General Structured Finance Rating Methodology

Structured Finance

13 February 2025

[1] Editorial note: This methodology was republished on 28 February 2025, with minor corrections of the axis titles of Figure 9 and Figure 10 as well as a correction of Figure 10's title. This methodology was republished on 20 March 2025, with a small change in layout: the removal of the paragraph numbering.

Table of Contents

1. Scope of application and rating definitions

This methodology applies to all types of structured finance instruments[2], generally in the form of debt instruments issued by a special-purpose vehicle (SPV[3]) and exposed to the performance of real or financial securitised assets. The securitised asset's economic risk can be transferred to the issuer[4] via either legal ownership (a true sale) or credit derivatives (synthetic transfer), where the latter may be funded or unfunded, but contractually agreed. Scope also applies this methodology to assign ratings that reflect the ability of an issuer to honour its obligations as counterparty under financial contracts (see section 7 Rating obligations under bilateral financial contracts).

This methodology applies to structured finance transactions in jurisdictions where terms and conditions, legal framework and institutional framework are similar to the ones applying in European jurisdictions.

This methodology applies to both the assignment and monitoring of ratings.

Structured finance instruments issued by an SPV are generally non-recourse or limited-recourse debts. Their repayment is driven primarily by the underlying collateral's performance and the transaction's priorities of payments or loss allocation mechanisms. Collateral can include a wide range of financial or real assets encompassing sectors such as real estate, consumer credit, SMEs, corporates, project finance and infrastructure. Specific considerations as outlined in the asset-class-specific methodologies – see Appendix 8.9 –, supersede the general considerations outlined in this document.

Scope's structured finance (SF) credit ratings

Scope's structured finance credit ratings constitute a forward-looking opinion on relative credit risks of a debt instrument, or a synthetic credit instrument. A SF rating reflects the expected loss associated with the coupon and principal payments contractually promised by an instrument on a payment date or by its legal maturity[5]. It factors in both the likelihood of default on such payments and the loss severity expected upon default. While the expected loss approach forms the cornerstone of Scope's analysis, the agency closely assesses the frequency of default and may limit the rating of an instrument, which has a low expected loss but a high default frequency.

For more detail, refer to the technical notes on the expected loss framework and timely payment under Appendix 8.1 and Appendix 8.4.

The default of a structured finance instrument entails among others one of the following events: i) a missed payment of interest or principal incurred under the instrument's terms and conditions; or ii) an event of default under the instrument's terms that leads to the security's enforcement. For additional details please also consult Scope's Rating Definitions.

Scope applies the 'SF' suffix to structured finance instruments in line with Regulation No. 1060 of the European Parliament and the European Council. Such instruments include asset-backed securities (ABS), mortgage-backed securities (MBS) and collateralised debt or loan obligations (CDO/CLO). The suffix is not applied to covered bonds and non-tranched asset securitisations. Scope may, however, apply the present methodology and relevant addendums to analyse the credit risk of instruments not subject to the 'SF' suffix.

Scope does not apply outlooks to its structured finance ratings.

Local- and foreign-currency structured finance instrument ratings

Unless otherwise specified, our ratings on structured finance instruments apply equally to liabilities in local and foreign currency. For structured finance transactions with relevant exposures located in countries assessed by Scope with a sovereign credit quality below BBB- (non-investment grade), we may assign both foreign and local currency ratings. Relevant exposures may come in the form of the location of i) the issuer (the SPV), ii) the majority of the securitised assets, or iii) a relevant third party.

For transactions that have exposure to non-investment grade countries, transfer and convertibility risks could result in losses for a structured finance instrument that could cause a difference for our local and foreign currency structured finance instrument ratings. This rating differential would capture the risk that a structured finance instrument incurs a loss due to government-imposed restrictions on foreign-currency payments, which may affect the payments from: i) the issuer to the investor, ii) the assets to the issuer, and/or iii) a relevant third-party to the issuer or investor. In this case, we expect the foreign currency

[2] Scope may assign a final rating to instruments defined under unexecuted contracts which are related and tied to an executed one.
[3] Or entities sharing characteristics similar to bankruptcy-remote special purpose vehicles.
[4] In this document, Scope refers to the issuer indistinctly as the 'issuer' or the 'SPV'.
[5] For instruments rated AAA_{SF} and AA_{SF}, Scope believes the probability of missed payments should be remote, irrespective of their terms and conditions. Please see Appendix 8.4.

structured finance instrument ratings at the level of the foreign currency rating of the sovereign in which the exposure is domiciled.

Conversely, we view transfer and convertibility risks as negligible in investment grade countries as well as in the euro area. As a result, in those countries, local and foreign currency structured finance instrument ratings are at the same level.

We may consider adequately sized reserves or insurances or other mitigation mechanism if these sufficiently protect the transaction from capital controls.

2. Key components

The methodology consists of several essential components that provide a comprehensive evaluation of structured finance instruments. It involves detailed assessments of (i) collateral risk, (ii) structural risk and (iii) counterparty risk. Collateral risk analysis emphasizes the quality, performance, and diversification of the underlying assets. Structural risk focuses on the key structural features of the transaction, including cash flow mechanisms, liquidity and interest risks. Counterparty risk analysis examines the impact on the rated instrument stemming from the transaction's exposure to the various transaction counterparties in terms of both financial risk and operational risk. Together, these elements deliver an integrated and robust framework for rating structured finance transactions.

3. Data sources

Key assumptions in this methodology are informed by discussions with external parties — such as issuers, institutional owners, regulators and governments — and Scope's analysis of financial and nonfinancial information, such as issuer financial statements and annual reports; bond documentation; and financial market, industry and economic data and history. Assessing the adequacy and completeness of the information available for the rating process is a prerequisite. We will consider limitations observed in available information, such as partial or missing information with the aim of identifying information gaps and highlight these elements. Scope applies conservative assumptions when data quality on the collateral pool is poor or historical data sets only cover a short time period, to reflect the greater uncertainty. In some instances, insufficient quantitative or qualitative data may even make it impossible to assign a rating.

4. Executive summary

This document is the latest update of Scope Ratings' (Scope) General Structured Finance Rating Methodology. Besides editorial changes it incorporates the following amendments relative to the methodology published in March 2024:

- Reorganisation of the structure of the methodology to ensure consistency and to enhance clarity
- Clarification that we do not apply outlooks to structured finance instruments
- Improved readability and reduced complexity to clarify for which type of exposure we apply which credit assessment type and what we do if credit estimates or similar assessments are no longer current
- Enhanced clarity on the definition of obligations under bilateral financial contracts and removal of the financial contract suffix
- Addition of the Cash Flow Model Master Waterfall (CFM MW) which is similar to the existing CFM but with standard implementation of inputs for plain-vanilla transactions
- Clarified and streamlined the description of the applied vintage analysis
- Additional clarifications to enhance transparency and readability of the rating methodology

The updates do not impact existing structured finance ratings.

Methodology summary

Scope's methodology, built on the three key components as described in section '2 Key components', applies a quantitative approach to capture the credit risk of different asset, portfolio or structural characteristics expressed in a rating. The quantitative analysis is complemented by qualitative factors, considering the context of the origination, the exposure to different transaction parties, regulatory aspects, the legal and tax framework, and our knowledge of local markets within the broader macro-economic or jurisdictional context.

Scope does not mechanistically limit the maximum rating achievable by a securitisation based on the credit quality of the country of the issuer or of the securitised assets.

The quantitative analysis is supported by the use of tools and models, primarily Scope's proprietary Cash Flow Model and Cash Flow Model Master Waterfall (CFM and CFM MW, together the Cash Flow Models), which capture Scope's assumptions and reflect the transaction´s key structural features (notes' tranching, priorities of payments, sources of liquidity, etc).

The distribution of lifetime defaults of the of the underling portfolio and lifetime recovery assumptions generally constitute our key assumptions. Scope incorporates the analysis of historical performance data into our assumptions, complemented by a forward-looking view on the macro-economic cycle, or other relevant factors.

The models provide and indicative rating primarily based on the instrument's expected loss (which is benchmark against Scope's idealised expected loss table, available on scoperatings.com) and, in certain cases, conditional on the instrument's probability of default (see Appendix 8.4). The results of the Cash Flow Models may be superseded by qualitative considerations, for instance counterparty risk may limit the final rating, link it to the counterparty's performance, or even lead Scope to not assign a rating.

The counterparty risk analysis builds on post-2007-2008 global financial crisis realities, including the regulatory and supervisory framework for banks, such as bail-in and stronger prudential metrics, and the resulting limited likelihood for banks to default in the short term. For further detail please see Scope's Counterparty Risk Methodology.

Qualitative considerations may also include components of the asset and transaction structure analysis, such as origination quality, asset management or asset servicing quality, the transaction´s complexity and incentives structure. This analysis is particularly important for transactions whose assets require intensive care, dynamic management or an active workout.

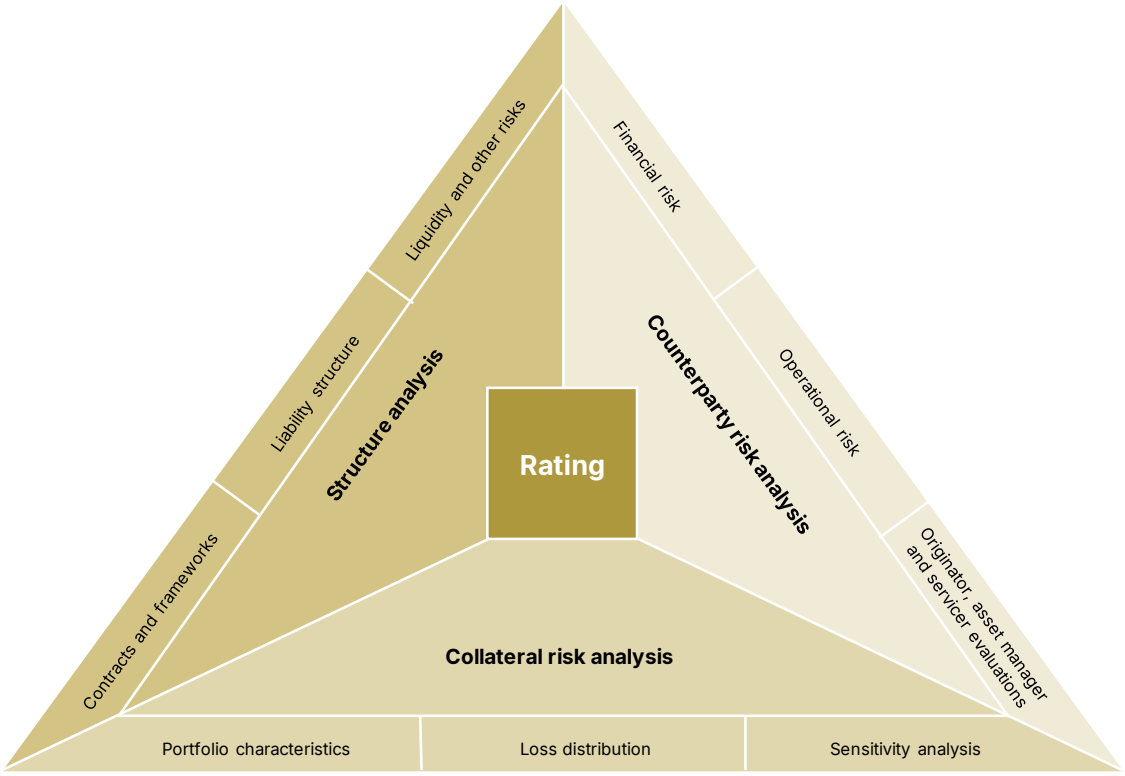
5. Analytical framework

Scope's credit risk analysis of structured finance instruments comprises: i) **the collateral risk analysis**, which assesses factors such as the underlying collateral's main characteristics, the expected default and loss distributions,, and timing and level of cash flows; ii) **the structure analysis**, which looks at the transaction's structural features, such as the priority of payments and legal risks, and iii) **the counterparty risk analysis**, which identifies and assesses parties that can affect the transaction's performance. Figure 1 below gives a visual representation of Scope's approach.

Scope estimates an instrument's expected loss using a quantitative approach, supplemented by qualitative considerations. Scope benchmarks the instrument expected loss and its corresponding weighted average life with the idealised expected loss table, accounting for Appendix 8.4. Qualitative considerations generally relate to unquantifiable elements or are applied when Scope identifies constraints in the quantitative analysis, for example, if an excessive counterparty exposure limits the assigned rating, or if the quantitative output is volatile. The qualitative analysis may incorporate numerous additional factors, such as operational risks, the quality of origination and servicing procedures, and legal and tax risks.

If the transaction embeds optional features, Scope generally assumes the investor would take a passive role, unless the investor´s incentives to act are deemed sufficiently strong. For example, when an investor has the option to alter transaction features, e.g. advance additional funds to a transaction to raise the credit enhancement of the rated instrument, Scope generally does not consider its impact on the ratings but monitors the effects should this option be exercised.

Figure 1: Scope's three key components for structured finance ratings



Source: Scope Ratings

5.1 Collateral risk analysis

The first step of Scope's analysis is to examine the credit quality of the underlying asset or pool of assets. Scope evaluates the characteristics of the assets to understand default patterns, loss severity upon default, associated timings, and dependency structures. The assessment of collateral risk involves both qualitative and quantitative components to estimate collateral performance parameters such as the collateral's default distribution and associated losses under different scenarios.

The collateral behind structured finance instruments can include a large variety of assets like loans, credit lines, bonds or credit default swaps. Assets can reflect secured or unsecured risk exposures and can also be real assets. Asset obligors include consumers, corporates or even public entities and sovereigns. Collateral can vary widely in composition, ranging from a few heterogeneous assets in CMBS or CDO/CLO transactions to several thousand relatively homogeneous assets in ABS, RMBS or SME ABS transactions. For SME ABS, collateral may comprise numerous assets, but with only a few representing a large portion of the total balance.

Figure 2 summarises the characteristics of common structured finance asset classes. Scope's preferred approach for assessing collateral risk depends on three key collateral characteristics: the risk horizon, the granularity of the portfolio, and the homogeneity[6] of the assets:

- In the case of granular and short-term portfolios, which are typical for revolving ABS structures, Scope generally focuses on the historic performance of the originator's loan book and on the assets' eligibility criteria. In the case of granular and mid-to long term portfolios, which are either static or feature limited turnover options, Scope complements the analysis of the originator's loan book and eligibility criteria, with a focus on the specific characteristics of the securitised pool. Granular ABS tend to be backed by homogenous portfolios, which allow for a statistical analytical approach (see Appendix 8.5). However, when the collateral portfolio exhibits certain heterogenous features, Scope conducts a more detailed analysis, for instance segmenting the analysis of historical data into different asset type buckets, or, in the case of concentrated positions, examining them on a line-by-line basis. When relevant, we complement the transaction-specific analysis with an asset-class specific market analysis in order to capture levels of stress not present in the originator performance data.

[6] Homogeneity indicates whether the portfolio assets share a lot of similar characteristics that allow to use similar assumptions to describe their credit profile.

- In the case of non-granular portfolios, Scope's preferred approach is to analyse loan-by-loan data, as limited diversification exposes the transaction to idiosyncratic risk. Non-granular portfolios may exhibit different risk horizons and varying degrees of homogeneity. Highly concentrated portfolios may require a particularly detailed assessment. For this purpose, Scope may produce a credit rating or assessment on some or all credit assets in the pool. Scope's analysis may also incorporate external credit assessments from a regulated bank or other rating agencies if available but reserves the right to adjust these as appropriate.

