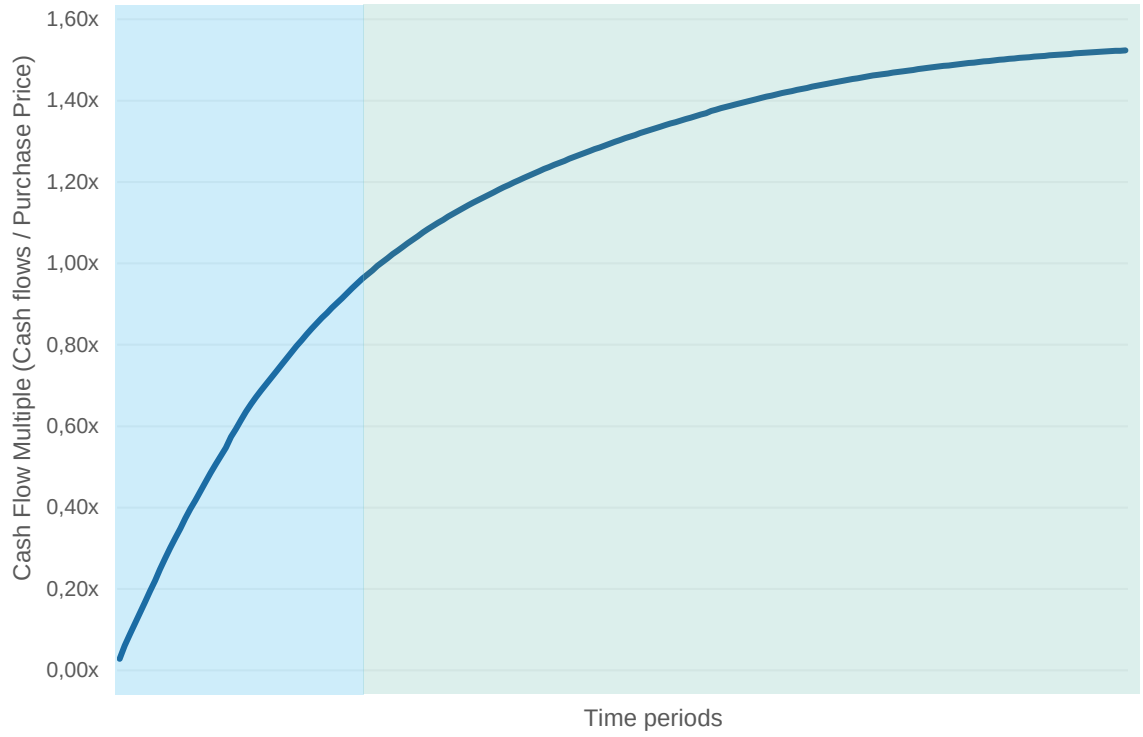
We first analyse the typical cash flow structure of the NPL portfolios. In our understanding, a typical recovery process includes the following phases:

1. Purchase of NPL portfolios

2. Pre-judicial collections
3. Judicial collections

These phases of a stylized cash flow term structure are shown in Figure 1. The horizontal axis represents time intervals of the recovery procedure. The vertical axis shows collection amounts or collected cash flows as a multiple of the purchase price[1].

Figure 1: Stylized NPL cumulative cash flow term structure



Initially after the purchase of an NPL portfolio, cash flows generally come from partial or full settlements of debtors with a high capability or willingness to repay their obligations. Additional expenses do typically not accompany these initial recoveries. Subsequently, when recovery performance slows down, the servicer starts its pre-judicial settling process, which entails additional operating expenses, e.g. for reminders. We deem the pre-judicial phase to be crucial as it may generate most of recoveries at lowest cost and thus contributing most to total net return. The process is shown in the blue area of Figure 1.

In the second phase (green area), judicial collections require higher legal and litigation expenses. Here, the recovery performance is highly dependent on the servicer's judgment as to which claims to prosecute

[1] Therefore, the stylized cash flow term structure is expressed as following money multiple. Multiple := [return - costs] / [purchase price]

with an expected positive net return. Therefore, the contribution of cash flows from judicial collections combined with debtors with a low capability or willingness to pay result in a less steep slope of the curve and an extended recovery period.

In order to derive our base case assumptions on expected multiples, we analyse historical NPL asset performance after the initial investment expenditures (purchase price). In case that complete data series are not available, the missing periods need to be extrapolated. Extrapolation occurs by examining the average change in the cumulative performance for similar asset pools. On occasion, CRA may deem the data it received to be insufficient. This may be the case when (i) the product under review is new and no predecessor product exists; (ii) the characteristics of a product have changed to such a degree that historical data is of little value; or (iii) the documentation of the data is missing or defective. In such cases, CRA may supplement the received data with information from other sources, such as internal CRA data or similar transactions, thereby applying a consistent structure across all years.

