

# Rating Methodology of Creditreform Rating AG

## Ratings of Financial Instruments

### (Issue Ratings)

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*This document (v1.4) is an update that does not contain material changes to Creditreform Rating's methodological approach. The information presented in this document has been clarified and supplemented. The update is dated on October 2021.*

## 1 Introduction

Creditreform Rating AG (hereinafter also "CRA") has been conducting ratings since its establishment in 2000 and has developed into a recognized European rating agency.

In order to enable involved parties, investors and the interested public to understand a rating opinion of CRA, the present rating methodology for the rating of financial instruments is disclosed. This document will be updated periodically to reflect changes in the methodology. CRA's rating methodologies and code of conduct are freely available on the website [www.creditreform-rating.de](http://www.creditreform-rating.de).

This document describes the approach for conducting an issue rating. In contrast to a corporate rating, an issue rating refers to a specific financial instrument, such as a bond or promissory note. These financial instruments are usually issued by a company or a special purpose vehicle and invested as an individual or portfolio investment in an investment universe defined in the issue's terms and conditions. The financial instruments under consideration may be provided with valuable collateral or may be covered by assets whose cash flows and/or liquidation proceeds are available to cover the claims of creditors in the event of default. The assets underlying as collateral often also act as a cash-generating unit during the term of the transaction in order to service the ongoing claims of the creditors in the form of interest payments and principal redemptions. This contrasts with the financial instrument of a "traditional" corporate bond, which generally has no such collateral. The present rating methodology for financial instruments is supplemented with further documentation for these different cases.

Creditreform's issue ratings are carried out taking into account all information available and deemed relevant in order to derive a risk measure for such an issue. CRA makes its statements on the basis of a rating methodology that combines different analytical approaches. Compared to CRA's corporate ratings, issue ratings focus on the aspects of seniority and collateralization, as well as related contractual and structural elements of a specific issue. These represent an independent focus of analysis in the assessment in addition to the quantitative analysis.

Issue ratings are informed opinions on the credit quality of a financial instrument. They are not recommendations to buy, sell or hold a financial instrument. An issue rating is not a legal opinion and does not constitute an independent assessment of the future market or fair value of individual assets and/or the issuer's investments.

## 2 Scope

The present rating methodology "Rating of Financial Instruments (Issue Ratings)" defines the general analytical framework for conducting an issue rating. An issue rating refers to a specific financial instrument, such as a bond or a promissory note loan, which is issued by a company.

Within the framework of the present methodology, a distinction is made accordingly as to whether the issuer is a commercial enterprise with operating activities or a special purpose vehicle (SPV). Furthermore, issues are differentiated according to whether the cash flows for servicing a specific financial instrument result either directly from the operating activities of a company, or whether these can be generated or derived from investments made ("underlyings"). Thirdly, it is necessary to differentiate according to the type of existing collateralization. In this context, it is initially irrelevant whether the collateralization is in the form of direct collateral (e.g. real collateral) or indirect collateral in the form of contractual claims. The assessment of the portfolio and credit quality of the underlying assets as well as asset management and servicing is of particular importance in the case of asset-backed securities. The present rating methodology reflects the cases described above.

The rating of a financial instrument is thus distinguished from a corporate rating, in which the classification of a company into a credit rating class is based on specific criteria. Although in the case of a completely unsecured bond (e.g. corporate bonds) an issuer rating is of particular importance - because it can be used to make a detailed assessment of operational and credit risks - in the case of issue ratings it is generally necessary to take into account additional factors such as rankings in the capital structure (seniority), collateralization mechanisms and transaction-specific features such as credit enhancements. The rating of a company and the rating of a security issued by that company can usually not be equated. Therefore, an issue rating cannot be derived directly from an existing corporate rating.

If and to the extent that financial instruments are issued in the form of structured tranches, the rating methodology for structured finance is applied, to which we also refer at this point.

### 3 Rating approach and process

#### 3.1 Rating approach

The rating methodology of CRA is based on the fundamental question of the extent to which the issuer will be able to meet its financial obligations in full and on time in the future. It is analyzed whether the expected returns (cash flows) will be sufficient to service the payment obligations due from the issue of a specific financial instrument. Thus, the issue rating is an assessment by the agency of the credit quality of a specific financial instrument and relates to the question of whether investors will suffer a loss during the term. While the rating result is based solely on the financial instrument assessed, the analysis assesses the business model underlying the transaction and the planned investments or underlyings without explicitly communicating these individual results ("look-through approach").