Scope normally applies conservative assumptions when data quality on the collateral pool is poor or historical data sets only cover a short time period, to reflect the greater uncertainty. In some instances, insufficient quantitative or qualitative data may even make it impossible to assign a rating.

From a qualitative standpoint, Scope analyses the context of origination or asset sourcing. We consider the assets' type, along with the originator's underwriting process, incentives, strategy and standards. The calibration of asset modelling parameters may be also based on loss characteristics common to structured finance transactions with comparable collateral. More detail can be found on Appendix 8.9.

Figure 2: Summary of asset types and typical characteristics of core structured finance asset classes

		Typical characteristics of the asset types			Asset analysis	
Deal types	**Underlying assets**	**Risk horizon**	**Collateral granularity**	**Homogeneity[7]**	**Focus**	**Asset-individual rating or credit assessment**
ABCP	Commercial discount credits or credit advances	Short-term	Granular	Homogeneous	Originator loan book	No
Credit cards	Credit card balances	Short-term	Granular	Homogeneous	Originator loan book	No
Trade receivables	Commercial credit	Short-term	Granular	Homogeneous	Originator loan book	No
Auto ABS	Auto loans or auto leases	Medium-term	Granular	Homogeneous	Securitised portfolio	No
Consumer ABS	Consumer loans	Medium-term	Granular	Homogeneous	Securitised portfolio	No
RMBS	Residential mortgages	Long-term	Granular	Homogeneous	Loan by loan or securitised portfolio	No
SME ABS	Loans to small and medium-sized enterprises	Medium-term	Granular	Mixed	Loan by loan or securitized portfolio	Possible
NPL ABS	Non-performing or unlikely-to-pay loans	Medium-term	Granular	Mixed	Loan by loan	No
Corporate CLO/CDO	Corporate leveraged loans, large corporate bonds, credit default swaps	Medium-term	Non-granular	Relatively homogeneous	Loan by loan or securitized portfolio	Yes
CMBS	Commercial mortgages	Medium- to long-term	Non-granular	Heterogeneous	Loan by loan	Yes
CRE loans	Commercial real estate loans	Medium- to long-term	Non-granular	Heterogeneous	Loan by loan	Yes
Reverse mortgage	Equity release mortgages	Long-term	Granular	Mixed	Loan by Loan	No
Credit-linked notes/ repackaging	Any financial assets	Medium- to long-term	Single asset	N/A	Pass-through rating/asset by asset	Yes
Insurance-linked securitisation	Pool of insurance contracts or reinsurance contracts referencing a portfolio of exposures	Medium-term	Granular	Homogeneous	Securitised portfolio of exposure	No
Other/esoteric	Real assets, funds shares, credit default swaps, other	Short- to long-term	Non-granular	Heterogeneous	Bespoke	Possible
PF CLO	Project finance debt	Medium- to long-term	Non-granular	Heterogeneous	Loan by loan	Yes

Source: Scope Ratings

[7] Homogeneity indicates whether the portfolio assets share a lot of similar characteristics that allow to use similar assumptions to describe their credit profile.

5.1.1 Granularity

Central to the collateral risk analysis is the selection of a modelling approach that captures collateral characteristics, allowing the construction of a collateral loss distribution that best mimics how the assets behave over time. Scope's method to estimate the distribution of defaults differs according to the granularity of such portfolio.

To assess portfolio granularity, Scope measures the equivalent effective number of exposures – the inverse of the Herfindahl Index. This diversity metric may measure granularity by obligor, industry or region. Scope uses this granularity measure to determine the application of certain modelling applications. Figure 2 includes the standard assessment for certain asset classes that are covered under this methodology.

Expression (1) shows the diversity index that measures obligor granularity:

(1) $D_{obligors} = \frac{1}{\sum_{i=1}^{obligors} p_i^2}; where\ p_i = \frac{Balance_{\ obligor\ i}}{Total\ Balance}$

5.1.2 Parametric default and loss-distribution

For granular pools, Scope typically applies standard, parametric probability distribution laws such as the inverse Gaussian to approximate the portfolio default rate distribution. This approach notably applies to retail mortgage loan pools, consumer credit or granular pools of SME loans.

The approach generally limits the number of required inputs to define the default distribution to the mean default rate and its variance (or correlation parameter). Scope's input assumptions are preferably based on historical data provided by the originator (see Appendix 8.5) if necessary supplemented with benchmarking against comparable asset portfolios and adjusted via a qualitative assessment of the securitised asset=. Scope may also consider performance data on other structured finance transactions exposed to similar collateral, public historical data, proprietary data, market studies by reputable providers, and academic research.

Scope also looks at long-term market performance data and takes a forward-looking view on the economic cycle. Scope incorporates market information into base case assumptions. This includes macroeconomic factors correlated to defaults in the relevant asset class. For example, GDP and unemployment rates can be used for default assumptions on consumer credit transactions. Scope's forward-looking approach may incorporate structural factors of local markets that could impact credit performance.

The determination of each input's characteristics is generally subject to sensitivity analysis, based on information provided by the assets' originator.

Once the collateral pool's default pattern is determined, Scope analyses the collateral's cash flow by deriving assumptions on default timing, recovery amount and timing, prepayment patterns, amortisation, asset yield, and any other cash flow drivers. Scope may also analyse the sensitivity of cash flows to these assumptions.

A technical description of Scope's expected loss framework and a definition of its Cash Flow Models are found in section 6 and Appendix 8.2.

5.1.3 Non-parametric default and loss-distribution

For collateral pools with low granularity or high concentrations, Scope generally produces a non-parametric distribution of defaults and losses that reflects specific assumptions for each asset using a Monte Carlo simulation method, typically with a Gaussian copula dependency framework. Appendix 8.3 provides a description of Scope's portfolio model (Scope PM) that implements such a non-parametric distribution of portfolio defaults and losses.

5.1.4 Recovery analysis

The estimation of portfolio loss distributions typically requires assumptions regarding recovery rates and recovery timing and depends on the securitised underlying assets. The analysis can range from statistical analysis of historical recovery observations to fundamental recovery analysis (see Appendix 8.7). We may complement the analysis with benchmarking and qualitative considerations reflecting our understanding of the established recovery process or the data quality.

5.1.5 Static and revolving portfolios

Scope focuses on the actual collateral's characteristics when the portfolio of assets is static, i.e. when assets cannot be removed from or replaced in the portfolio. By contrast, when collateral can be replenished, sold or actively traded, the analysis incorporates a hypothetical portfolio that follows asset-eligibility covenants. The agency does not consider a worst-case portfolio, but takes

into account among others the initial portfolio, the expected composition over time, the originator strategy and the transaction covenants.

5.1.5.1 Originator, asset manager and servicer evaluations

Qualitative factors are crucial to the analysis of structured finance transactions whose assets require intensive care, dynamic management or active workout. The performance of the underlying assets can therefore be affected by different transaction parties such as the originator, asset manager and servicer. Where applicable, we review the operational processes employed by each of the originator, asset manager or servicer when assigning new ratings.

Irrespective of whether the review is expressed as an internal score or succinct opinion, the review of the processes may lead to adjustments to the transaction's assumptions regarding e.g. the default rate, the recovery rate or lag, excess spread, etc., and consequentially impact the credit enhancement levels needed. In more extreme cases it could even cause us to decline rating a transaction. In general, we expect the parties to have sufficient operation experience in the relevant market and in originating, managing and servicing the products comprised in the pool to be securitised. We also expect the parties to provide historical performance and recovery data. The more detailed principles for our review of the originator, asset manager and servicer are published as part of the asset class specific methodologies, where applicable. If relevant we can also refresh the reviews of the originators, asset manager and servicer during the surveillance process, as further explained in the asset specific methodologies.

We review the risks associated with the originator's products, underwriting guidelines and controls applied during the origination process with the objective to assess whether the assets from an originator are likely perform in line with, better or worse than assets from other originators, particularly in times of stress. The quality of the origination practises and controls may manifest itself as a better, or worse, performance relative to comparable asset pools originated by a typical originator. Scope also evaluates the asset portfolio manager's ability, incentives, and potential to add value in the context of the transaction. This is particularly important for managed transactions with covenants that limit, or allow a significant margin for, credit deterioration from the actual characteristics of the invested collateral. This is also important for transactions whose performance is driven by value generation from active asset management such as capital expenditure plans and business plans connected with transactions exposed to real estate.

The performance of NPL transactions is mainly driven by the servicer's capabilities. Recent CMBS transactions in Europe have shown the key role played by special servicers in maximising recoveries for investors. Similarly, the active role of CLO managers helped to not only preserve the portfolio par value of several transactions during economically distressed periods, but also to accelerate the transaction's recovery by seizing investment opportunities to reconstruct notional par.

Scope's rating methodology emphasises qualitative credit judgment based on objective components.

For transactions involving active management of the collateral pool, i.e. to source, develop, work out, add, exchange or remove assets, Scope examines the potential risks related to the asset manager's performance. The impact and importance of this risk on Scope's analysis greatly depends on the level of discretion left to the manager or servicer and how this can maximise, preserve or destroy the collateral pool's value.

Scope analyses the asset manager or servicing agent by reviewing its structure, skills, expertise, processes, performance and track record, considering:

- the agent's economic incentives within the structure, e.g. remuneration, interest in the transaction's performance, and how or to what extent its interests are aligned with those of debt investors;
- the importance of the securitised asset segment within the agent's overall development strategy;
- the standard of care and general liability; and
- reputational risk.

5.1.6 Portfolio concentration risk

5.1.6.1 Large obligor analysis

Transactions may have large single-asset exposures with different concentration levels that pose significant idiosyncratic risks. Therefore, Scope assesses the credit risk of large exposures individually, with a different approach depending on the level of asset concentration. Scope's approaches to assessing and monitoring different concentration levels of direct single-asset risks securitised in a portfolio are the following, ordered by decreasing preference as per Figure 3.:

1) Public or private rating by Scope
2) If 1) is unavailable we derive the credit quality from available external ratings from supervised and regulated credit rating agencies as follows:
   a) the second-best external rating mapped to Scope's rating scale if there is more than one external rating available OR
   b) an external rating if there is only one available, adjusted, if necessary, by sensitivity analysis
3) If 2) is unavailable a credit estimate or similar assessment by Scope or its affiliates
4) if 3) is unavailable, a mapping of external credit risk measures available to Scope[8]

Credit estimates (or similar assessments) are typically: i) point-in-time and usually updated for each monitoring review cycle, ii) are not derived from a rating methodology and iii) rely on less information than ratings. Scope may use stale credit estimates if not older than 18 months, subject to a conservative adjustment of up to three notches. If the credit estimate is older than 18 months, e.g. for operational reasons like credit relevant information not received on time, Scope will cap the assumed credit quality of the obligor at the lower of B-, or the latest adjusted credit estimate assignment.

Figure 3 defines the above-described options, and when they apply, in large obligor analysis.

Figure 3: Standard approach for assessing and monitoring direct single-asset risk by level of concentration

Obligor concentration (% of portfolio balance)	Options to determine credit quality
Less than 5%	1) to 4)
5% <= exposure < 10%	1) to 3)
10% <= exposure < 25%	1) to 2)
Exposure >= 25%	1) only

Source: Scope Ratings

5.1.6.2 Risk presenters

Mainly in the context of transactions that concern non-granular asset portfolios some instruments may also be exposed indirectly to the default of a third party (a risk presenter), such as a lessee of the securitised asset. To assess a risk presenters' creditworthiness, Scope uses the following approaches, ordered by decreasing preference as per figure 4.:

1) Public or private rating by Scope
2) If 1) is unavailable
   a) Credit estimate or similar assessments by Scope or its affiliates and public rating(s) from a regulated and supervised CRA, if any OR
   b) the second-best external rating mapped to Scope's rating scale, if there is more than one external rating OR
   c) an external rating if there is only one available, adjusted, if necessary, by sensitivity analysis
3) If 2) is unavailable a credit estimate or similar assessment by Scope or its affiliates
4) If 3) is unavailable, generic default risk assumption or mapping of external credit risk measures available to Scope[7]

[8] Such external risk measures may be internal rating models of the originator, portfolio assumptions from vintage data or public ratings from a regulated and supervised CRA. Scope may use those measures and adjust them as necessary. We perform consistency checks to review whether the exposures' considered credit quality level is consistent with credit quality benchmarks available for the obligor type.

Figure 4 defines the above-described option in risk presenter analysis. We consider the same principles for stale credit estimates and similar assessments as described in section 5.1.6.1 Large obligor analysis.

Figure 4: Standard approach for assessing the creditworthiness of exposures to risk presenters

Exposure to risk presenters[9]	Options to determine credit quality
Less than 5%	1) – 4)
5% <= exposure < 10%	1) – 3)
10% <= exposure < 25%	1) – 2)
Exposure >= 25%	1) only

Source: Scope Ratings

Risk presenters contributing more than 5% of total debt-service cash-flow can be subject to a fallback credit quality assumption of 'B-'. This may apply to all corporates or financial institutions that have not publicly filed for bankruptcy or any other debt protection scheme. Risk presenters to which the fallback credit quality assumption applies will be subject to the sensitivity analysis outlined under section 6.3.

5.1.7 Collateral market value risk

Securitisation instruments may be exposed to collateral market value risk, for example, when cash flows used to repay the instrument are generated from the sale of all or part of the securitised assets. This exposes the instrument to the price volatility of the sold assets, which typically depends on the asset's market liquidity, duration and currency. In Europe, high market value risk is uncommon for securitisation transactions. Therefore, Scope will assess this risk using a transaction-specific approach to reflect the different characteristics of the assets and their respective markets (also see Appendix 8.7).

5.1.8 Representations and warranties

Scope considers the strength and expected impact of representations and warranties made by transaction parties, including those made by the originator of the assets in the collateral pool. In some instances, Scope may complement representations and warranties with any external audits performed on the pool.

For the portfolio audits, Scope generally relies on the standard agreed upon procedures that internationally recognised accounting firms apply for the respective asset class and a given level of portfolio granularity.

5.2 Structure analysis

Central to the structure analysis are Scope's Cash Flow Models, which combines the quantitative methods described in section 5.1, with an analysis that aims to replicate the most important features of the transaction's liability structure. For each default rate scenario, weighted by its respective probability, Scope calculates a loss for the rated instrument to produce an expected loss associated with the rated instrument[10]. As a result, the analysis can measure how, when and to what extent cash flows generated from collateral cover costs and liabilities borne by the structure.

Other elements of the structure analysis may be embedded quantitatively into the cash flow models or assessed qualitatively. For instance, many of Scope's assumptions for the cash flow analysis are based on legal documents related to the rated issuance. Most constant parameters relevant to income and expense assumptions are derived from contractual terms governing the structure, while parameters that are not contractually specified or include provisions for variable components will be incorporated into Scope's qualitative assessment.

Below we provide more detail of key elements of the structure analysis.

5.2.1 Liability structure

Structural features can improve or weaken the transaction performance from the perspective of a rated debt. Key structural features generally include: i) the order of priority of the rated notes' interest and principal payments; ii) the instrument's payment frequency; iii) enhancement features such as excess spread, cash reserves or liquidity buffers; iv) mismatches of cash flows between the underlying collateral and the issuer's financial obligations; v) the coverage of the issuer's ordinary and extraordinary expenses; vi) guarantees or hedging mechanisms; vii) covenants, performance triggers or other protective mechanisms; and viii) call, early-redemption, asset-substitution or new-issuance features.