When extrapolating historical data, we control for exogenous factors in the calculation. In addition, existing volatilities and differences in trend may be enhanced by this process, with the result that individual years, in particular more recent ones, may differ from the average. CRA examines the causes for divergences of this nature and integrates the results of the analysis in the rating.

The average of extrapolated cumulative performance from the static pool of receivables is a starting point for the derivation of the **money multiple's** base case assumption. In deriving the base case, the seasoning of purchased receivables and the duration of successful recovery of the historical portfolios constitute important factors.

3.3.3 Interest- and FX-risk

Depending on the underlying assets, the cash flows available to NPL transactions may be sensitive to fluctuations in either interest rates or foreign exchange quotes. Interest rate and currency mismatches typically arise when portfolio assets and note tranches have different interest rates, durations, or currency denominations. FX risks emerge with currency mismatches between NPL transaction assets and liabilities and may lead to a reduction of available cash flows. Movements in interest rates can pose a risk when significant differences between assets and notes exist, either because of a fixed vs. floating mismatch or because of duration gaps between assets and liabilities. Depending on the particular conditions, interest rate risks will materialize in rising or falling interest rate environments.

CRA will assess stress scenarios by considering particular parameters (e.g. specific curve tenors, or FX volatility) and will base its analysis on prudent assumptions concerning stressed movements in interest and FX rates to incorporate the results in its cash flow model. The FX and interest rate risk breakdown

serves to enhance the cash flow model by providing a consistent analysis to appraise economic stress events. The assessment approaches for interest rates and FX stresses are presented in “Appendix II: Interest rates and foreign currency stress”.

3.4 Cash flow analysis

Based on the analysis of the transaction structure, the cash flow model includes the specific characteristics of the respective NPL securitization such as costs and fees, interest rate and repayment structure, existing credit enhancements (reserves, etc.), tranching, triggers, as well as the order of priority. The aim is to replicate all relevant mechanisms, thus cash flows generated from the assets with regard to the payment obligations of the issuer can be examined in detail. To conduct a rating, CRA will introduce specific stress factors providing different rating scenarios in order to study the stability of the cash flows and to assess the risk of incomplete payment of investors' entitlements within the different tranches.

3.4.1 Asset-Liability Mismatch (ALM) / cash flow timing

Since cash flows of NPLs are volatile by nature that might create mismatches with the transaction’s potentially fixed liability side with respect to interest payments and redemption schedules. Here, we particularly pay attention to the age of the purchased NPL portfolio, which might influence the expected performance of collection processes. For example, older batches in a judicial process may generate lower cash flows compared to younger batches. After determining the timing of the cash flows, we perform sensitivity analysis and stress testing regarding the timing of cash flows in order to derive the appropriate assumptions.

The analysis will also consider any structural features, such as liquidity reserves and triggers, as well as waterfall or tranching debt instruments for a given transaction.

3.4.2 Revolving Period

Traditional risk factors of revolving periods are the unknown characteristics of future assets and originators and a changing market environment that might bear additional investment risk. For example, higher competition among purchasers may lead to lower purchase price discounts or weaker underwriting standards or entering into markets where the servicer is not established and has less experience. These factors may adversely affect future portfolio performance and we expect significant eligibility criteria in order to mitigate this risk.

In addition to the traditional risk factors, NPL portfolio's volatile cash flow timings add an additional risk dimension regarding the reinvestment timing, which may have negative impact on other risk categories (e.g. ALM).

3.4.3 Concentration Risk

High granularity is important especially for portfolios of unsecured NPL assets. Since the recovery amounts and recovery timing of the underlying NPL assets vary widely, a more granular portfolio ensures a higher probability to service all payment obligations. Most of the transaction's portfolios rely on a modest number of originators or sellers. Therefore, concentration risk might arise due to the originator's business model. CRA analyses the pool characteristics in particular regarding the number of sellers and obligors, type of sector or industry and the residency of the debtors.

3.4.4 Stress factors and rating scenarios

Based on the findings of the portfolio performance analysis we derive stressed assumptions on recoveries or collections, whose stressed values constitutes a rating scenario. We therefore take into account the average money multiple, the historically observed standard deviation, the correlation of the portfolio performance, and the granularity of the securitised pool. The 2.1rating scenarios vary according to the respective stressed assumptions, and applied stresses increase in higher rating scenarios.[2] The rating relevant money multiple will serve as input for the subsequent cash flow analysis.