The presentation of ratings requires a definition of default. CRA's definition of default is generally based on the definition of default provided by the Basel Committee on Banking Supervision. With regard to a particular financial instrument, a default is deemed to have occurred if it is highly likely that the issuer will be unable to meet its contractual payment obligations in full. According to this definition, any actual loss greater than zero is equivalent to a default ("first euro loss"). Causes for this are, for example, the insolvency or liquidation of the issuer as the party obligated to pay. However, under this definition of default, the insolvency of an issuer is not synonymous with a default of the issued financial instrument, as in the case of collateralized or asset-backed structures in particular, cash flows continue to be realized which can partially or fully compensate for the nominal amount still outstanding at the time of default as well as interest or coupon payments of the financial instrument due or still outstanding up to that point. Therefore, in the case of collateralized or covered financial instruments, the result of the liquidation process is explicitly included in the definition of default. Accordingly, a collateralized financial instrument is deemed to be in default if, even after collateral has already been liquidated, it is highly likely that contractual payment obligations cannot be met in full.

Creditreform uses a notation/rating scale with the internationally standardized rating classes from AAA to D for issue ratings. Since collateral elements and structural features as well as their characteristics for a specific financial instrument are taken into account in particular when assessing the issue of a specific financial instrument, the following categories, each of which can be assigned to a rating class, are used to represent credit quality:

Rating grade	Rating	Assessment
AAA	AAA	Highest level of credit quality, lowest investment risk
AA	AA+	Very high level of credit quality, very low investment risk
	AA	
	AA-	
A	A+	High level of credit quality, low investment risk
	A	
	A-	
BBB	BBB+	Highly satisfactory level of credit quality, low to medium investment risk
	BBB	
	BBB-	
BB	BB+	Satisfactory level of credit quality, medium investment risk
	BB	
	BB-	
B	B+	Moderate level of credit quality, higher investment risk
	B	
	B-	
C	CCC	Low level of credit quality, high to very high investment risk
	CC	
	C	
D	D	Insufficient level of credit quality, total loss of investment
NR	Not Rated	Rating temporarily suspended, e.g. liquidation process

In particular, in the event of insolvency or liquidation of the issuer or default under the contractual servicing obligations for a financial instrument, a "D" for default is added to the rating notation when the rating is assigned. This default refers to the issuer or to defaults that have occurred in servicing the rated financial instrument.

An analyst team consisting of at least two rating analysts is responsible for a rating. The analyst team is the contact person for the client throughout the rating process and in the subsequent monitoring. A rating committee serves as the final authority for the rating assignment.

### 3.2 Data request and preliminary analysis

In a first step, the business model relevant for the financial instrument and the intended investments (use of funds) is analyzed and information on the economic and legal environment is researched. For this purpose, the documents submitted by the initiator of the transaction or manager as well as specific industry and market data are used. The data request includes information on the design of the financial instrument, specific information on the use of issuance proceeds or the downstream structure of the assets, and the collateralization of the financial instrument. Furthermore, information about the originator or the manager of the transaction is analyzed. Depending on the scope of the documents provided,

in some cases only random plausibility checks are conducted on the quality and consistency of the data. All data received is treated confidentially by CRA.

### **3.3 Management interview**

The management interview serves to explain and supplement the information presented and is conducted with the manager or initiator and, if necessary, with other parties involved in the transaction. Qualitative and quantitative factors are discussed. The focus is on the creditworthiness of the originator/manager, the (investment) strategy, acting persons, the historical track record or performance as well as the tools and capacities required for portfolio management. In particular and on a case-by-case basis, the quality of the collateralization as well as the rights of recourse within the framework of the regulations and contracts for financial instruments are assessed, in particular to limit risks in complex and multi-stage transactions.

### **3.4 Rating committee**

The findings from the analyses performed in the rating process are prepared by the analysts into a proposal for the rating notation. The rating analysts forward the report and the proposed notation to the rating committee. The rating committee is the final authority for the rating. It assigns and changes rating grades. The committee serves to objectify the rating assignment and ensures the uniformity of the content and formal quality of the ratings.