[9] Measured as % of cash flow available for debt service on the rated instrument.

[10] The expected loss for the structured finance instrument is therefore the sum-product of i) the probability of occurrence of a given scenario associated with a given asset performance; and ii) the loss derived from the Cash Flow Models and specific to the transaction in each scenario.

For simple structured finance transactions for which cash flow allocation does not drive the rating, Scope may derive the notes' expected loss directly by deriving the collateral pool's loss distribution and allocating losses to the rated instrument in each scenario, instead of computing expected loss through a full cash flow allocation.

Also, for instruments that are not subject to material credit enhancements, the expected loss of the rated debt instrument may equal a simple weighted average of the expected loss of each asset securing the instrument's repayment.

5.2.2 Liquidity risks

5.2.2.1 Liquidity coverage

While Scope's structured finance ratings are anchored in the measure of expected loss, Scope also pays careful attention to the credit risks related to liquidity. We only assign high ratings in the AAA or AA categories if timely interest payment is highly likely, even upon portfolio servicing disruptions.

A liquidity shortfall in a transaction, i.e. the issuer's available funds being insufficient to cover senior costs and interest payments on the notes, may derive from different factors, among which i) insufficient cash flows received from the securitised portfolio; ii) a servicer disruption causing a temporary cash interruption; iii) the servicer's default resulting in issuer and servicer funds being commingled; and iv) the default of a key counterparty such as the swap counterparty, account bank, or paying agent. We analyse whether liquidity support in a structure can reduce the risk of missed interest payments over certain (potentially long) periods, such as the time needed to replace a disrupted servicer.

Scope's analysis considers rating-conditional stresses on reference interest rates and may account for optional liquidity injections, back-up servicing agreements and the effectiveness of servicer replacement mechanisms, as well as derivative contracts that ensure a certain level of liquidity.

The minimum liquidity needed to achieve a certain rating depends mainly on: i) the type of asset being securitised, ii) the counterparties' operational capacity and financial strength; iii) the contemplated liability structure; and iv) structural mechanisms to replace key counterparties if needed.[11]

In securitisations of plain-vanilla performing assets, the first layer of liquidity protection is generally provided by regular cash inflows, excess spread, and 'principal to pay interest' mechanisms. Replacing a servicer in such securitisations is usually simpler, both in terms of timing and the availability of suitable replacements. As a result, the minimum required liquidity support (contractually agreed) for ratings in the AAA or AA categories ranges between two and six months of the expected senior fees and interest on the senior non-deferrable notes. For investment grade ratings on senior non-deferrable notes in the A or BBB categories, a servicer disruption scenario is likely to have a lesser negative impact. At this level, our analysis can also incorporate the incentives in place and capabilities of a transaction party to provide additional liquidity to a transaction.

For transactions whose assets produce irregular cash flows and/or require active or complex servicing, Scope may only assign high investment grade ratings (AAA or AA categories), if the minimum liquidity coverage ranges from 12 to 18 months. Among others, this should address the risk of a long servicer replacement process, which could impair the transaction cash flows, driven by long on-boarding periods to gain the knowledge required to actively manage the assets. For investment grade ratings on senior notes in the A or BBB categories, the irregularity of the cash flows and the importance of active servicing may still require a certain level of readily available liquidity, e.g. in the form of a liquidity reserve, even if other strong additional mitigants are present in the structure.

Scope generally considers the most senior notes to be the senior notes in the context of this analysis, as the application of a transaction's events of default may shift with the repayment of originally higher-ranking instruments. As long as they have not become the most senior instrument in a transaction, mezzanine and junior notes typically have coupons that are deferrable making these instruments less sensitive to liquidity risks as a non-payment of interest would typically not trigger a default on these notes.

5.2.2.2 Interest deferral

Some structured finance instruments contractually allow interest to be deferred and then potentially accrued. Prolonged interest deferral is generally due to the underlying collateral performing worse than expected. Scope will consider this risk through a downward adjustment of the instrument's rating. Scope is unlikely to assign investment grade ratings to instruments that allow discretionary interest deferral over long periods, i.e. greater than the shorter of one year and two interest payment dates. In

[11] For more details on the analysis of counterparty risks, consult Scope's Counterparty Risk Methodology.

addition, Scope is unlikely to assign high investment grade ratings to instruments allowing interest deferral for credit performance reasons, unless the likelihood of deferral remains in line with the timely payment standards highlighted in Appendix 8.4.

5.2.3 Exposure to interest rate risk

Interest rate risk is the risk that the interest rate payable on the rated instruments differs from the interest rate on the securitised assets. Such risk may stem from: (i) basis risk, where both the portfolio and the notes have a floating rate, but they are linked to different reference rates, (ii) fixed-floating risk where the portfolio pays a fixed rate, whereas the rated instruments pay a floating rate (or vice versa), and (iii) reset date mismatch, where both the portfolio and the rated instruments have floating rates linked to the same reference rate, but the reset dates are different.

To mitigate interest rate risks, the issuer may enter into a contractual hedging agreement. We assess the main terms of the hedging agreement to determine how effectively the risk is mitigated. If not contractually hedged, we also consider the protection that an asset-liability-hedge provides, i.e. assets and liabilities pay interest based on highly correlated benchmarks, supported by the priority of payment structure that would shield highly rated instruments from potential mismatch losses.

Unless fully covered structurally or hedged, we would analyse the sensitivity of the transaction to material changes (upward or downward) in interest rates throughout the transaction life – see 0.

5.2.4 Exposure to foreign currency risk

Foreign currency risk typically occurs when the securitised asset portfolio is (partly or fully) denominated in a currency other than that of the rated instrument. Scope considers the impact of foreign exchange rate fluctuations on a rated instrument, on a transaction specific basis, typically by a haircut cash-flows exposed to the foreign currency.

Scope may give credit to structural or contractual hedges, depending on their ability to mitigate the risk for the rated instrument.

5.2.5 Contracts and frameworks review

Scope examines the structure's legal integrity to identify any legal issues or weaknesses that could affect transaction performance, for example, taxes on collateral affecting cash flows. A key element affecting structural integrity is how likely the issuer could default for reasons not related to collateral or counterparty risks. Even if the collateral and counterparties are performing well, an issuer's default may lead to collateral liquidation and expose the instrument to market value losses.

The analysis of how legal aspects affect credit risk considers the transaction structure and incentive mechanisms, among others. Scope's credit view depends on the associated credit risk and the applicability of legal principles as described below and in Appendix 8.8. The latter results in adjustments to Scope's analytical assumptions. For instance, legal aspects determine the mechanisms and features that Scope can give credit to when analysing available sources of credit enhancement in a transaction.

Scope generally assesses risks related to unclear or imprecise definitions in the legal documents, for example, on key transaction mechanisms defining transaction default and termination events.

Scope considers third-party expert opinions on tax and legal analysis. Typically, Scope examines whether these opinions confirm:

- the SPV capacity and authorisation;
- that all transaction documents constitute valid, legally binding and enforceable obligations of the parties;
- the effectiveness of the true-sale (unless there is a synthetic credit risk transfer);
- the effectiveness of SPV bankruptcy-remoteness elements; and
- the taxation of underlying assets, transaction documents and the SPV.

Legal opinions may merely contain assumptions and qualifications. If any of these cast doubt on the opinion, Scope will discuss the implications with the transaction's counsel and arranger to better gauge the impact on the structure's robustness.

For cash transactions, Scope assesses the legal robustness of the true sale to evaluate the risk of collateral claw-back and consolidation on the seller's balance sheet, should the seller default shortly after the collateral's sale. Scope may also examine whether, upon default of the originator, securitised assets could become subject to set-off claims from the obligors (set-off risk). For example, if the obligor holds a cash deposit account with the originator, the obligor may be able to set off a part or the whole outstanding debt against the deposit amount, generating a loss for the transaction.

The risk of an issuer's bankruptcy cannot be fully eliminated. However, the issuer can be protected through standard securitisation features specific to the issuer's nature, activities, and relationships with transaction parties. Scope evaluates the strength of protective elements, which include the issuer's legal nature, restrictions on its activity, its ownership structure and its

limited liabilities. Scope also reviews the limited-recourse and non-petition provisions in transaction contracts aimed at preventing other contractual parties from causing the issuer's default.

5.2.6 Insurance-related credit enhancement

Credit enhancement available in a transaction sometimes includes insurance protection. The instruments' ratings then need to reflect the credit quality and conditionality of such credit enhancement. Therefore, Scope's analysis focuses on the contractual provisions and the credit quality of the insurers.

The analysis of the insurance contracts' provisions focuses on the conditionality of the protection, timing delays of the payment from the insurance company, and potential scenarios under which a payment claim for loss coverage could be filed, while at the same time the insurance company can put a defence to not pay (see Appendix 8.8). This analysis would be based on our understanding of the insurance contracts, supported by legal opinions.

Regarding the credit quality of the insurer(s), we consider public rating(s) from regulated and supervised CRAs in our analysis, which we may adjust in case we deem necessary. Scope distinguishes two cases of insurance-related credit enhancement:

1) Insurance(s) provide(s) for enhanced recoveries on the underlying assets, i.e. an insurance contract covers a certain portion of portfolio loss in the context of an individual asset's default.

Transaction exposure to a single insurer	Credit quality assessment derived from:
Up to 100%	Public rating(s) from a regulated and supervised CRA mapped to Scope's rating scale*

*Should there not be a public rating available, Scope will assess the exposure, supported by sensitivity analysis, or may choose not to rate the transaction.

2) The protection provided by the insurance(s)[12] would result in credit substitution[13], i.e. the rating of the rated instrument reflects to a large extent Scope's assessment of the credit quality of the insurer(s).

Transaction exposure to a single insurer	Credit quality assessment derived from:
Less than or equal to 25%	Public rating(s) from a regulated and supervised CRA mapped to Scope's rating scale*
More than 25%	The second-best external rating mapped to Scope's rating scale, if there is more than one external rating available**

*Should there not be a public rating available, Scope will assess the exposure, supported by sensitivity analysis, or may choose not to rate the transaction.
**Scope may choose not to rate the transaction or consider complementing sensitivity analysis for the instrument if there is only one public rating for an involved insurance company available.

In the context of this second case, Scope will provide in its rating communication sensitivity analysis to indicate the benefit that an instrument receives from the insurance protection.

5.3 Counterparty risk analysis

5.3.1 Materiality of financial and operational risks

Scope evaluates the credit risk impact on the rated instrument stemming from the transaction's exposure to the various transaction counterparties in terms of both financial risk and operational risk. The materiality of an exposure is assessed as excessive, material or immaterial depending on the impact the counterparty default would have on the rated instruments. Scope also assesses the extent to which available measures mitigate or reduce counterparty risk in the specific context of the transaction. More detail on the approach can be found in Scope's Counterparty Risk Methodology.

6. Complementary analysis

6.1 Country and industry risks

Scope carries out a qualitative, forward-looking evaluation of systemic trends affecting the countries and industries to which the transaction is exposed. Scope considers macroeconomic, environmental, sovereign and industry risk factors that may impact instrument performance.

Scope does not systematically cap the maximum rating achievable by a securitisation based on the sovereign credit quality of the country of the issuer or of the securitised assets. However, Scope's analysis still considers country risk. Credit ratings allow investors to consistently compare credit risks between different instruments and securitisation types across different locations.

[12] There may be one or more insurers providing protection that in sum cover the entire transaction exposure or instrument.
[13] Credit substitution relates to rated instrument(s)' that benefit of the insurance protection, where the rating of the instrument(s) reflects the credit quality of the insurer(s), in case their credit quality is higher than that of the rated instrument stand-alone.

As a result, the ratings must adequately and consistently reflect the credit risks of an instrument, including those arising from an exposure to a country with weak economic fundamentals.

Scope's sovereign risk analysis for structured finance transactions looks at convertibility risk, e.g. risk of eurozone exit, the risk of institutional meltdown within the transaction's tenor, and macroeconomic factors. A material exposure to a financially weak domestic sovereign is viewed as a material credit risk that may negatively impact the rating.

6.2 Implementation of ESG factors in our analysis

Scope considers the impact of environmental, social and governance factors (ESG) on credit risk, if ESG considerations are relevant to certain areas affecting credit risk.

Given that structured finance issuers generally hold a pool of financial assets like, loans, bonds, leases or other receivables, which generate cash flows over time we assess how ESG factors may affect those cash flows, over the term of the rated instrument.

With respect to ESG factors, we consider both how regulation and self-imposed ESG targeted actions can impact the future cash flows. We also analyse how the cash flow of the assets, including the assets long term sustainable value securing claims, can be affected by ESG considerations, when supported by historical data[14], which for the time being is often not the case. For a pool of diversified assets, the direct impact is more muted than for concentrated pools, due to off-setting and diluting effects.

Where we believe that ESG related risks materially increase the uncertainty about future cash flows but where we do not have enough information to project the impact on the cash flows, we may incorporate the ESG risks through a qualitative adjustment.

Also, ESG factors may impact the credit risk profile of structured finance transactions indirectly. They feed into our analysis through ESG aspects already incorporated in corporate or bank ratings on specific issuers, either included in a securitisation; or counterparties of the transactions such as account banks or portfolio servicers.

6.2.1 Environmental risks

Environmental issues can be decomposed into (i) physical risks which are changes in both weather/climate or environment that would impact economies or directly assets (vehicles, properties), and (ii) transition risks which are the societal changes arising from a transition to a low-carbon economy, which could affect asset prices. Scope aims to integrate acute environmental risk when the transaction is directly exposed to events such as natural disasters or other environmental aspects, particularly in case of a long duration of the exposure, and if there is no hedge in the form of an appropriate insurance or cost coverage in place.

To also integrate the long-term emergence of chronic environmental risks, we may conduct sensitivity analysis, for example investigating the impact of certain climate change scenarios. The dedicated stress tests will then be published in our press release.

6.2.2 Social risks

Structured-finance transactions are exposed to very specific social risks, which may deviate from our usual definition of social risks for corporates or sovereigns, due to their nature. Existing frameworks from the sovereign or corporate world are not directly adaptable to structured-finance transactions, due either to the long-term nature of the factor, i.e. demography, or the nature of the issuer, a special purpose vehicle with no customers or employees.

Nonetheless, the securitised assets may be exposed to social risks. Here we have seen several different issues ranging from (i) the fundamental dynamics of society as whole (demographics, income/employment distribution, etc.), (ii) the current household resilience (household indebtedness, social benefit), (iii) down to the specific transaction-related issue (e.g. lending to borrowers who are underserved by high street banks). Moreover, social risk in structured-finance transactions may also occur via laws and regulation risks, like property squats in Spain, the introduction of new debt-like products in securitised pools, or the introduction of debt moratoria across Europe. Such social factors are incorporated into our analysis within the definition of the default and/or recovery rate, we apply, or the respective volatility parameter.

Additionally, social risks stemming from the key transaction parties, i.e. the originator, servicer, or asset manager are factored in our counterparty risk analysis.

[14] There is only limited historical data available from which the ESG impact on cash-flows and collateral values can be inferred.