In the absence of further disaggregated data, CRA will make use of public information, other macroeconomic data and market studies to derive country-specific base-case assumptions and reasonable performance stresses.

In some cases, analysts exercise analytic judgment and determine stress factors based on qualitative criteria. These criteria will be explained and their usage justified in the rating report. The actual stress factor applied may therefore differ from the values that have been determined quantitatively. Qualitative factors particularly important in the context of NPL transactions include:

- quality of the historical data provided
- quality of the sellers
- stability of initial underwriting standards
- stability of servicing standards

[2]Stress factors serve to represent phases of economic downturn and correspond to the risk of performance remaining below the base assumptions. Stress factors are calibrated under the premise that the corresponding rating scenarios and the expected money multiples associated with them will be according to the empirically observed distribution of performance in the respective rating category.

- Revolving periods
- Macroeconomic factors

Such qualitative factors — along with our rating definitions — may lead us to choose lower or higher stresses (further details are provided in the Appendix: Adjustment of assumptions). The determination of stress factors is subject to diligent assessment and approval by the rating committee.

A tranche passes a specific rating scenario if its cash flows fully and timely cover interest and redemption payments.

3.4.5 The cash flow model

CRA models cash flows in consideration of all particularities specific to the transaction as outlined above. As such, for example, we will take into account the order of priority as well as performance triggers. Based on the targeted interest rate and redemption flows at the beginning of the amortization phase, all costs are included and the tranches (interest and principal) are serviced according to the predetermined priority of payments.

Here, CRA's proprietary cash flow model processes assumptions concerning the relevant performance of the securitized pool, the timing of recoveries, as well as the influence of interest rate risk and FX risk. The cash flow model is the central quantitative tool that allows us to evaluate cash flow stability in a wide range of scenarios. Furthermore, it enables us to depict the influence of a range of rating scenarios on the servicing of financial instruments in detail and over the entire term of the transaction. For example, for a worst-case analysis, we can set the cash flow model with the worst possible portfolio that is feasible under the eligibility criteria.

3.4.6 Scenario-based stress tests

The information gained in the course of the rating process is used to construct sensitivities related to the parameters of the cash flow model. This enables scenario-based stress testing by which the cash flow model, in the context of a particular rating scenario, is subjected to these predetermined additional stress parameters. We investigate their effect on the serviceability of the structure. Furthermore, we conduct sensitivity analyses to quantify the extent to which the stability of the structure is affected by variations in individual parameters. This enables us to assess the robustness of the rating indication for parameter uncertainty. In addition to the stress factors affecting the rating relevant recovery rate, CRA may stress other relevant parameters and their impact on the risk profile (e.g., level and timing of collection performances and interest rates).

To determine a rating indication for a tranche, the predefined scenarios are evaluated. CRA examines whether the creditors' claims for payment of interest and principal can be met in accordance with the contractual obligations.

The sensitivity analysis on the parameters governing the timing of collections deserves some further motivation. The data on non-performing unsecured receivables suggests that collections tend to peaking after purchase, and slowly falling thereafter. Therefore, it may be instructive to test whether the structure is robust to a front-loading of collections. However, some structures have included non-deferrable interest rates. Consequently, it is instructive to test whether the structure is robust to a back loading of collections as well.

CRA's quantitative model allows us to stress-test front-, even-, and back loading of collections. We will run these stress tests whenever analysts deem them appropriate based on the characteristics of the pool of receivables as well as the transaction structure.

The rating report presents the results from the cash flow analysis including findings from the scenario-based stress tests. These findings are discussed extensively in the rating committee.

4 Environmental, social and governance factors

CRA generally takes ESG-relevant factors (environmental, social and governance) into account when assessing NPL ratings. CRA assumes that an isolated consideration and presentation leads to further transparency and greater granularity of information.

We mainly take into account relevant aspects of the NPL transactions, the relevant legal basis and pool-specific ESG factors. Social factors (e.g. risks related to customer relations and product safety regarding collection practices and data security) can have a noticeable influence on the rating. Often the payment options offered and the way in which they are contacted can affect the payment behaviour of debtors. CRA assesses social factors and governance factors (e.g., risks related to transaction structure, counterparties, legal and regulatory environment and risk management) in particular as significant for the assessment of NPL ratings.

On the subject of ESG (Environment, Social and Governance), CRA has published the basic document "The Impact of ESG Factors on Credit Ratings". This document and the rating methodology related to the issuer-relevant ESG factors are readily available on our website. (www.creditreform-rating.de).