## 4 Rating methodology

Due to the different design features of transactions, which can influence the rating statement with regard to credit quality, Creditreform Rating examines a given transaction with regard to a large number of different risk factors. The weighting of the individual factors in the aggregation to a rating statement is carried out by the rating team in line with the requirements and specifics of the transaction in question and reviewed by the rating committee. Quantitative and qualitative analyses are conducted for a specific financial instrument as part of the rating process. The analyses focus on the following risk factors:

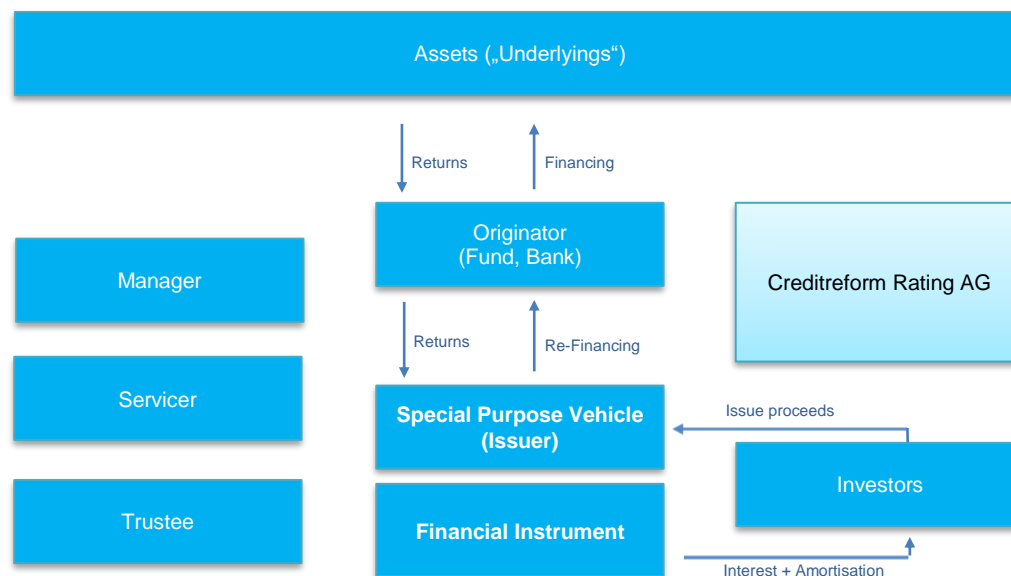


The qualitative analysis of the transaction structure or the quality of the cash flows that can be derived from it plays a significant role in the rating grade. Here, strengths and opportunities for the transaction are analyzed, such as reserves or other collateral instruments. Likewise, certain contractual provisions in the case of trigger events or a good credit rating of the originator can have a positive effect. Weaknesses and risks of the transaction are contrasted. For example, the implications of an issuer default, high risks at asset level or low diversification in the loan or receivables portfolio may come into play here. Industry knowledge and the expert knowledge of the analysts are used for the qualitative analysis.

Creditreform Rating applies different rating approaches or analysis methods alternatively or cumulatively, depending on how the business model is implemented via the issuance of a financial instrument and which characteristic features are present for the specific financial instrument and come into play in the transaction. In principle, cash flow analyses are conducted as part of an issue rating in order to determine the expected ability to service the contractual payment obligations for a specific financial instrument. To check the plausibility of the risk-reward profile, scenario analyses are conducted on a case-by-case basis and the cash flows are stressed. Depending on the complexity of the relevant structure in general and the quantitative and qualitative structure of the investments as well as the collateralization in particular, the scenario analyses are set up specifically (see section 4.5).



A typical transaction structure can be simplified as follows:



The proceeds of the issuance of the financial instrument are invested to acquire assets by the special purpose vehicle (SPV). The originator, such as a (loan) fund, bank or property company, raises proceeds in this way to provide financing (loans or loan sub-participations, infrastructure assets, real estate, etc.) or to refinance previously provided financing. In the following, we refer to the financing objects as assets or "underlyings". The term "assets" is used to distinguish the receivables acquired by the SPV as part of the issue. These may, for example, also be equity investments in the form of fund units. The assets at the level of the SPV are related to the recoverability of the assets/underlyings through different types of collateralization and coverage (see section 4.1.2, "Type of collateralization").

In fund-based transactions, the manager selects target investments and is responsible for due diligence, portfolio construction and ongoing risk management. In this case, the originator is a fund that refinances itself by selling fund units to the SPV. It is also possible for the SPV to directly originate financing itself. A servicer, if provided, oversees the processing of payment flows, the collection of receivables and possibly also the work-out in the event of a default or delinquency of a debtor. The servicer forwards the cash flows to the SPV. If the transaction is held in trust, the trustee reviews the cash flows on behalf of the investors and usually holds the accounts in custody. The investors receive the payment flows specified in the terms of the transaction in the form of interest payments and principal redemptions.