6.2.3 Governance risks

Governance is core to our analysis of structured-finance transactions, i.e. we expect strict adherence to the documentation, calculations, reporting and transaction covenants, where deviations may trigger a rating review and could even jeopardise the rating maintenance or lead to the withdrawal of the rating if changes, e.g. following a reorganisation of the rated entity, which alters the fundamental nature of the transaction. Although not described as an explicit rating factor in our methodology, our ratings systematically reflect those risks through: i) our assessment of the legal structure, using concepts linked to the notion of simple, transparent and standardised (STS) transactions or just reflected by the structural governance, the legal construct used to implement the securitisation; ii) the counterparty governance, i.e. the quality of the transaction parties, including their own operational due diligence; and iii) the qualitative governance aspects, which consider the alignment of interest of the involved parties. Incorporating weak governance into our analysis can be quantitatively and qualitatively through key rating drivers or corresponding adjustments to supplementary rating drivers or may lead to a rating process conclusion without assigning a rating.

Structural governance is our assessment of the legal structure of the transaction as per Appendix 8.8 Legal considerations in structured finance. We review the transaction documentation and raise any concerns regarding the structure, execution, and enforcement of the security as well as any anomalies in the waterfall. Concerns are included in our publications and comparisons are made with established standards.

Counterparty governance is our assessment of the quality of the transaction involved parties. It is described in the relevant methodologies with our different areas of focus and examples of the elements used in our analysis. This includes, inter alia, the quality of origination, strength of lending standards and due-diligence processes.

Qualitative governance aspects relate to the purpose of the transaction and the existing (or absence thereof) alignment of interest between investors and different parties to the transaction. This is discussed during the rating process and embedded into our opinion.

6.2.4 ESG disclosures

Scope will disclose relevant ESG factors in its publications to the extent they are drivers of rated instrument risks and outline how those were taken into account in the analysis. The absence of such disclosure should therefore be read as ESG considerations (including climate change risk factors) were not a relevant driver of transaction risks.

6.3 Sensitivity analysis

Scope supplements the quantitative analysis and model input calibration by testing the sensitivity of the results. This includes selecting the main variables that drive an instrument's credit profile and assessing which assumptions on these variables would change the instrument's rating. The rating committee decides whether such potentially stressed assumptions correspond to a scenario whose likelihood is consistent with the rating. Scope may also test whether different stress levels in the collateral pool might shift the rated instrument from investment grade to non-investment grade, or vice versa.

Scope tests the sensitivity of the rated instrument to credit estimates, fallback credit quality assumptions or similar assessments (including adjusted stale credit estimates) by Scope or its affiliates (collectively credit estimates) that apply to portfolio exposures, see Figure 3, and unrated risk presenters, see Figure 4. Scope checks the sensitivity of the quantitative results for the rated instruments to:

1) A joint default scenario of the two largest direct or indirect[15] exposures[16] to which credit estimates, fallback assumptions or similar assessments apply; and
2) A joint default scenario for all indirect exposures[17] above 10% to which a credit quality assumption above BB-, derived from a credit estimate or similar assessment, applies.

If relevant, Scope will disclose these two sensitivities in the respective rating report.

6.4 Monitoring

All outstanding ratings are monitored on an ongoing basis through high-level checks and reviewed in more detail at least once a year, or earlier if warranted by events. Outstanding Credit Ratings rely on the same methodologies, tool and models as new credit ratings. However, the analysis can be conducted at a higher level compared to the depth of the analysis at closing.

Scope may conduct a monitoring rating action following i) the re-assessment of the transaction´s key rating drivers, ii) a review of the transaction's key cash flow model assumptions, considering the observed performance of the collateral and Scope's

[15] Indirect exposures are exposures to risk presenter as further outlined in section 5.1.6.2.
[16] If exposures are of equal size, the one with the better credit quality will be considered for the sensitivity analysis, i.e. the increase in expected loss would be higher.
[17] See section 5.1.6.2.

economic outlook, and iii) the occurrence of any material changes to the key transaction features (portfolio composition, structural features) or counterparty exposures.

Scope typically monitors structured finance transactions based on performance reports produced by the servicer, the management company, the collateral agent, or trustee in the transaction, as well as on information from the originator or other transaction key agents. If the information provided by issuer or its agent is of insufficient quality, or inappropriately delayed, Scope may have to consider the impact on the ratings and may even withdraw the rating.

A temporary dip in performance is not necessarily a reason to downgrade the rating. Scope may decide to only adjust the rating if underperformance or outperformance occurs over a sufficiently long period. Similarly, Scope may decide to re-run analytical tools and models applied to assign a rating, only if underperformance or outperformance is considered relevant and has occurred over a sufficiently long period, and/or when developments to analytical assumptions since the prior review are considered material.

Monitoring reviews may be performed for single-name Credit Ratings or for a portfolio of Credit Ratings. They are performed by means of peer group comparison, benchmarking against the rating change drivers, and/or a review of the transaction's performance over time.

If changes to the underlying portfolio´s performance assumptions and to the transaction´s capital structure are deemed immaterial for the current ratings, we may not require to re-run or update the tools and models supporting the current ratings.

Some common examples are: 1) when a transaction is still in its revolving period and, monitoring the evolution of the distance to triggers, there is no negative trend showing a likelihood of the revolving triggers to be breached, 2) when the capital structure has improved following positive portfolio performance, but the note´s rating is already at the maximum possible level, (either because the note is rated AAA, or because it is limited by a qualitative constrain, such as excessive counterparty risk, insufficient transaction´s liquidity, or a very negative asset class outlook), and 3) when performance has not improved and the rating is already reflective of a very high likelihood of default (i.e. C to CCC ratings) and mainly supported by a qualitative assessment of expected recoveries given an assumed event of default.

7. Rating obligations under bilateral financial contracts

A rating assigned to an obligation under a bilateral financial contract measures the expected loss associated with a contract party (issuer) not fulfilling its contractual payment obligations to its counterparty under the terms of the financial contract. Such financial contracts generally refer to derivative contracts, including swaps, forwards, options, securities lending and repurchase agreements, or contracts entered into under the form of a master agreements with annexes.

However, the rating does not address the capacity of the counterparty facing the issuer to fulfil its obligations. If such party were to default under the contract terms we would withdraw the rating. Thus, we do not address the ability of the issuer to pay contract termination costs if it is not the defaulting party.

The main rating drivers relate to:

- the definition of the issuer's obligations under the financial contract that establishes a financial exposure,
- the credit risk assessment of the issuer, accounting for:
  - the credit quality of its assets
  - its legal setup; and
  - other counterparty risk relating to third parties which have a role under the financial contract (e.g. custodian, account bank)[18].

Our analysis focuses on the issuer's events of default under the terms of the contract, which, if not cured in time, would lead to i) a financial loss for the party facing the issuer, and ii) the termination of the contract. The occurrence of a contractual event of default, will not by itself lead us to consider the issuer as having defaulted under such financial contract. Our analysis will incorporate widely accepted cure options[19] and the parties' incentives to early terminate contracts, particularly for events related to operational failures.

In the case of master agreements where maturities can vary, we will consider the tenor of the rated obligation with the minimum of one year.

[18] For further detail please see Scope's Counterparty Risk Methodology.
[19] Such cure options may include the application of penalty charges, cash settlement provisions or redelivery agreements.

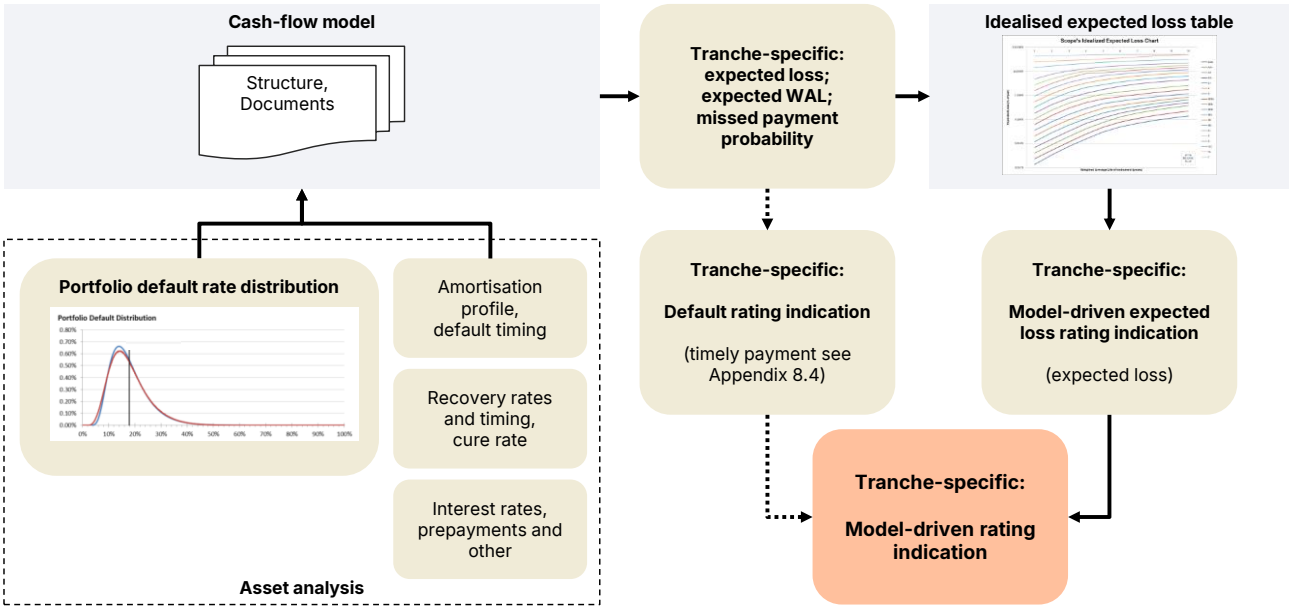
8. Appendix

8.1 Technical note on the expected loss framework

Scope estimates the probability-weighted average loss, e.g. the expected loss, and the probability-weighted average life (WAL), i.e. the *expected* WAL, for each rated tranche. The rated structure is tested for every possible portfolio default rate from 0% (no defaults) to 100% (the entire portfolio defaults), incorporating rating-conditional recovery rate assumptions and interest rate[20] or where relevant foreign exchange rate stresses, as well as multiple prepayment assumptions. Scope associates the rating-conditional expected loss and expected WAL calculated for a given tranche to Scope's idealised expected loss table to indicate the rating for a given instrument.

The probability of each possible default rate is taken either from an idealised distribution such as the inverse Gaussian distribution, or from the probability distribution produced by a Monte Carlo simulation. Losses in the structure result from portfolio losses following the application of rating-specific recovery assumptions and from costs of carry. The portfolio default probabilities are used to weight the losses obtained for each rated tranche under every default rate scenario. This is shown in expression (1).

Figure 5: Diagram of the structure analysis and cash flow model implementing the expected loss framework



Source: Scope Ratings

The loss of a tranche under a given default rate scenario i, LR_i, is the difference between the par value of the tranche and the present value of all principal and interest cash flows for the investor, discounted at the promised rate of the tranche, as shown in expressions (2) and (3).

Similarly, the portfolio default probabilities are used to weight the different WALs, resulting in a cash flow model for each rated tranche under every default rate scenario from 0% to 100%. This is shown in expression (4). For consistency, the WAL of a given default rate scenario ***i*** is derived by considering all principal and interest cash flows for the investor, see expression (5).

(1) $EL = \sum_{i=1}^{N} prob\{scenario_i\} \times LR_i$

(2) $LR_i = \frac{par - \sum_{i=1}^{N} PV^{i}_{@promised\ rate}}{par}$

(3) $CF_t^i = Principal\ CF_t^i + Interest\ CF_t^i$

(4) $\text{Expected}\{WAL\} = \sum_{i=1}^{N} prob\{scenario_i\} \times WAL_i$

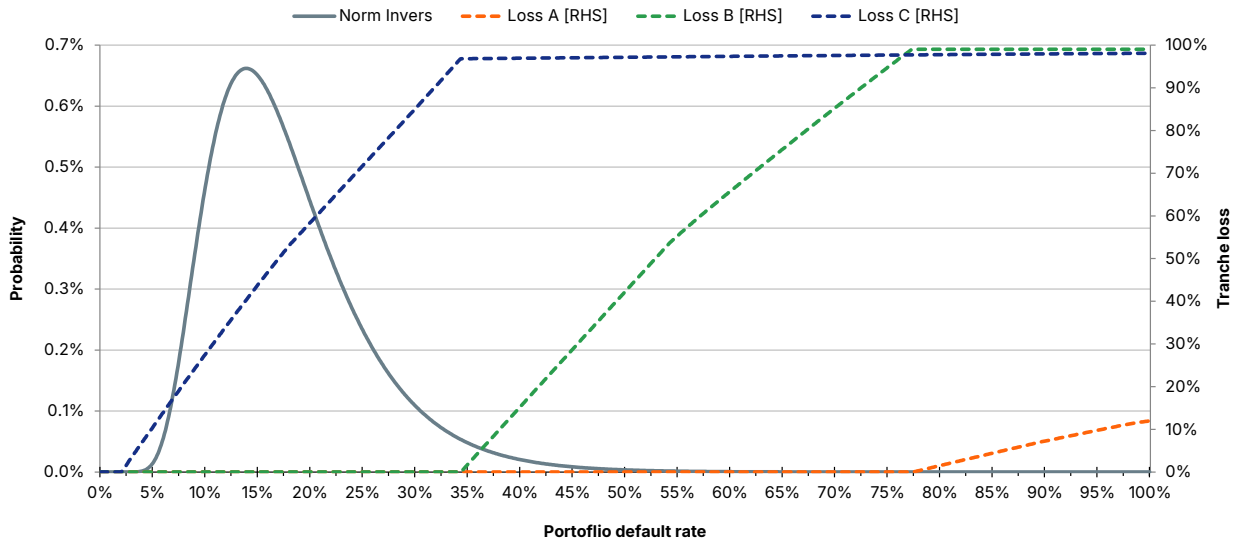
(5) $WAL_i = \frac{\sum_{t=1}^{T} t \times CF_t^i}{\sum_{t=1}^{T} CF_t^i}$ [21]

[20] Some asset classes may apply the concept of rating-conditional stresses to other or additional modelling parameters, which can be found in the respective asset class specific rating methodology – see Appendix 8.9.

[21] Our calculations consider $WAL_i = 0$, if there is no cash-flow in scenario i.

Figure 6 illustrates the losses on each level of a three-tranche structure for each portfolio default rate. The loss rates are expressed as a percentage of the tranche notional at closing. In this example, it is notable how class C benefits from excess spread that is not trapped by the transaction until the first assets are classified as defaulted. This together with a different discount factor allows class C's maximum losses to be lower than the maximum possible for class B. The probability-weighted loss for class B would, however, be smaller than that of class C.

Figure 6: Sample portfolio distribution and corresponding losses in a three-tranche structure



Source: Scope Ratings

8.2 Technical note on Scope's Cash Flow Models (Scope CFM and Scope CFM MW) implementing the expected loss framework

Scope's Cash Flow Models implement the calculation of expected loss as described in Figure 5. The expected loss is determined via a numerical integration of the losses under different default rate scenarios, weighted with their respective probability. The algorithm naturally separates into a cash-generating and a cash-consuming part – each will be described below. Losses on the tranches manifest when the projected discounted cash flows are less than the initially invested amount. The CFM MW compared to the CFM provides a standardised setup for the inputs whereas the CFM allows for modelling of non-standard features.