5 Continuous monitoring and follow-up rating

A rating is typically valid for one year. During this period, the team of analysts continuously monitors the development of the issue. For monitoring purposes, the analysts remain in direct contact with the relevant parties to the transaction while also evaluating relevant information. We strive to ensure, at all times, that the indication provided by the rating is valid. Should any significant events occur during the monitoring period, which may have a negative or positive effect on the risk profile of the issue, the rating will be adjusted.

Since NPL transactions might be volatile in terms of cash flows and portfolio composition, we expect a comprehensive and continuous reporting. The quantitative information provided herein must suffice to test our base rating assumptions along with management discussion and analysis on qualitative material events. In addition, the report must include details on sources of available distributions and the use of such transaction proceeds.

6 Variation from Criteria

This principal methodology is intended to be generally applicable. However, if necessary, the analysis might also be based on other methodologies or the analysts deem it necessary to make adjustments or deviations. This is particularly the case for transactions with certain asset classes as underlying assets, where a specific approach to the amount and timing of recoveries is required. In addition, restructured or re-performing loans may require specific default analysis in the context of certain asset classes. CRA then derives its assumptions on defaults and recoveries using the relevant methodology (e.g. Auto ABS, RMBS, etc.). These variations will be presented and discussed within a rating committee along with an explanation in the accompanied rating report.

7 Data Requirements

For ratings on transactions with NPLs involved as asset base, CRA analyses information provided by the issuer, the servicer, the arranger or available information provided by other third-party sources. Our focus is on loan-by-loan (or at least batch-by-batch) information on the NPL assets, investment processes, purchase price information, the business plan of the servicer, business information of the servicer and any other counterparties (e.g. seller, guarantors, etc.) and the transaction documentation. The documentation should provide a clear and concise explanation of possible transaction risks. These may also include foreign currency, legal and commingling risks.

In general, CRA relies on following information for its rating:

1. Transaction description, organizational overview, (indicative) structure, term sheet, including information on:
    a. Life cycle of securitization (duration of the revolving and duration of the amortization period)
    b. Cash flow waterfall
    c. Interest and repayments of the notes/tranches
    d. Liquidity facility
    e. First loss reserve
2. Further relevant transaction documentation (e.g. servicer agreement, purchase agreements, prospectus or issuing documents)
3. Business plan by the servicer
4. Valuation model, recovery estimation
5. Any further policy documents of the servicer (e.g. investment policies, collections policies, ESG policy)
6. Business information on the originator / servicer / seller (e.g. financial statements, annual accounts, group structure charts) and information about other relevant program entities (account bank, liquidity provider, guarantors, etc.)
7. Ongoing investor / collection / performance reports
8. Relevant loan information, in particular restructuring documentation

We reserve the right not to rate the transactions with insufficient or implausible data.

7.1 Loan-by-loan data

Historical loan-by-loan or batch-by-batch data should show all types of cash inflows and outflows. Typical cash flow types include the following:

1. Purchase of the portfolio (negative)
2. Repayment (positive)
3. Other expenses (negative)
4. Judicial expenses (negative)
5. Taxes (positive/negative)
6. Retrocession (positive)
7. To determine the discount provided by the sellers for the purchase of the portfolio NPLs, we need to see the nominal amount of certain batches or loans. The composition of the notional amount, including any legal fees, should be identifiable. As the timing of cash flows is another crucial component of the analysis, it is essential to observe timing details for each cash flow listed above.
8. Retrocessions refer to cash flows resulting from the return of certain loans to the seller due to incorrect debtor information, such as an incorrect address. This may result in additional costs, as the identification and return of these loans may not meet the required rate of return for the financing transaction.
9. Furthermore, the data should include seller ID, debtor or batch IDs as well as the geographic location and industry or sectors of the debtors. This will enable us to structure the data for initial analysis, while the geographic and industry specifications will help determine the concentration risk in the portfolio.

The provided data should include the following fields, but additional information may be requested:

Data Field name	Description
Seller ID	Unique identifier for a seller
Seller name	Name of the seller company
Batch ID	Unique identifier of the batch
Debtor ID	Unique identifier of the debtor
Origination date	Date for the purchase of batch
Cash flow type	Occurred cash flow type with respect to the given loan. E.g. purchase price or repayment
Cash flow amount	Amount of cash flow transaction
Transaction date	Date for a given cash flow
Location	Location of the debtor
Industry or Sector	Industry or sector of the debtor
Outstanding nominal amount	Nominal amount due by the debtor
Period	The period of the cash flow which is occurred in for a given type of transaction
Current delinquency status	Number of days the loan is delinquent
Currency of the loan	What currency is the loan denominated
Initial invoice date	Deadline of the initial payment due
Date of default	Since when is the loan delinquent

7.2 Business plan by the servicer

The business plan of the servicer should present base-case and worst-case assumptions and scenarios, along with expected recovery amounts and timings of cash flow distributions in relation to the purchase price and the nominal value. In addition, the business plan should include an estimate of the duration of the recovery phases, the recovery strategies and the costs associated with each phase.