## 4.1 Structural risks

### 4.1.1 Analysis of the transaction structure

The analysis of the transaction and redemption structure reveals the main structural features of the transaction that can positively or negatively influence the performance from the investors' point of view. Due to the flexibility of the design of financial instruments and the multitude of investable asset classes, an exhaustive naming of all features is hardly possible. Key features include the priority of payments for interest payments and principal redemptions in relation to the financial instruments being rated, the type of collateralization and additional security buffers such as excess interest, cash reserves or liquidity buffers (credit enhancement); the presence of guarantees and hedging mechanisms; defined events (trigger events) that change cash flows; covenants, conditions and other security mechanisms (suitability criteria); and call or redemption options (early redemption, call/put rights). The features are assessed in terms of their effectiveness and are taken into account when modeling the transaction.

Other specific criteria include the purpose of the investment of the capital and, in the case of collateralization, its type and design. As the issue rating explicitly relates to a specific financial instrument, possible structural aspects must also be taken into account, such as contractual maturities and seniority in the context of the origin and use of issuance proceeds.

### 4.1.2 Type of collateralization and seniority

#### 4.1.2.1 *Type of collateralization*

In order to make the risk position of a financial instrument assessable for the investor in the event of default, the rating process analyzes whether the issue is a secured or unsecured financial instrument. In the case of collateralized financial instruments, the following facts must generally be taken into account in the rating process:

- Who is the collateral provider? Is it the issuer itself and/or is third-party or substitute collateral provided by another legal entity, for example in the form of guarantees?
- Are the investments made as underlyings the object of the collateralization, which, for example, are only indirectly available as cover assets in the form of claims under the law of obligations?
- The collateral can be specific assets, business or fund shares as well as receivables or similar. Assets in the form of collateral can include single or multiple assets of a specific industry, such as real estate, infrastructure, logistics or energy.
- Furthermore, investments can be made in a loan or a sub-participation in a loan whose interest and principal payments serve to settle the payment obligations for a financial instrument. In individual

cases, it must be assessed whether specific collateral for these loans and sub-participations can be used in the event of a sustained default, or whether it is possible to realize assets.

- Sometimes collateral or underlyings are located in legally independent entities. It is not uncommon for underlyings to have a project character on the investment side, so that the ability of an investment to perform must be assessed as a separate project with its own cash flows. This can involve both assets that have already been built and projects that are in the planning stage.

The assessment of collateral is based on an internal analysis of the collateral elements as well as external valuations, in particular for collateral in rem. Based on this analysis, the type, form and structure of the collateral and the underlying assets used as collateral are assessed as part of the credit and portfolio risk assessment (see section 4.4). For a specific type of collateralization, it is analyzed in the event of an issuer default whether and to what extent proceeds from the liquidation of collateral and/or recoveries or cash flows from debt claims of collateralized underlyings can be made available to the creditors of financial instruments to service their payment obligations. Accordingly, the type of collateralization in the case of issuances represents a so-called "enhancement" which, taking into account structural aspects, enables a better assessment of the credit quality in relation to unsecured issuances, depending on the amount.

If financial instruments are not collateralized and not covered by contractual claims, and if no third-party or substitute collateral is provided, the contractual payment obligations are serviced solely on the basis of cash flows from operating activities of the issuer or originator. In these cases, the issuer rating for the assessment of operational and credit risks as well as the seniority of the financial instrument plays a central role in the assessment of the issuance.

#### 4.1.2.2 *Seniority*

If, in the context of an issuance, exclusive collateralization of the creditors of a financial instrument cannot be assumed or can only be assumed in part, additional structural aspects must be taken into account. In the event of default, cash flows from the liquidation of collaterals are available or recoveries can be generated from collateralized underlyings on the basis of legal claims. As part of the analysis process, maturities and, in particular, the ranking of receivables and liabilities must be assessed. If this field of analysis is explicitly applied in the rating process, a single, equally ranking and unsecured class of financial liabilities is no longer assumed ("single class of debt").

On the one hand, an assessment is made of the ranking of the financial instrument among the possible debt classes at the issuer and whether a de facto collateralization structure can be derived from this. For the purpose of this methodology for issue ratings, we assume that only the financial instrument is issued as a single tranche and represents the sole debt instrument of the issuer for the term. Cases where a

financial instrument is issued in a structured manner in the form of multiple tranches are addressed separately in CRA's rating methodology "Structured Finance". Accordingly, no debt classes are to be taken into account in the rating analysis, but often payment sequences that result from the terms and conditions of the issuance in individual cases.

On the basis of the concept of risk-bearing capacity, it should also be borne in mind with regard to the use of issuance proceeds that the pool of underlyings may consist of equity and/or debt instruments as well as mixed forms thereof. Derived from this, the structural ranking of the cash flows in relation to possible other creditors must be assessed. Taking the above constellations into account, an assessment is made for a specific issuance as to what proportion of the cash flows generated is available to meet the contractual payment obligations of a financial instrument.