The analytical assumptions derived in 5.1 Collateral risk analysis, the structural elements identified in 5.2 Structure analysis and further risk quantifications are inputs to Scope's Cash Flow Models which we use to examine cash flows in the structure. The analysis determines the cash flows available for each tranche of the structure when considering a given default rate for the portfolio of assets. The cash flows to the tranche at each default rate allow us to calculate a specific tranche's loss and its WAL according to the portfolio default rate distribution. A tranche's expected loss and expected WAL are the probability-weighted averages of a tranche's losses and WALs obtained for all possible portfolio default rates.[22]

We take the main features of the structure into account so as to correctly capture the loss contributed by all portfolio default rate scenarios. We simplify the structure if certain mechanisms become irrelevant for the rating of certain liabilities. For example, subordinated items in a priority of payments are irrelevant if the junior tranche is not rated. Specific structural features benefit some investors but harm others, i.e. depending on tranche subordination, which our analysis aims to capture.

Asset treatment (cash generation[23])

The assets generate future cash flows according to assumptions for interest and amortisation payments as well as for prepayments, defaults, recoveries, asset cures and other market parameters, such as foreign exchange and interest rates. Asset assumptions are specific to the analysed transaction and recorded as vectors.

In the simulation, assets are considered either performing, delinquent or defaulted. Performing assets pay interest and amortise according to a specified schedule. Defaulted assets are excluded from the asset balance and the assumed recovery will be distributed over time according to a defined recovery schedule. Assets normally do not change directly from performing status to default but rather undergo a period of delinquency. Delinquent assets can fully or partially cure before defaulting. Scope can assume a level of liquidity stress by considering that a certain percentage of assets may become delinquent and cure, i.e. becomes performing again and pays missed payments after a moratorium period, before default.[24]

The performing asset balance in each period undergoes the following sequence:

1. Add back cures to the opening performing asset balance (if assumed);
2. Subtract new delinquent loans to the opening performing asset balance;
3. Calculate interest over the period based on the resulting performing asset balance (steps 1 and 2);
4. Subtract prepayments over the period; and
5. Subtract amortisation over the period.

The generated cash is passed to the securities according to the main interest and principal priority-of-payment features defined in the transaction structure.

By default, each period corresponds to a calendar month except if the transaction's time-related characteristics need adjustment.

Liability treatment (cash consumption[25])

Scope's Cash Flow Models have a very flexible description of the priorities of payment for the different transaction structures. The models feature a set of accounts that keeps track of outstanding liabilities and received or paid cash amounts.

[22] See Appendix 8.1
[23] We may also apply the cashflow model to a synthetic transaction, considering the modelled cash-generation as de-risking of the referenced risky assets.
[24] Please note the CFM MW doesn't provide for the modelling of delinquencies and subsequent cures. However, we assume assets being non-performing before defaulting based on the transaction's default definition.
[25] In a synthetic transaction, the modelled liability cash consumption replicates the risk cover release for the different liability instruments.

8.3 Technical note on Scope's portfolio model (Scope PM)

Scope PM implements a numerical procedure to estimate the default and expected loss metrics of an amortising pool of assets. The approach is based on a Monte Carlo simulation, which randomly determines, on a line-by-line basis, whether the assets of the pool have defaulted and the time of the default occurrence. Multiple iterations of the simulation generate statistics which are used to estimate the pool's default characteristics. Line-by-line asset defaults are determined by applying a Merton model, which compares a random asset value against a defined threshold value. If a default happens, the corresponding default time is determined along with the outstanding balance at that time, as defined by the asset's amortisation profile. This information is used to ascertain the aggregate default rate at the end of each iteration, calculated as the total balance of defaulted assets divided by the total initial balance. The default frequency is determined as the number of defaulted assets divided by the total number of assets. The statistics of such values over all iterations constitutes the final portfolio default rate and frequency curves.

The asset's threshold value is implied by the asset's default risk and its risk horizon. The random asset value is driven by the combination of a set of market risk factors and an idiosyncratic component for each asset. The common market risk factors create a default dependency framework. Typically, the different factors reflect the key dependency factors of the respective asset, for instance, their geographic location, industry or other relevant elements. In most cases, asset values will also depend on a global factor that reflects macroeconomic influences. The weights assigned to these factors are voted on by a rating committee, which considers the transaction characteristics and the public benchmark's sensitivity to weights of those factors.

In mathematical terms, Scope constructs the Gaussian random variable Z_j, as a linear combination of standard independent Gaussian random variables $z_1, \dots, z_{n;}\, z_j^{id}$:

$$Z_j = \sum_{i=1}^{n} \beta_i \cdot z_i + \beta_j^{id} z_j^{id} ,$$

where the sum of weights $\sum \beta_i$ is less than one and the idiosyncratic factor weight is calculated as $\beta_j^{id} = \sqrt{1 - \sum \beta_i^2}$ to make the Z_j standard Gaussian.

The model can also generate loss statistics when used with asset-per-asset recovery rate assumptions. Additionally, the model reports default timing profiles, which can be constructed for the entire pool and in dependency of default quantiles. This allows a detailed look into the conditional default term structure.

8.4 Technical note on timely payment

Scope complements the analysis by assessing the instrument's probability of default. The rating assigned to a structured finance tranche may be lower than the rating derived from its expected loss and expected WAL if the probability of missing at least one payment, which is due and payable, is high relative to the expected loss.

The expected loss framework does not always sufficiently differentiate between the credit qualities of timely-payment and ultimate-payment instruments as the time value of coupon deferral is generally negligible, depending on the size of a tranche. As further explained below, Scope can analyse both timely-payment and ultimate-payment structures in the quantitative analysis. Most structured finance ratings consider a timely-payment structure for the most senior outstanding note, but Scope can also assign ultimate-payment ratings if both a) the terms and conditions of the notes allow for that, and b) it is not uncommon in the relevant market or asset class. Scope's rating communication will detail if a rating reflects ultimate payment.

Additionally, Scope believes the probability of missed payments should be remote for instruments rated AAA_{SF} and AA_{SF}, irrespective of their terms and conditions, given that investors in highly rated securities expect strong certainty on timely payment, regardless of how small a time-value loss is.

As part of the general analysis, Scope computes the probability of missing at least one payment under all possible default scenarios for the underlying exposures (0% to 100%), which is then compared to the cumulative default probabilities implicit in Scope's idealised expected loss table. When assigning a final rating, Scope applies a degree of tolerance in line with the relationship between the long- and short-term rating scales as published in its Rating Definitions. For example, a tiny number of missed payments in the tail of a tranche's life may be acceptable, particularly if they result from technical defaults captured in the quantitative analysis. We apply analytical metrics to investigate i) the time period for which a due amount remained unpaid and ii) whether a due amount was ultimately paid and what is the difference between the probability of default under timely-payment considerations versus the probability of ultimate payment failure.

Depending on the respective instrument target rating level, we deem the levels in Figure 7 acceptable.

Figure 7: Acceptable notch difference between probability of default and expected loss model result per instrument target rating

Instrument target rating level	Acceptable notch difference probability of default and expected loss model result
AAA	4 notches
AA- to AA+	5 notches*
BBB- to A+	6 notches*

*(particularly when it is a tiny number of missed payments, as evidenced by additional analytical metrics)

When the model results indicate a probability of default which is important, i.e. commensurate with the default probabilities below the B category according to our idealised default probability table, then we generally restrict the notch difference to maximum five notches. The five notches-difference is however only acceptable when the model results for the probability of default are close to, albeit below, the B category in the idealised default probability table.

In addition, Scope is particularly observant when there is an important risk that there could be a default or default like event, as further defined in the Rating Definitions, within the next year to year and a half. The quantification of the degree of risk can either be the function of i) a quantitative output which shows a high probability of default for a significant amount in relation to the total transaction amount or ii) through a qualitative assessment of such a probability, for example reflecting our view on current refinancing conditions. In such cases the notch difference is normally not higher than 4 notches and the level depends on the quantity and certainty of the recoveries as further described in the Rating Definitions.

8.5 Technical note on Scope's vintage analysis

This appendix provides technical information on our vintage analysis[26] which we generally apply for the analysis of historical performance information for consumer, auto, residential mortgage or small-and midsized corporates (SME) credits at inception when the transaction is rated. The vintage analysis results in an estimate for the lifetime cumulative default rate together with an estimate for the variance of the cumulative default[27] rate which may be adjusted for further analytical considerations applying expert credit judgement and peer comparison. Vintage analysis generally does not need to be perform during the monitoring phase of a transaction.

Extrapolation of vintage data

The provided vintage data might not cover the entire life cycle of securitised assets. Incomplete vintage data still contain useful information on likely lifetime defaults. We therefore extrapolate the incomplete vintages to be able to use them as one of the sources for our collateral assumptions.

For a given vintage, we can calculate the cumulative amount of defaulted loans over time divided by the aggregate original balance of the loans included in the vintage. For younger vintages, which cover only on a shorter time period, we extrapolate default rates based on the historical pattern observed on older vintages. The extrapolation is done by calculating the weighted average growth rate of the cumulative defaults between each period since origination and using that as an estimate for the future growth rates for each period for the shorter vintages by multiplying the last historical data point for a vintage by one plus the average cumulative defaults for the next period. In this way the cumulative default rate for the shorter vintages can be extrapolated up to a time horizon congruent with the longest vintage. During the extrapolation exercise we may, by applying analytical judgement, exclude younger or older vintages, e.g. if they are significant outliers or behave in a very different way compared to the other vintages. This approach standardises the analysis across transactions and markets to allow for a better comparison, benchmarking, between different transactions.

Segment analysis

Vintage data split by portfolio segments can give more insights on the historical performance for certain segments. If the securitised pool contains significantly different concentrations of the single segments compared to the historical data and each segment contains a sufficient number of underlying exposures to make the vintage analysis statistically relevant, then Scope prefers to analyse the default rate for each segment and weight the segment results with the expected concentrations in the securitised pool.

Rebasing – adjustments for seasoning

Vintage data shows the performance of representative assets from origination and reveals the average effect of ageing. We believe that the shape of default vintage curves is not determined only by the credit quality of the underlying obligors improving, but also by the factors involved in its composition. Typical curves reflect: i) the compounding of survival rates; ii) the amortisation of the initial balance; iii) prepayments; iv) the expiration of contracts at maturity; and v) the possible higher propensity of obligors to pay as equity builds up in a financed object[28]. Additionally, the term structure of each series in a vintage set also captures the point in an economic cycle, which may cause a pronounced front/or back loading of default rates.

If appropriate, and only in case the drop in performing balance can be estimated[29], we adjust preliminary vintage analysis results to capture the effect of ageing on the assets which have been or will be transferred to the portfolio. This adjustment (rebasing) produces and estimate of the future marginal cumulative default rate that applies to the portfolio of assets transferred to the special purpose vehicle, as opposed to the lifetime default rate of the assets since contract origination.

We rebase vintage results by referring the marginal contribution to the assets' lifetime default rate from the ageing point to the surviving balance of the vintage at the ageing point calculated for a given portfolio segment. The ageing point is the weighted average ageing of the relevant portfolio segment. The balance at the ageing point depends on amortisations and defaults since the contract's origination up to the time of the ageing point.

[26] The analysis of historic credit performance data, i.e. defaults, recoveries and losses, that is presented in static cohorts is generally referred to as vintage analysis. The analysis aims to provide an aggregate view on historic credit performance, by applying certain extrapolation techniques to the differently seasoned cohorts of data.
[27] In this Appendix we use the term default consistently for ease of reading while the same method can be applied also for losses or recoveries provided in vintage format.
[28] Less relevant for unsecured loans or loans to SMEs.
[29] In other cases, the adjustment for seasoning, if appropriate, is done in a qualitative manner applying expert judgement and peer comparison where relevant.

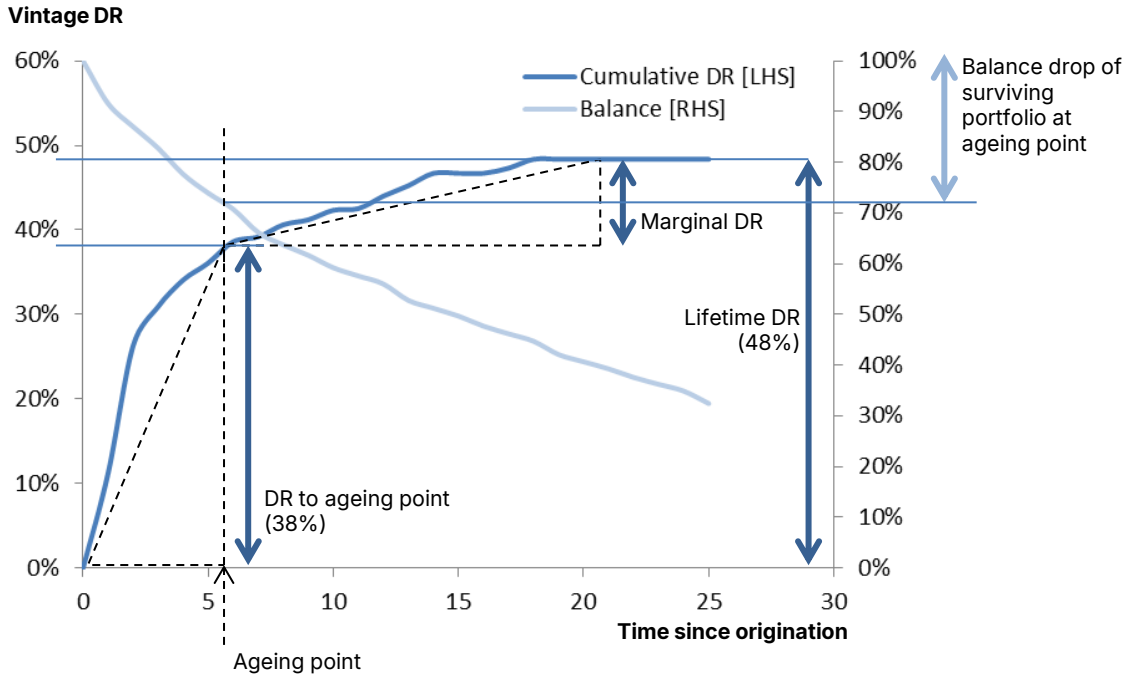
The rebasing is described by the following expression:

$$\text{Rebased marginal DR} = \frac{\text{Marginal DR from ageing point}}{1 - \text{DR to ageing point} - \text{Drop in performing balance}}$$

Rebasing is illustrated in Figure 8 with an example. The marginal default rate of 10%, over the original balance at origination, is effectively 29.4% when applied to the balance of surviving assets at the ageing point, see calculation below. This rebased marginal default rate is the expected lifetime default rate applicable to the securitised portfolio and differs from the lifetime default rate of 48% over the original balance at the time of the assets' origination.