Appendix: Adjustment of assumptions

Money Multiple

Additional haircuts to mirror the risk of a deviation between current collection values and historical values may occur e.g. due to changes in qualitative factors. Depending on the historical data, the stresses may be higher where the dataset of non-performing receivables is small and shows high volatility.

CRA will analyse the historical collection performance of the servicer and examine the characteristics of the portfolio and the collateral structure (if applicable) in more detail and, if necessary, make adjustments depending on relevant characteristics or changes to the historical mean.

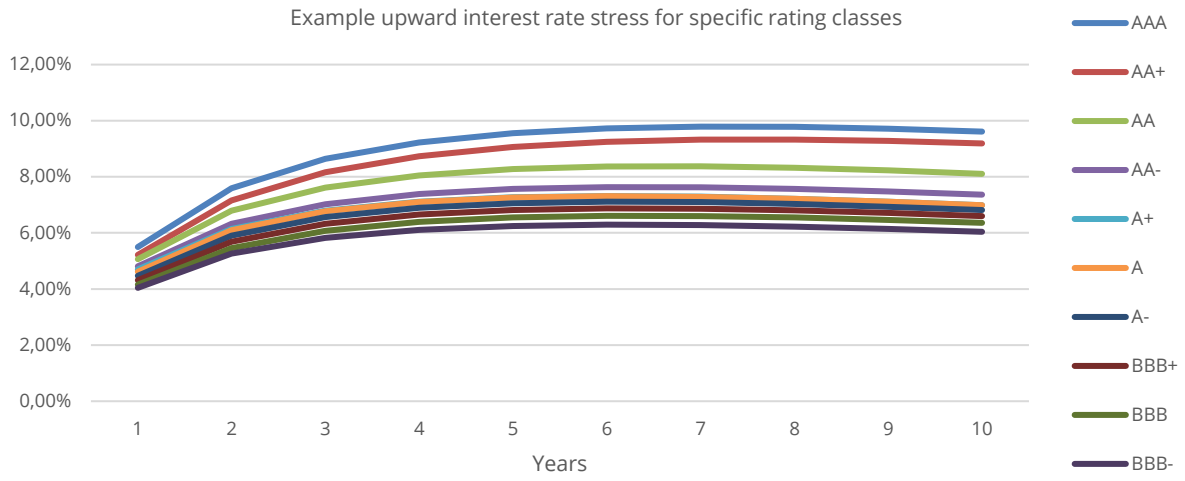
Furthermore, in CRA's experience, the servicer-specific collection process matters, as does the jurisdiction, the type of asset class, and third-party involvement in the workout process. The above factors can have a significant impact on the timing of the liquidation process. Faster repossession and liquidation of collateral can have a positive effect.

Appendix II: Interest rates and foreign currency stress

Interest rate risk modelling

CRA uses deterministic and/or stochastic approaches to assess interest rate risks by stressing the interest rate term structure taking historical volatility into account. The starting point of the analysis is the historical evolution of forward rate curves, typically EURIBOR rates. We then apply a stochastic model to forecast future developments of interest rates for upward and downward scenarios and for specific time horizons. Market spot rates are dynamic and updated regularly, so the CRA closely monitor the evolution of interest rates regularly and updates its rating-specific interest rate stress scenarios.

Figure 2: Example of upward interest rates stress over time for specific rating class| Source: CRA



Foreign currency risk modelling

Similar to forecasting interest rate stress, CRA assesses FX rate risks by stressing historical exchange quotes in the pertinent market, taking into account FX volatility. The modelling approach to derive losses due to FX risk is similar to a parametric VaR model. Average returns and standard deviations of currency baskets are calculated based on historical FX data of selected currencies. Then factors are applied to define the rating level stresses, which are fed into the cash-flow analysis.

Typically, we calculate both, currency appreciations and devaluations for specific time horizons to apply these stress scenarios to the cash-flow analysis on foreign currency collections or payment obligations.

Figure 3: Example FX devaluation over time for specific rating class| Source: CRA