#### 4.1.3 Revolving period, ramp-up

The structure of the transaction in the case of issue ratings often includes a period in which there is a successive build-up of the loan portfolio via a staggering of investments over time ("ramp-up"). It is also possible to repeatedly purchase assets over a certain period of time ("revolving period"), as opposed to an otherwise static portfolio. However, the successive build-up of the portfolio or the re-investment of incoming returns during the revolving period is usually subject to the requirement that new assets meet certain criteria, as investors otherwise bear the risk of a deterioration in the portfolio's credit quality due to the acquisition of new assets of lower quality (see section 4.4.3). Corresponding transaction characteristics are included in the analysis and are taken into account, among other things, when modeling the transaction-specific cash flows.

#### 4.1.4 Covenants and trigger events

If covenants have been agreed as part of the contractual terms and conditions for the financial instrument, these are taken into account in the analysis. Typical regulations in this context are, for example, change of control or cross-default clauses, which can be invoked. With regard to possible ranking ratios, which a specific financial instrument has in relation to other financial instruments, e.g. positive and negative declarations are also to be taken into account in the analysis.

Often, certain events are defined in the transaction, which may trigger a termination of the revolving or ramp-up period or an early redemption of the financial instrument. Trigger events can reduce the requirements for further collateralization mechanisms and the risk of the transaction. They serve to protect investors against a deterioration in the quality of the receivables portfolio. Defined trigger events include, for example, a deterioration in the credit rating of a party involved; a breach of contractual obligations ("covenants"); a deterioration of existing collaterals ("credit enhancement") as well as of liquidity reserves below predefined limits; or limits for default and dilution rates, payment delays and receivables

maturities. The defined trigger events can be used to derive worst-case scenarios, which in turn can be taken into account in the quantitative analyses.

#### 4.1.5 Country and sector risks

In order to be able to take into account possible (contingent) risks in the analysis on a case-specific basis, additional parameters are stressed as part of the scenario analyses. The risk-reward profile of a specific issuance can be additionally influenced by these parameters. The CRA mainly takes the following influencing variables into account on a case-specific basis:

- General interest and exchange rate effects
- Secondary market prices for assets or underlyings and realization costs
- Macroeconomic parameters and economic data
- Market and industry data

Country risks often play a subordinate role in collateralized issue ratings. Nevertheless, these are included in the scenario analyses as contingent risks.

#### 4.1.6 Legal aspects

Based on the analysis of the transaction structure, the degree of complexity or structuring of an issuance and, derived from this, possible design deficiencies or risks are checked for plausibility. This plausibility check is based on an analysis of the contracts (term sheet, bond conditions, downstream contracts, etc.). Contracts, issuance terms and/or valuation reports are typically prepared by special lawyers. Relevant contractual documents and legal valuation reports are reviewed by CRA. If possible construction defects or risks become apparent from the results, the analysts provide their assessment of these risks. The discussion of legal aspects does not constitute a legal opinion of CRA, nor are legal opinions prepared internally as second opinions. While CRA forms an opinion on these documents, a legal review does not take place. In addition to transaction-specific legal risks, regulatory risks in the broader sense are also assessed for plausibility as part of the issue rating and included in the analysis.

## 4.2 Operational risks

### 4.2.1 Originator and servicer

Various parties are involved in the issuance of financial instruments, with the originator being essential first. The originator is the initiator of the underlying claims. An insolvency of the originator during a transaction can, under certain circumstances, lead to considerable risks for the enforcement of the claims of all parties involved, which have to be assessed and evaluated accordingly. For a CRA rating, the originator's business practices in originating receivables or granting loans are an important feature. Selection and quality criteria that the underlying assets must meet, as well as concentration and portfolio

limits in the case of revolving portfolios, are checked for plausibility and are included in the rating assessment (see section 4.4).

If the collateral instruments do not directly serve as cash-generating units and/or financial instruments are not collateralized and no third-party or substitute collateral is provided, the assessment is made not only with regard to the origination of receivables ("underwriting") and debtor management, but above all with regard to the originator's ability to service the contractual payment obligations from cash flows from operating activities. The assessment of operational risk in relation to the originator includes an analysis of the strategy and business model, the financial position and results of operations, and an assessment of existing operational capacities. This usually involves a separate credit analysis by CRA.

The servicer is responsible for managing and processing payments from receivables in the portfolio. Often, the servicer is identical with the originator. In addition to the process flows in receivables management, the human and technical resources are important aspects. The servicer is responsible for receivables management, in particular cash flow management, receivables collection and default management. In certain asset classes, servicers take on additional functions, such as debt rescheduling or restructuring in the event of default. The assessment of the servicer's operational risks therefore also takes into account the type of receivables collection and cash management capabilities, as well as an assessment of the practical systems and processes of accounts receivable management, and the quality of internal control processes.