$$\text{Rebased marginal DR} = \frac{(48\% - 38\%)}{1 - 38\% - 28\%} = 29.4\%$$

Figure 8: Rebasing of marginal default rate from vintage analysis



Source: Scope Ratings

8.6 Framework on fixed-floating interest rate risk

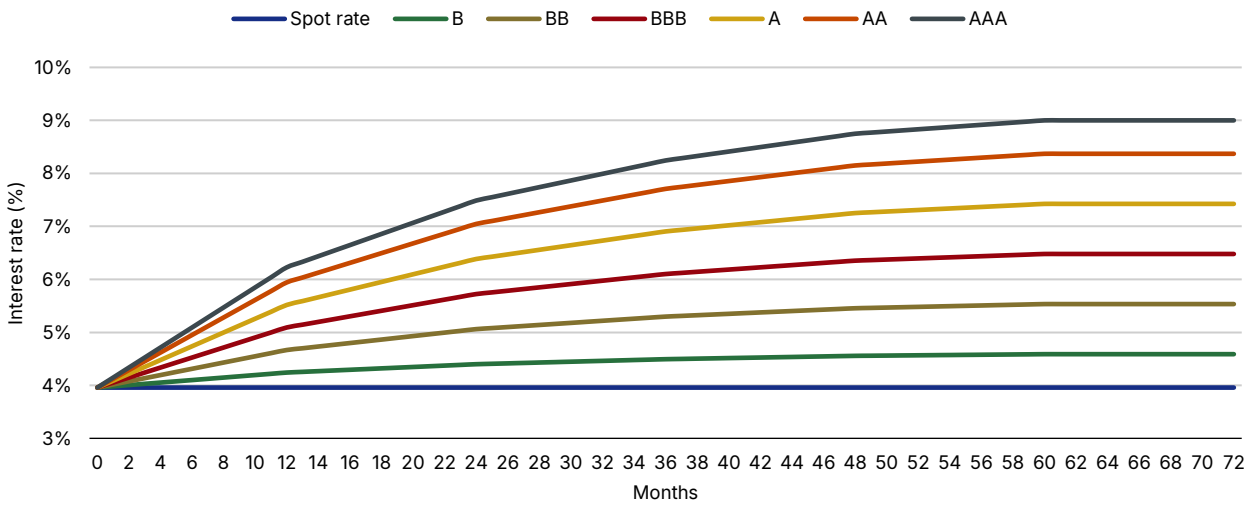
This technical note details Scope's approach to capture fixed-floating risk. This approach is applied equally to all structured finance instruments across all asset classes. Fixed-floating risk is the arising where the portfolio pays a fixed rate, whereas the rated instrument pays a floating rate (or vice-versa). In unhedged or only partially hedged structures, fixed-floating risk constitutes the main interest rate risk driver. Although they are typically less relevant, Scope also pays attention to basis risk (where both the portfolio and the notes have a floating rate, but they are linked to different reference rates) and reset risk, and applies transaction-specific stresses, such as a haircut to excess spread, if necessary.

We stress variable reference rates applicable either to the assets or the liabilities by applying rating-conditional interest rate vectors, under an increasing and a decreasing interest rate scenario. Such vectors gradually increase/decrease from the current transaction currency 3-month interbank rate level to a perpetual rating-conditional plateau/floor at the end of year five. For all interest rate tenors of the major western currencies (USD, GBP and EUR), the AAA plateau and floor are fixed at 9.0% and -1.0%, respectively, with a gradual convergence of the plateau and floor levels to the transaction currency 3-month interbank spot rate for lower rating categories. We assume the path to plateau and floor to be frontloaded for all rating scenarios.

In addition to the above stresses, we may also test the current forward rate scenarios as well as alternative interest rate paths that could be more detrimental and may not be fully captured by the above stresses. These additional tests ensure a comprehensive evaluation of the transaction's resilience under adverse and unexpected interest rate environments. The rating committee assesses whether such alternative interest paths correspond to a scenario whose likelihood is consistent with the rating.

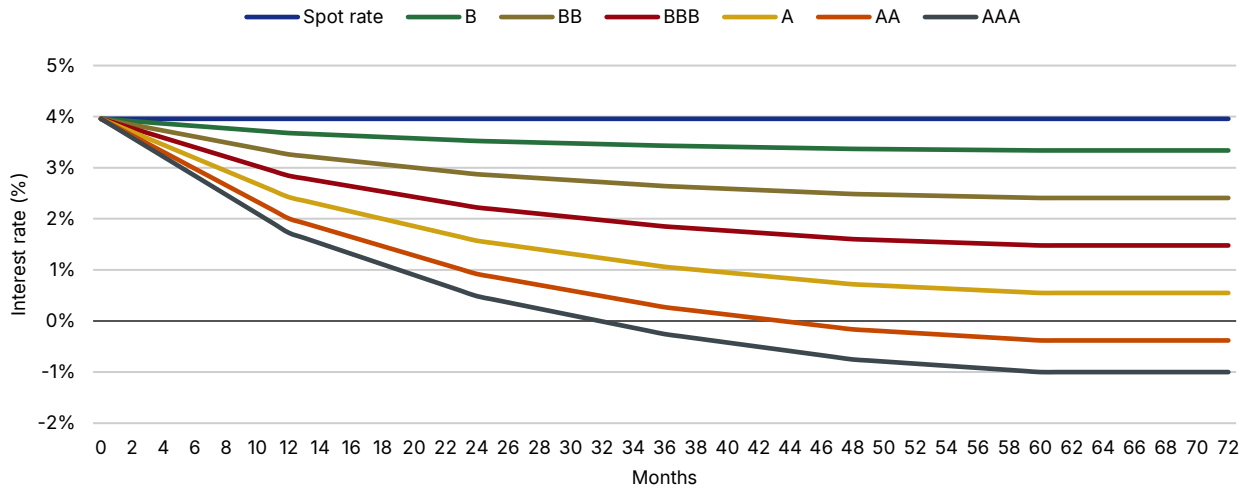
Figure 9 and Figure 10 illustrate the two rating-conditional scenarios for transactions exposed to Euribor fixed-floating risk, as of end of 2023, starting from a spot rate of 4%.

Figure 9: Indicative interest rate stress vectors for rising Euribor rates (end-2023)



Source: Scope Ratings

Figure 10: Indicative interest rate stress vectors for declining Euribor rates (end-2023)



Source: Scope Ratings

In Scope's view, the AAA interest rate plateau (9%) represents a level of stress to national debt service ratios which is approximately commensurate with that observed in the US in the early eighties, when the central bank policy rate peaked at about 19% against the backdrop of a significantly less indebted economy than today. While other western economies show similar patterns which justify the same AAA assumption, Scope may apply a different plateau for transactions exposed to currencies other than EUR, USD and GBP. Furthermore, Scope may adjust the AAA stresses (for each of the major currencies individually) if market rates move too close to the plateau level and, at the same time, the market implied probability of reaching the plateau level peaks. We periodically assess such probability based on implied volatility metrics from traded options on fixed income underlyings.

Scope's AAA interest rate floor (-1%) has been determined qualitatively. Recent European history has proven that interest rates can indeed go negative for a sustained period. However, in Scope's view the limits of unconventional monetary policies have already been tested and it is extremely unlikely that we will see rates falling below the -1% threshold, at least in the short-term or for a sustained period. As for the plateau assumption however, Scope may revisit this view from time to time.

8.7 Technical note on general asset recovery analysis

Scope starts by estimating the portfolio recovery rates using either of two different approaches, which can effectively coexist: i) a statistical analysis of recovery performance, for example vintage analysis, when available data is adequate and the securitised pool is granular – applicable to secured and unsecured exposures; or ii) fundamental analysis – generally only applicable to secured exposures; when determining the recovery rate assumption we also rely on benchmarking with other relevant transactions or market trends and other qualitative considerations.

Scope applies a fundamental analysis for secured exposures in non-granular portfolios and can, if deemed necessary, complement the statistical analysis with the fundamental approach for granular portfolios of secured exposures. The fundamental approach relies on analysing asset price movements and asset liquidity. This approach is most appropriate when data limitations prevent a statistical analysis. The security value is the stressed value of the underlying asset.

When the security provides first-lien claims on the underlying asset, for instance, a security on real estate that the agency believes cannot be challenged, the fundamental recovery analysis can be used. It can also be used for non-first-lien claims if Scope has clear evidence about prior ranking claims.

While real estate security represents most of the analysed cases with secured exposures, Scope may also give credit to other forms of security such as pledges on cash accounts and real or financial assets so long as enforceability cannot be legally contested, and market value and liquidity risks can be estimated.

Fundamental recovery rate analysis

Under the fundamental approach, Scope assesses the risks associated with the underlying security, typically a real estate asset, on a line-by-line basis. The analysis results in a rating-conditional haircut to the appraisal value of the security, delivered by a third party in the context of the analysis. Such security value haircut which has three components: 1) appraisal quality assessment, 2) market-value-risk, and 3) liquidity and other idiosyncratic risks.

Appraisal quality assessment

Scope assesses the quality of property appraisals considering i) the transparency of the appraisal process; ii) the quality of the valuation techniques applied; iii) the age of the appraisals; and iv) the appraiser's incentive to conduct unbiased valuations.

Scope generally relies on the latest appraisals from independent third parties to estimate current property values. However, property appraisals connected with secured NPL securitisations may require extra attention due to i) outdated valuations; ii) simplified valuation procedures, e.g. desktop or statistical valuations; or iii) valuation biases arising from an appraiser's lack of independence from transaction parties.

Scope captures limitations on appraisal quality through transaction-specific haircuts. In addition, seasoned valuations are updated through indexation techniques based on public or private real estate indices.

Market value risk

Forward-looking market value risks are captured through rating-conditional, market-value-decline (MVD) assumptions. Figure 11 illustrates residential MVD assumption benchmarks for several European countries. Scope may apply transaction-specific MVD assumptions which deviate from benchmarks. Some common examples of instances where we may deviate from such benchmarks are the following: 1) when the collateral assets are non-granular or concentrated in specific regions, 2) if recent movements in the underlying HPI have been particularly strong, or 3) if changes to the macro-economy and to the country´s sovereign rating have been acute.

Figure 11: Illustrative average residential MVD assumptions per country

Instrument's rating	AUT	BEL	CYP	DNK	FIN	FRA	DEU	GRC	HUN	IRL	ITA	NLD	NOR	PRT	POL	ESP	SWE	GBR
CCC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
B-	2.2%	1.8%	1.9%	1.9%	1.4%	1.6%	1.9%	2.7%	3.8%	2.4%	2.0%	2.2%	2.1%	2.5%	2.7%	2.2%	2.0%	2.0%
B	4.4%	3.6%	3.7%	3.7%	2.7%	3.1%	3.8%	5.5%	7.5%	4.7%	4.1%	4.3%	4.3%	5.1%	5.4%	4.4%	4.0%	3.9%
B+	6.7%	5.4%	5.6%	5.6%	4.1%	4.7%	5.7%	8.2%	11.3%	7.1%	6.1%	6.5%	6.4%	7.6%	8.1%	6.7%	6.1%	5.9%
BB-	8.9%	7.3%	7.5%	7.5%	5.4%	6.3%	7.7%	10.9%	15.0%	9.4%	8.2%	8.6%	8.5%	10.2%	10.8%	8.9%	8.1%	7.9%
BB	11.1%	9.1%	9.3%	9.4%	6.8%	7.8%	9.6%	13.6%	18.8%	11.8%	10.2%	10.8%	10.7%	12.7%	13.5%	11.1%	10.1%	9.8%
BB+	13.3%	10.9%	11.2%	11.2%	8.2%	9.4%	11.5%	16.4%	22.5%	14.1%	12.3%	12.9%	12.8%	15.3%	16.2%	13.3%	12.1%	11.8%
BBB-	15.6%	12.7%	13.0%	13.1%	9.5%	11.0%	13.4%	19.1%	26.3%	16.5%	14.3%	15.1%	14.9%	17.8%	18.9%	15.5%	14.1%	13.8%
BBB	17.8%	14.5%	14.9%	15.0%	10.9%	12.5%	15.3%	21.8%	30.0%	18.8%	16.4%	17.2%	17.1%	20.4%	21.7%	17.7%	16.1%	15.7%
BBB+	20.0%	16.3%	16.8%	16.9%	12.3%	14.1%	17.2%	24.5%	33.8%	21.2%	18.4%	19.4%	19.2%	22.9%	24.4%	20.0%	18.2%	17.7%
A-	22.2%	18.1%	19.2%	18.7%	13.6%	15.7%	19.2%	27.3%	37.5%	23.5%	20.5%	21.5%	21.3%	26.2%	27.8%	22.8%	20.2%	19.6%
A	25.9%	21.1%	21.6%	21.9%	15.9%	18.3%	22.4%	30.0%	41.3%	27.4%	22.5%	25.1%	24.9%	29.5%	31.3%	25.7%	23.5%	22.9%
A+	29.6%	24.2%	24.0%	25.0%	18.2%	20.9%	25.5%	32.7%	45.0%	31.4%	24.6%	28.7%	28.4%	32.8%	34.8%	28.5%	26.9%	26.2%
AA-	33.4%	27.2%	26.4%	28.1%	20.4%	23.5%	28.7%	35.5%	48.8%	35.3%	26.6%	32.3%	32.0%	36.1%	38.3%	31.4%	30.3%	29.5%
AA	37.1%	30.2%	28.8%	31.2%	22.7%	26.1%	31.9%	38.2%	52.5%	39.2%	28.7%	35.9%	35.6%	39.3%	41.8%	34.2%	33.6%	32.7%
AA+	40.8%	33.2%	31.2%	34.4%	25.0%	28.7%	35.1%	40.9%	56.3%	43.1%	30.7%	39.5%	39.1%	42.6%	45.2%	37.1%	37.0%	36.0%
AAA	44.5%	36.3%	33.6%	37.5%	27.2%	31.4%	38.3%	43.6%	60.0%	47.0%	32.8%	43.1%	42.7%	45.9%	48.7%	39.9%	40.4%	39.3%

Source: Scope Ratings
Note: The stress levels displayed in Figure 11 reflect jurisdiction specific adjustments that cater for the respective HPI's peak-to-trough distance, the index volatility and a jurisdiction-specific macro-economic risk adjustment.

Scope's MVD assumptions are derived based on a quantitative analysis of the underlying house price indices, which comprises three building blocks or steps: First, quantification of AAA assumptions, reflecting a very distressed and remote scenario b) CCC assumptions, which generally reflect current market conditions and c) a bi-sectional interpolation between the AAA and CCC assumptions to derive intermediate rating level assumptions. To ensure the consistency of the analysis across jurisdiction, we use public house price indices that are methodologically homogeneous.[30] Next, we describe each of the building blocks in more detail.

AAA assumptions

Scopes AAA residential MVD assumptions reflect a baseline 40% stress applied equally to all jurisdictions or regions, which has been calibrated considering maximum house price index (HPI) declines observed across multiple jurisdictions during periods of stress dating back to the second quarter of the 20th century[31]. This baseline stress is then adjusted (upwards or downwards), considering recent HPI-specific dynamics (typically covering the last 15 years) and the current macro-economic context. Specifically, Scope considers three adjustments to the 40% baseline stress:

First, a potential downward adjustment (i.e. MVD decrease) to reflect the distance between the current HPI and the HPI cycle peak. Second, an upward or downward adjustment for relatively volatile or stable HPIs, respectively. Third, a potential upward adjustment which addresses jurisdiction specific macro-economic risks and is assigned using the jurisdiction's sovereign rating. The combination of these adjustments results in a maximum possible AAA MVD of 60% for any given jurisdiction with an investment grade sovereign rating, which is roughly commensurate with the worst historical drawdown observed by Scope (Netherlands, 63%, 1921-1936).[32] Exceptionally, Scope may apply a qualitative overlay to its quantitative approach, for instance if the reliability or quality of the underlying HPI is considered poor, or if the quantitative results are excessively sensitive to the time horizon of the analysis. Scope also qualitatively floors the minimum AAA MVD at 30%.