#### 4.2.2 Asset manager

In transactions with a fund structure (for example, infrastructure or real estate funds, alternative investment funds (AIF) and private debt/equity funds), the asset manager usually takes over the planning, due diligence and selection of the target investments, manages the construction of the portfolio (allocation, diversification, etc.) and operates the risk management of the portfolio of assets. The manager's assessment focuses on aspects of competence (strategy, team, track record), existing processes and capacities (valuation, monitoring) and planned risk management (risk assessments, portfolio management, etc.).

#### 4.2.3 Counterparty risks

In addition to the originator and servicer, the analysis of counterparty risks also assesses the creditworthiness and experience of the protection seller and swap counterparties, account-holding banks and trustees. In doing so, CRA assesses dependencies on parties involved. Counterparty risks that arise, for example, from the provision of derivatives, credit lines or financial guarantees represent risks that go beyond the credit risk of the receivables pool. Important parties involved, such as account-holding or guarantee-issuing banks, insurance companies, swap counterparties or trustee dealers are therefore examined in the rating process. Corresponding risks and accruing fees are included in the assessment.

## 4.3 Credit and portfolio risks

### 4.3.1 Asset and credit quality

The assessment of the asset and credit quality of the underlyings depends on the specific asset class on which the financial instrument is based as a cash flow-generating unit or as (real) collateral. In principle, a large number of different assets are possible in their function as cash flow and collateral instruments.

The characteristics that are typically used to assess asset and credit quality, and which largely define the type and characteristics of the underlyings, include, among others:

- Asset / or loan type
- Initial and remaining maturities, useful lives
- Fair or market value
- Interest rates and amortization profile
- Debt-to-income ratio or leverage (depending on class, e.g. debt-to-income (DTI), debt service coverage (DSCR), loan-to-value (LTV) or similar)
- Internal/external credit ratings of debtors
- Location, geographic distribution
- Asset-specific characteristics

The evaluation of historical data on asset and credit quality is carried out on condition that the quality of the data supplied is sufficiently high. Furthermore, if the database is comparable to individual or portfolio investments planned for the future, the evaluations based on this data can be used to derive asset and credit quality. CRA uses comparative data from various sources if sufficient manager- or originator-specific data history is not available.

Asset-level credit risk ("bad debt risk") refers to the risk that purchased receivables will default or suffer a massive loss in value during the term of the issuance. It reflects the credit risk of the debtors or the default risk of the assets in the portfolio. For the subsequent simulation of credit defaults, the individual receivables or the underlyings of the portfolio under consideration are assessed via the default risk, among other things. Depending on the asset class, this is determined using a CRA rating approach for counterparty risk assessment. In addition to internal comparative data, information obtained from the evaluation of historical performance is also taken into account. The default risks are then adjusted at the level of the individual investments.

In addition to default risks, the assets underlying a portfolio are also assessed with regard to the expected loss severity. The assessment of loss severity is based on available historical data including internal comparative data or is supported by a detailed recovery rate analysis (see section 4.5.2). Particularly

in the case of securities secured in rem, this is used to examine whether it is possible to realize existing claims of creditors in the event of default on a specific asset.

The evaluation of the historical performance of assets and collateral enables the derivation of default and loss assumptions, the extrapolation of expected trends and the construction of base case assumptions, which serve as input parameters in the further quantitative analyses.

#### 4.3.2 Portfolio structure analysis

The requested documents include an adequate data history with regard to defaults, arrears and dilutions etc. for the underlying portfolio of assets. In a further step of the empirical analysis, the structure of the portfolio is therefore examined with regard to concentrations (individual debtors, industries/sectors, countries, etc.) as well as historically measured default rates and dilution ratios. The assumptions thus obtained can be incorporated qualitatively in the assessment and serve as input for the subsequent quantitative analysis. The analysis of the future portfolio structure is carried out taking into account suitability criteria, which are usually contractually defined.

#### 4.3.3 Eligibility criteria

At the beginning of the transaction, the parties involved in the transaction agree on quality criteria that define limits for the assets to be purchased with regard to certain characteristics and can thus significantly influence the risk profile of the receivables pool. Portfolio limits can also be defined with reference to the overall portfolio, which must be adhered to continuously during the term of the transaction. The seller of the receivables is responsible for checking these criteria when purchasing new receivables, and generally guarantees compliance with them when transferring a new receivable to the receivables portfolio. Typically, the seller of the receivable agrees to compensate for a breach of the eligibility criteria by repurchasing the non-compliant receivable or providing an appropriate replacement. In case of non-compliance (e.g., also in case of a deterioration of the characteristic values within an existing portfolio), trigger events, such as an early redemption of the financial instrument, can be triggered. From an investor's perspective, eligibility criteria are intended to mitigate risk. CRA assesses eligibility criteria and portfolio restrictions during the qualitative analysis of the transaction structure with regard to the expected risk mitigating effect.

Common eligibility criteria for investments relate to, for example, maturity; absence of defenses, defaults, delinquencies, or lawsuits; jurisdiction and legal basis; determinability and enforceability of receivables; protection by credit insurers; limits on single debtor or geographic concentrations; or historically low bad debts and payment delinquencies.



#### 4.3.4 Credit enhancement

The transaction structure of an issue rating can have various instruments to collateralize different types of risk ("credit enhancement"). Commonly used hedging mechanisms include, but are not limited to:

- Credit default insurance (ABS-CE policy) or ECA cover
- Interest rate and currency swaps
- Trigger events
- Letters of credit / liquidity facilities
- Overcollateralization
- Letters of support / Guarantees

CRA examines the adequacy and dimensioning of the intended hedging mechanisms with regard to their risk-mitigating effect and takes the results of this analysis into account qualitatively in the rating judgment, or quantitatively during cash flow modeling.

### 4.4 Cash flow modelling

Based on the analysis of the transaction structure, the specific features of the respective issuance (such as interest payments and principal redemption, priority of payments, credit enhancements, etc.) are included in the development of a cash flow model. The aim of the modelling is to map the structure as closely as possible to the details so that the cash flows generated from the collateral instruments or the assets can be examined with regard to the issuer's payment obligations. Depending on the model approach, specific stress factors are varied in order to examine the stability of the cash flows in different scenarios and to determine the risk of investors' claims not being serviced in full and on time.

#### 4.4.1 Simulation approach

Simulation approaches are used in particular when investments have been made in granular credit portfolios or in a portfolio of assessable assets, or when there are collateral and/or debt claims from portfolio investments. This may also involve a pool of assets across asset classes.

In a simulation approach, CRA will generally follow a "look-through approach" down to the level of the underlyings. In special cases (especially fund-of-funds structures), CRA may limit the approach to the target fund level for materiality reasons. In this approach, it is important to note that a fund-of-funds usually holds equity stakes in other investment vehicles and consequently rating caps (see section 4.4.4.1) may be applied, although it is possible that when applying a full "look-through approach" down to the level of the underlyings, only debt securities are held.

As part of the stochastic analyses, the cash flows of the underlying receivables are subjected to a Monte Carlo simulation. Parameters such as probability of default (PD), loss severity (LGD) or recovery rates and default correlation of the individual assets are included here. Further determinants of the simulation are the individual assets or exposure amounts, the repayment structures, the interest rate levels and yield distributions for equity investments. The calibration of default probabilities takes into account country, industry and sector risks. PDs and LGDs can, for example, be taken from the originator's internal valuations. Stress factors may have to be taken into account. Default correlations process information on the distribution of counterparties by industry and region and thus also cluster or concentration risks. Internal analyses are used as the basis for deriving the correlation coefficients.

In order to make an overall statement about the risk of default on receivables, the analysis must also take into account the hedging mechanisms provided. Both the risk buffers provided by the collateral instruments and all other credit enhancements, e.g. the creation of a loss or default reserve through purchase price discounts when purchasing the assets, are taken into account in the quantitative simulation in the planned amount. The relevant contractual documents are assessed by CRA with regard to the risks covered by the enhancements. Only from the combination of these risks can a statement on the bad debt risk at portfolio level be derived. Accordingly, CRA determines the probability of the transaction defaulting on the basis of the credit and portfolio risk, taking into account all transaction-specific features.

The loss distribution of the analyzed reference portfolio or the cash flow distribution is then determined by means of a Monte Carlo simulation, taking into account the above-mentioned parameters. The frequency distribution and the distribution function of the portfolio losses can be derived from the portfolio losses determined in this way for each simulation run. The probability that the portfolio losses exceed a certain level or that the cash flow falls below a certain level is thus represented as the quantile of the frequency distribution determined using the simulation approach.