Base case assumptions

Scope's base case assumptions generally reflect current market conditions. i.e. stable prices. However, as part of the analysis Scope assesses a) short-term HPI trends in the context of current cyclical conditions, b) the mid-term real estate outlook based on macro-economic and credit indicators, and c) potential long-term structural vulnerabilities such as excessive levels of private or corporate debt. Scope may adjust its base case assumption to incorporate a forward-looking view reflecting short-term expectations of increasing or decreasing HPIs, particularly for countries and regions where a certain direction is emphasised by the different risk drivers.

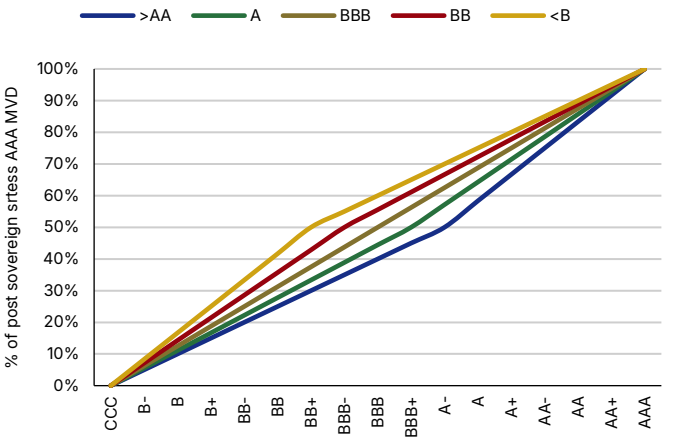
[30] The analysis considers house price information provided by the Bank for International Settlements.
[31] Among others USA (1926-1941) and UK (1927-1934).
[32] For very-low rated jurisdictions, the maximum possible AAA MVD could go as high as 75%.

Interpolation benchmarks

Scope considers deterministic interpolation benchmarks to derive intermediate MVD stresses. The vector of choice is subject an assessment of sectoral and/or macro-economic risks as of the MVD benchmark cut-off date (see Figure 11), which can be typically assessed through the countries sovereign rating (see Figure 12). Scope may apply transaction-specific interpolation vectors which deviate from the interpolation benchmarks, particularly when perceived macro-economic risks have strongly evolved since the afore-mentioned cut-off date. As a general rule, Scope will frontload MVD stresses along the rating scale, in countries where underlying macro-economic risks and/or real estate price uncertainty are considered high, on a relative basis. Conversely, we will backload MVD stresses along the rating scale in countries where underlying macro-economic risks and/or real estate price uncertainty are considered relatively low.

Figure 12: Illustrative average residential MVD assumptions per country

	Sovereign rating category buckets				
	>AA	A	BBB	BB	<B
CCC	0.0%	0.0%	0.0%	0.0%	0.0%
B-	5.0%	5.6%	6.3%	7.1%	8.3%
B	10.0%	11.1%	12.5%	14.3%	16.7%
B+	15.0%	16.7%	18.8%	21.4%	25.0%
BB-	20.0%	22.2%	25.0%	28.6%	33.3%
BB	25.0%	27.8%	31.3%	35.7%	41.7%
BB+	30.0%	33.3%	37.5%	42.9%	50.0%
BBB-	35.0%	38.9%	43.8%	50.0%	55.0%
BBB	40.0%	44.4%	50.0%	55.6%	60.0%
BBB+	45.0%	50.0%	56.3%	61.1%	65.0%
A-	50.0%	57.1%	62.5%	66.7%	70.0%
A	58.3%	64.3%	68.8%	72.2%	75.0%
A+	66.7%	71.4%	75.0%	77.8%	80.0%
AA-	75.0%	78.6%	81.3%	83.3%	85.0%
AA	83.3%	85.7%	87.5%	88.9%	90.0%
AA+	91.7%	92.9%	93.8%	94.4%	95.0%
AAA	100.0%	100.0%	100.0%	100.0%	100.0%



Source: Scope Ratings

MVD assumptions reflect a forward-looking view at a specific cut-off date. Therefore, Scope periodically reviews its forward-looking MVD assumptions to reflect material changes to the underlying HPI or in the macroeconomic environment.

This does not necessarily imply, however, that Scope retroactively adjusts past MVD assumptions in the context of the monitoring process. Instead, we typically assess realised recoveries against our fundamental recovery rate assumptions, and holistically adjust transaction-specific recovery rate assumptions if appropriate.

Liquidity and other idiosyncratic risks

Asset liquidity is a key driver of expected recoveries and implies transaction-specific fire-sale discount (FSD) assumptions.

Scope's fire-sale discount assumptions are benchmarked against jurisdiction-specific historical evidence of market liquidity and may capture qualitative adjustments reflecting the nature of the collateral. e.g. residential versus non-residential. Such assumptions are derived on a deal-by-deal basis to account for i) servicer-specific historical evidence of appraisal values relative to the sale price (if available); or ii) transaction-specific risks, driven by the ageing of the collateral, the workout options available to the servicer, asset marketability and quality, information asymmetries, obsolescence, among others.

The servicer's methods can impact the recovery significantly both in terms of timing and the actual recovery rate. Scope's recovery analysis therefore also considers the servicer's ability by adjusting the expected recovery rates upwards or downwards and by reducing or prolonging the expected time for recoveries.

If not captured directly within the FSD assumptions, Scope deducts liquidation costs from the estimated gross recovery proceeds. Additionally, a stochastic analysis may address specific risks, e.g. concentration, or low liquidity. When permitted by data, Scope may also consider a distribution of security values to capture market value and liquidity risks.

Scope may apply higher stresses to capture negative collateral selection, which is typically performed for very seasoned NPL portfolios. Scope may also apply a market-value-decline floor or a recovery rate cap to address data limitations like non-stationary or too short historical time series.

8.8 Legal considerations in structured finance

Asset analysis

The quality of underlying assets and the SPV's legal recourse to asset proceeds are essential to all structured finance and asset-based finance transactions.

Enforceable assets

To determine if the assets produce cash flows that can cover the SPV's liabilities, Scope assesses whether payments owed to the SPV are valid and enforceable at the amount required.

Applicable laws can challenge the existence and enforceability of claims and obligations stemming from assets. These laws may prohibit certain transactions, e.g. usury, fraudulent dealings, or collusion; may grant counterparties extraordinary termination rights (consumer protection), or may stipulate formal prerequisites, e.g. filings, or notarisation. Scope assumes the validity and enforceability of obligations and typically confirms this via a third-party legal opinion. When the transaction allows the purchase or substitution of assets at a later stage, the originator or collateral manager will generally explicitly represent any factual elements necessary for obligations to be existing and enforceable. Especially when the SPV's asset base consists of a pool of assets, the analysis may focus on whether a transaction party, i.e. the originator or the collateral manager, is contractually obliged and capable of validating the assets' existence and enforceability.

Even if payment obligations were originated in a valid and enforceable fashion, a creditor may be unable to fully benefit from them. Scope always considers any right of the obligor to refuse full payment due to statutory defences, or any contractual changes to payment obligations. In this context, set-off, dilution and encumbrances may negatively impact the ratings.

i) Set-off

Set-off may be invoked by a debtor that holds a monetary cross-claim against a creditor. In this case, the debtor could be released from honouring the creditor's claim up to the amount of the cross-claim. Depending on the jurisdiction, set-off rights may be a statutory defence, contractually agreed and in some instances may be contractually waived. Set-off risk can arise in consumer credit or SME loan securitisations if the securitised loans' originator holds debtor's' deposits or equivalent.

If set-off is successfully exercised by a debtor, the value of the securitised assets may be substantially reduced or cancelled, impacting the SPV's income. Where such cross-claims exist or are likely, Scope examines whether documents on the assets contain waivers of set-off rights and whether these are valid under the relevant jurisdiction[33]. If such waivers were not agreed on or are not recognised by the applicable jurisdiction, Scope assesses whether any structural features can mitigate the negative impact of set-off, such as a dedicated reserve. If the originator undertakes to indemnify the SPV to cover the risk, Scope considers whether this could affect the true sale of the assets (see below). Scope also evaluates whether the borrower has been notified of the transfer, as this can limit the potential set-off.

Set-off may also create challenges for the structure if exercised by transaction parties such as the servicer, cash manager or account bank. In most structures, transaction parties contractually waive their right to set off any amounts against their obligations with the SPV.

ii) Dilution

Dilution may affect a transaction's cash flow. For example, in a trade receivables securitisation, dilution gives debtors the opportunity to pay less for an underlying contract than the face value at which it was sold. Dilution may occur for several reasons based on different legal concepts such as contractual arrangements (fast pay or volume rebates), discounts, credit notes, and statutory withholding rights like price reductions due to defects in the deliverable goods or the services rendered.

Dilution reduces cash flow from an asset. Scope assesses this risk by considering documents governing the asset, the obligor's representations, contractual safeguards, and legal opinions. Where the risk of dilution cannot be excluded but is adequately quantified, Scope's assessment may rely on appropriate mitigants like dilution reserves.

iii) Encumbrances

Other impediments include encumbrances of rights to the assets, i.e. if any rights have been pledged, charged or are subject to a security interest for the benefit of a third party. This third party may be entitled to enforce its rights on the asset if the requirements have been fulfilled. Where such encumbrances must be made public to be valid, e.g. German mortgages must be

[33] In some jurisdictions, the amount that the debtor is entitled to set off against the issuer crystallises at the date of the receivable assignment's notification. As a result, if such a notification is performed at closing, the amount at risk can be quantified and decreases over time as the portfolio amortises.

recorded in a register, Scope assesses whether the public records have been checked by the transaction counsel. If there are no requirements for publication, Scope may rely on appropriate representations.

Legal benefit of the assets

Following the acquisition of the receivables for the securitised portfolio, the issuer should be legally entitled to receive cash flows generated by these assets.

In any cash securitisation, Scope takes a two-step approach to analyse the asset transfer, examining the actual transfer and the true-sale requirement. The transfer of asset property does not apply to synthetic transactions. For this type of transaction, Scope's legal analysis focuses on the valid, legally binding and enforceable nature of payment obligations on the party transferring the risks to the SPV. This aims to determine whether the issuer will benefit from cash flows arising from the synthetic exposure to the asset.

i) Transfer

The actual transfer of the asset must be legally valid, binding and enforceable for the issuer to benefit from cash flows generated by the asset.

a) Transferability

The asset's transferability may be restricted by law or by contract. For instance, a bank loan's terms can limit transferability in terms of minimum amounts, number of transfers and qualifying transferees. The latter can pose a challenge for a valid transfer to the SPV if only financial institutions qualify as transferees under the loan contract. In this regard, Scope typically relies on the originator's representations and on legal opinions. In managed or revolving structures, Scope examines the undertakings of agents selecting the assets to be purchased during the life of the transaction. For instance, the collateral manager of an actively managed transaction may only purchase assets after verifying transfer restrictions, and Scope would typically assess whether the manager has the skills to comply with his obligation.

b) Perfection of transfer

Formal requirements must be met to perfect a transfer of securitised assets. If the legal opinion does not address this issue, Scope assesses whether relevant documentary proof is adequate, e.g. registry excerpts, or capital account statements. Transactions such as trade receivables securitisations may be structured so that the originator is not required to notify debtors of the asset transfer. This is typically the case when the seller, due to commercial reasons, does not want debtors to be informed about the sale of the receivables. Depending on the jurisdiction and transfer type, notification may be unnecessary for a transfer to be valid.

ii) True sale

In structured finance the term 'true sale' stems from the early days of US securitisation transactions, describing one characteristic of the transfer: its indefeasibility in an insolvency of the seller (normally the originator) of the assets. If the transfer of the assets to the issuer is a true sale, the ownership of the assets cannot be challenged by any creditor of the seller or by its insolvency administrator (or equivalent). The effectiveness of a true sale can be called into question depending on the jurisdiction governing the transfer and the applicable insolvency regime. The two major challenges to a true sale, which have been the subject of numerous court cases and academic discussions, are claw-back and re-characterisation.

a) Claw-back

Most jurisdictions provide for claw-back mechanisms to protect the creditors of an insolvent entity that has transferred assets or has otherwise diminished the value of its asset base, not only during but also prior to insolvency. In such cases, the transfer may be rescinded so that the transferred asset is 'clawed back' for the benefit of creditors by the insolvency administrator into the insolvency estate of the insolvent transferor. Such claw-backs can occur in the event of fraud but also when a transfer detrimental to the obligor's creditors falls within a certain observation period prior to insolvency. Scope's analysis considers the transaction's nature and the transferor's financial situation. Since Scope is generally not in a position to assess whether the transaction was effected at arm's length, Scope typically relies on corresponding representations from the parties. The transferor's financial situation and credit risk will also be considered. A strong true-sale opinion will typically cover, amongst other insolvency searches, a check of applicable registers for filings of insolvency proceedings with respect to the transferor. Since not all stages of a company staggering towards insolvency are subject to a public filing, Scope looks for standard representations on the seller's solvency, and if a solvency certificate issued by a court or chamber of commerce is provided, this would serve as another mitigant to address potential concerns regarding the transferor's financial stability and the risk of claw-back.

To mitigate claw-back risks associated with repurchases by the originator during the life of the transaction, we consider the implementation of limitations on the volume or frequency of repurchases. If repurchases exceed a certain predefined amount, the obligation by the originator to provide a solvency certificate, issued by a court, chamber of commerce, or another authoritative body, mitigates claw back risk.

b) Re-characterisation

The second major challenge to a true sale is the re-characterisation of the asset transfer into a security over the asset. Should the seller become insolvent, the SPV would cease to be the asset's legal owner but would have a monetary claim secured by the asset against the seller. This jeopardises the timely payment of cash flows due to the delay caused by enforcing the security interest. When assessing the legal nature of the asset transfer and determining whether it might be re-characterised as a secured claim, the courts may consider the conduct of the transferor and transferee, how the assets are controlled and serviced, the ownership of the economic benefit, or the distribution of loss associated with the asset. The validity of a true sale could be challenged when the originator covers certain risks related to the assets.

A legal opinion confirming the perfection of the true sale (true-sale opinion) is necessary due to the diversity of aspects which can call a true sale into doubt, along with the differences in how jurisdictions recognise a true sale. The scope of the legal opinion may be reduced when the relevant jurisdiction has securitisation laws or insolvency regimes that facilitate or establish a true sale by law.

The issuer and the SPV

The issuing SPV constitutes one of the defining features of any structured finance transaction. This vehicle de-links the underlying assets from the originator's credit risk, enabling the structure to rely solely on the credit risks stemming from the assets. The issuer must fulfil several restrictive criteria to ensure payments from the assets are neither interrupted nor negatively affected during the life of the transaction. These criteria can be grouped into the SPV's two main goals: bankruptcy remoteness and non-consolidation. The first should prevent the SPV from entering insolvency proceedings, while the second should prevent the assets of the SPV from being affected by the insolvency of its parent or other related company.