#### 4.4.2 Recovery ratio analysis

This approach is used primarily for issue ratings if a specific financial instrument is collateralized by a small number of individual assessable assets - in particular in the form of collateral in rem - or if there are legal claims arising from the collateralization of underlyings. In the sense of a recovery rating, such an issue rating analyzes whether it is possible to realize existing claims of creditors in the event of default of a specific issuer. Accordingly, the credit quality is essentially determined by the loss severity or, conversely, a recovery rate is determined which stands at the end of a recovery process. Since in these case constellations the expected recovery from the structure or an expected collateral and / or cover assets can be put in relation to the financial instrument, indicative ultimate recovery figures are used in the sense of a loan-to-value approach to determine the expected loss severity.

In detail, the expected loss severity of a financial instrument is initially determined by its ranking in the company or within the structure and, depending on the structure of the collateral or the cover assets, risk-adequate discounts are applied as part of the loan-to-value calculations. Based on this, scenario calculations are conducted on a case-by-case basis to further determine the risk-reward profile and, if necessary, the expected future cash flows are "stressed" after assessing the probability of default. This approach allows the final expected loss to be determined. Starting from a base case, possible best- and worst-case scenarios or the break-even for a 100% repayment rate are derived accordingly. The rating committee determines which specific scenario is taken into account in the rating result.

To underpin the qualitative rating analysis, case-specific and additional shadow ratings can be prepared at the level of the cash-generating units or the specific companies in order to be able to assess the expected development of cash flows more precisely as part of scenario analyses. Particularly in the case of investment grade companies, where the servicing of a financial instrument can be expected to be stable from operating activities, possible collateralization is of less significance for the rating in relation to the SPV structures. Accordingly, a recovery rate approach is applied with lower priority in these cases.

#### 4.4.3 Scenario-based stress tests

The information obtained in the rating process is used to construct best-, mid- and worst-case assumptions with regard to the cash flow-relevant parameters. This enables scenario-based stress tests to be conducted in which the cash flow model is exposed to the respective stress parameters and examined in terms of the effect on the structure's operability. Sensitivity analyses in relation to the input factors, which examine the stability of the structure in the event of changes in individual parameters, round off the quantitative analysis and allow an assessment of the effect of uncertainty and risk in relation to the input parameters and the resulting changes in the assessment of the financial instrument. When determining possible best-, mid- and worst-case scenarios, the application of rating caps (see item 4.4.4) must be taken into account.

#### 4.4.4 Rating caps

Due to additional model risks, uncertainties (e.g. in parameter estimates) and tax/legal risks, CRA considers it necessary to apply rating caps for the following asset classes and structuring features.

##### 4.4.4.1 *Ratings with a link to equity investments*

Cash flows from equity investments are characterized by an increased volatility profile compared to, for example, loan investments, as future returns on equity or dividend payments are uncertain and, in contrast to contractually fixed interest payments from loan receivables, represent discretionary cash flows of a company to its shareholders. Thus, the analysis is subject to increased model risk and additional uncertainties in parameter estimates. To account for these increased risks of equity investments as portfolio underlyings, CRA limits these ratings to a maximum of A+.

#### 4.4.4.2 *Ratings with clawback mechanisms*

Transactions can build up credit enhancement via a clawback mechanism. In this case, the issuer is granted the option of subsequently reclassifying payment flows already made in the past. This means that, for example, conditional interest payments from previous periods may subsequently be reclassified as early (partial) amortization payments, thus changing the legal character of such cash flows. Such clawback mechanisms operate independently of the performance of underlying portfolio investments in a transaction and, in CRA's view, increase tax and legal risks of the transaction. For this reason, for ratings with a clawback mechanism implemented as described, CRA makes use of a rating cap at BBB+.

#### 4.4.4.3 *Ratings with a link to aviation financings*

In view of the high relevance of exogenous risks, some of which are difficult to anticipate, for the recoverability and stable value of aircrafts, CRA generally limits the ratings for aircraft financing and its securitizations to A+. CRA considers evidence for these value-affecting risks based on historically observed geopolitical interactions, airspace-affecting natural disasters, or pandemics to be sufficiently given. CRA reserves the right to deviate from this rating cap in individual cases (e.g. state-affiliated airline as a cash flow generating unit).

## 5 **Ongoing monitoring and follow-up rating**

Once announced, the rating is generally valid for the duration of the monitoring period. During this period, the development of the issuance is continuously monitored by the analyst team. The aim is to ensure that the rating is up-to-date at all times. To this end, the analysts remain in direct contact with the client and evaluate the relevant information. If significant events or developments occur during this monitoring period that have a positive or negative impact on the economic situation of the company or the quality of the issuance, the rating can be adjusted.

After the end of the monitoring period, the rating procedure must generally be conducted again in the course of a follow-up rating in order to maintain a valid rating. Measures introduced that have led to a change in the factors affecting the credit rating may then lead to an adjustment of the rating grade.