Bankruptcy remoteness and non-consolidation are targeted through different types of corporate entities like SPVs, depending on the jurisdiction under which they are set up. To facilitate structured finance transactions, some jurisdictions have issued specific securitisation laws providing for the incorporation of bankruptcy- and consolidation-remote SPVs. A corporate entity not benefiting from this kind of statutory backup could still be structured to meet requirements. Structured finance transactions often rely on orphan SPVs and/or on jurisdictions that provide appropriate securitisation laws to ensure bankruptcy remoteness and non-consolidation.

Bankruptcy remoteness

SPVs are set up as bankruptcy-remote vehicles to reduce the risk of insolvency proceedings being initiated against the SPV. This feature is particularly important given the detrimental effect an insolvency can have on a transaction. First, the payment of interest and principal to investors may be halted in an insolvency scenario to protect other creditors. Second, a default resulting from such a shortfall may enable investors to enforce the security interest over the assets, which could result in fire sales. Finally, an insolvency is likely to trigger the termination of services and contracts entered into by the SPV that are vital for the transaction.

The different structural elements resulting in bankruptcy remoteness can be separated into restrictions that have been contractually agreed by transaction parties or that limit the number of potential claimants against the SPV. These elements apply cumulatively to the structure.

i) Issuer events of default

Even though SPV's are set up as bankruptcy remote entities, there are certain defined events that trigger a default and start the contractually outlined enforcement process. These events usually relate to: i) non-payment, in particular non-payment of due claims under the most senior outstanding debt instrument; ii) issuer insolvency and liquidation proceedings; iii) unlawfulness and invalidity; iv) repudiation; v) breach of material obligations; and vi) misrepresentation. We review such legal clauses and our analysis incorporates any nonmarket-standard events of default while modelling non-payment as the only event of default.

ii) Contractual restrictions

The essential contractual arrangements include limited-recourse and non-petition clauses, which generally form part of any transaction document creating potential obligations for the SPV. Their purpose is to prevent transaction parties from initiating bankruptcy proceedings against the SPV. The SPV typically grants pledges over all assets to a trustee, which reduces other

creditors' incentives to file for bankruptcy, thus benefiting investors. Legal opinions will typically confirm that such contractual arrangements are valid, legally binding and enforceable.

a) Limited recourse

All creditors of the SPV (including the investors) agree to limit their recourse against the assets of the SPV. The limited recourse will typically be subject to the cash available under the waterfall of payments, complemented by a corresponding limit on termination rights. Therefore, it will not constitute an event of default if cash flows cannot cover the SPV's obligations towards creditors after the waterfall is applied.

b) Non-petition

All creditors of an SPV (including the investors) typically agree not to file, initiate or take part in insolvency proceedings against the SPV. As such, clauses can be invalid in certain jurisdictions, or the non-petition clause may sometimes be limited to a certain timeframe.

c) Asset pledges

Pledging the SPV's assets to a security trustee for the benefit of the investors provides the latter with recourse to the assets should this prove necessary to protect their investment. More importantly, it is crucial in the context of bankruptcy remoteness to dissuade other creditors from filing for bankruptcy. Ultimately, the investors will have priority over the assets' enforcement proceeds, with no significant assets to be liquidated for the benefit of other creditors to remain in the insolvent SPV's estate.

d) Debt limitation

The SPV must comply with the conditions listed below to not incur obligations other than those under the transaction's provisions. This limits the risk of a cash flow mismatch leading to an SPV's insolvency; ensures the waterfall is shielded from debt not initially anticipated in the structure; and ensures no third parties can file for the SPV's bankruptcy. These conditions are commonly made subject to representations of the SPV, which typically include, among others:

- No existing debt: the SPV has no past obligations towards third parties not set up explicitly for the rated transaction.
- Limits on debt: the SPV is prohibited from incurring debt other than that created in the transaction documents and under applicable laws, including taxes. Plans for further debt may be capped to be quantifiable for the credit risk analysis.
- Limited business purpose and powers: the SPV's constitutional documents set out a business objective and powers that are strictly limited to the issuance of the debt and the dealings necessary to set up and maintain the transaction structure.
- No employees: the SPV cannot enter into commitments regarding employment contracts, including pension liabilities.
- No subsidiaries: the SPV cannot create subsidiaries that could incur obligations for which the SPV might be liable.

Non-consolidation

Consolidation risk is the threat that the SPV and/or its assets are consolidated with (the estate of) another legal entity. This consolidation could ensue from corporate reorganisations or insolvency proceedings relating to the parent company.

i) No corporate reorganisation

To prevent a corporate reorganisation from affecting the SPV or its assets, negative covenants may prevent the SPV from entering mergers, consolidations or other forms of corporate reorganisations. These covenants normally extend to prohibiting dissolution, liquidation or asset sales, although do not strictly address consolidation risk per se.

ii) No statutory consolidation

In certain jurisdictions, insolvency proceedings may allow assets of the SPV to be consolidated with the insolvency estate of the parent company. This risk is sometimes addressed through orphan SPVs or by choosing a jurisdiction that prohibits such consolidations. If consolidation is a threat in the applicable jurisdiction, it may still be mitigated through structural elements. In this case the transaction may typically include elaborate separateness covenants and independent management provisions, ensuring the SPV will be treated by the applicable insolvency regime as a separate entity, i.e. will not be consolidated with an insolvent parent company.

Other SPV safeguards

While Scope's legal analysis focuses on bankruptcy remoteness and non-consolidation, other contractual safeguards can be either essential or at least beneficial to the overall robustness of any structured finance transaction. These include, among others, representations regarding the fulfilment of appropriate regulatory requirements, the existence of independent management, and a restriction on changes to the constitutional documents of the SPV.

i) Necessary licenses and authorisations

The SPV must possess all the necessary licences and authorisations to ensure its business can comply with all legal obligations and regulations. Any lack thereof could result in additional liabilities through the asset transfer's validity being under threat, transaction documents being voided, or fines from supervisory authorities. The SPV documents may contain adequate representations. As a result, legal opinions may not include such qualifications.

ii) Independent management

SPVs are generally managed by a board that is independent from the SPV's parent or other transaction parties. This prevents the board from being wrongly incentivised in its management of the SPV and limits the risk of a dependent manager filing for voluntary insolvency to benefit certain transaction parties or the SPV's parent company. One independent director may suffice if, according to the SPV's constitution, that director can ensure board decisions are not influenced by transaction parties with interests contrary to the investors'.

iii) No change to constitutional documents

Scope is aware that the above-mentioned, and necessary, restrictions to the SPV could be changed by its owners, who are generally entitled by law to amend constitutional documents at their discretion. This risk can be mitigated by covenants prohibiting changes before transaction parties are notified and appropriate consents obtained, including, in certain cases, investor approval.

Guarantee contracts

Sometimes transaction counterparties or even direct exposures in the transaction can be guaranteed by entities with a different credit profile. With the help of legal opinions, Scope will consider whether the credit risk of the guaranteed transaction party can be replaced by the credit risk of the guarantor. Credit substitution may be contemplated if the guarantee features the following characteristics:

- **Irrevocable:** the guarantee cannot be revoked in relation to obligations entered into prior to the termination of the guarantee.
- **Unconditional:** the claim of the guarantee is not conditional e.g. upon the beneficiary of the guarantee having pursued its rights vis-à-vis the debtor or the completion of other prerequisites or defences the principal debtor may have against the fulfilment of its duties under the guaranteed obligation, etc.
- **Demand:** the guarantor agrees to pay upon the beneficiary's demand. The support is particularly strong, if the guarantor agrees to not dispute the payment with the argument that the guaranteed case has not occurred (first demand).
- **Beneficiaries:** the guarantee is for the benefit of the SPV or the security trustee and enforceable by the same.
- **Amendment/termination:** any amendment or termination of the guarantee is typically subject to the consent of the beneficiary.

Some insurance contracts can also comprise similar concepts as guarantees and if Scope deems that those insurance contracts in substance work as guarantees we can apply credit substitution approach also in those cases, although they are formally called insurance contracts.

Taxation

Scope considers any liabilities originating from taxes that could affect cash flows and hence the instrument's rating. Potential tax liabilities are a major concern, not only because they are senior obligations by law in most jurisdictions, but also because non-payment could result in regulatory actions affecting the SPV or the structure. Tax liabilities usually rank senior to all other payment obligations in the cash flow priority of payments.

Sources of tax liabilities

Tax liabilities arise for diverse reasons and Scope groups them according to the transaction item they affect.

i) Taxes on assets

These can take the form of:

- withholding taxes on payments to be made from the assets to the SPV;
- VAT on the transfer of an underlying asset; or
- stamp duties for the perfection of the asset transfer.

ii) Taxes on the SPV

Earnings of the SPV can be taxed unless it is tax-neutral or tax-transparent. In any case, tax solely on profit would not affect the structure, i.e. earnings after deducting cash needed to service the rated debt plus senior-ranking obligations.

iii) Taxes on transaction parties' payments and withholding taxes on derivatives

Payments by third parties, credit enhancement providers or derivative counterparties could also be taxed.

Tax analysis

Scope generally assesses tax liabilities by relying on tax opinions. Cross-border transactions may add complexity via tax re-characterisation or secondary tax liabilities. Tax re-characterisation is relevant when a jurisdiction in which the SPV is not resident applies its tax regime to the SPV, for instance, a jurisdiction in which a company providing all essential services to the SPV is domiciled. Secondary tax liabilities can have an effect when an SPV's parent has unpaid taxes and the relevant jurisdiction requests payment from the SPV. Double-taxation treaties governing cross-border taxation, among other mitigants, can help to reduce tax risks.

Scope may not need to rely on external tax assessments to demonstrate that no tax obligations exist if the relevant transaction documents contain valid, legally binding and enforceable gross-up clauses in favour of the SPV; or if the generated cash flow is enough to settle all potential tax claims. Additionally, Scope considers whether withholding taxes could be due on derivatives and, if that is the case, whether the counterparty will gross up the payments or not.

Scope's ratings do not address the potential taxes borne by investors on their investment in the rated instrument.

8.9 Standard structured finance asset classes and dedicated methodologies

Consumer and auto ABS

Collateral pools backing consumer ABS or auto ABS transactions are often homogeneous and contain many loans. The portfolio assessment for such transactions considers pool characteristics, the quality of the pool's servicing, the originator's lending standards, and Scope's forward-looking performance expectations based on historical data and macroeconomic forecasts. Additional details can be found in Scope's Consumer and Auto ABS Rating Methodology.

RMBS –residential mortgage loans

Residential mortgage-backed securities (RMBS) are securitisations of granular and homogenous portfolios of standard mortgage loans to purchase, refinance or refurbish a residential property. The portfolio assessment for such transactions considers the pool characteristics, the quality of the pool's servicing, the originator's lending standards, and Scope's forward-looking performance expectations incorporating historical data and macroeconomic forecasts. Some RMBS transactions might show limited granularity, thus Scope might complement the portfolio analysis with a loan-by-loan analysis, at least for the largest loans.

SME ABS

Depending on the granularity of the securitised pool, Scope either performs a loan-by-loan analysis or assumes an idealised portfolio. Scope may assess the pool's credit quality by examining individual credit ratings and internal assessments, calibrating historical data, and incorporating the internal rating systems of loan sellers. Scope also incorporates its macroeconomic view on the relevant SME market. Details on these procedures can be found in Scope's SME ABS Rating Methodology.

Non-Performing Loans

Structured finance securitisations of non-performing-loan (NPL) portfolios, while similar to performing loan transactions, have the key difference that their income consists of an irregular flow of recovery amounts, as opposed to the regular cash flows paid by performing debtors. Scope's analysis focuses on the portfolio servicer's ability to extract the security value, the collateral appraisal quality (especially for security from real estate), the security liquidity, the recovery timing as well as the applicable legal framework and enforcement proceedings. Details on these procedures can be found in Scope's Non-Performing Loan ABS Rating Methodology.

CDO/CLO – corporate credit

CDO/CLO transactions expose investors to portfolios comprising leveraged loans, large corporate's bonds and also credit default swaps on corporates. The characteristics of these instruments are relatively homogenous. However, portfolios composed of such instruments are often non-granular and require a credit-by-credit analysis to assess credit risk. Scope relies on its ratings, internal assessments on each underlying instrument or, when available, monitored ratings from other regulated credit rating agencies. Details on these procedures can be found in Scope's CLO Rating Methodology.

CMBS and commercial real estate loans

Underlying collateral of CMBS transactions and commercial real estate loan securitisations is often non-granular and highly heterogeneous. For these transactions Scope assesses each underlying commercial real estate loan. This is achieved by reviewing economic features, tenant credit quality, property quality, debt structure, rent roll, the macro-economic environment, and the borrower's ability to service the loans. Details on these procedures can be found in Scope's CRE Security and CMBS Rating Methodology.

Credit-linked notes and asset repackaging

Credit-linked notes (CLN) can be used to repackage a variety of assets under a different format, thus modifying the underlying assets characteristics. The instruments' cash-flows are linked to either the asset cash flows and/or derivatives contracts cash-flows. Such structure may either pose significant counterparty risks or modify the underlying asset's payment characteristics, e.g. payment maturity profile, currency, or coupon basis.

The analysis of such structure will typically rely on modelling the timing of default of both (i) the underlying entities and (ii) the derivative counterparty and applying the cash-flow mechanism, including any hedging arrangements, as per the legal documentation. The analytical focus is therefore on the legal structure, including typically existing credit support annexes, and counterparty risks.

Insurance-linked securitisation

Insurance-linked securitisation instruments cover any debts issuance whose repayments are linked to the realisation of claims on a portfolio of granular insurance exposures either from all risks type and from a single risk type, for example catastrophe

bonds. The analysis of such exposures uses the same concept as for credit exposures, where claims frequency is akin to default frequency and claims severity is akin to loss severity. The assessment of such transactions considers the risk transfer characteristics, the underwriting standards, the quality of the claims management and Scope's forward-looking claims expectation based on historical data.

Project finance loans securitisations

Project finance (PF) assets are usually very heterogeneous since the asset class covers financing for infrastructure, transportation, energy and real estate. Project finance often addresses public needs. Scope's analysis of structured finance instruments backed by PF loans generally involve the preparation of a rating or credit assessment on each underlying loan in the collateral pool. The assessment incorporates a detailed view of the economics of each project, the project phase and the liability-servicing abilities, including seniority and credit enhancement. Scope also considers the off-takers and guarantee providers, which often play a significant role with respect to going-concern operations. More information regarding the analysis of individual project finance loans is available in Scope's General Project Finance Rating Methodology.

Contacts

Antonio Casado
Managing Director
+49-30-27-891-228
a.casado@scoperatings.com

Benoit Vasseur
Managing Director
+49-69-66-77-38-940
b.vasseur@scoperatings.com

Sebastian Dietzsch
Senior Director
+49-30-27-891-252
s.dietzsch@scoperatings.com

Olivier Toutain
Executive Director
+33-1-82882-356
o.toutain@scoperatings.com

Paula Lichtensztein
Senior Consultant
+49-30-27-891-0
p.lichtensztein@scoperatings.com

Martin Hartmann
Director
+49-30-27-891-304
m.hartmann@scoperatings.com

Scope Ratings GmbH

Lennéstraße 5, D-10785 Berlin
Phone: +49 30 27891-0
Fax: +49 30 27891-100
info@scoperatings.com

Scope Ratings UK Limited

52 Grosvenor Gardens
London SW1W 0AU
Phone: +44 20 7824 5180
info@scoperatings.com

Bloomberg: RESP SCOP
Scope contacts
scoperatings.com

Disclaimer