



STRUCTURED FINANCE RATING CRITERIA

**GLOBAL COLLATERALISED LOAN OBLIGATIONS ('CLO')
RATING CRITERIA**

February 2023

I. INTRODUCTION

ARC Ratings' ('ARC') Global Collateralised Loan Obligations ('CLO') Rating Criteria (the 'Criteria') apply to securitisations of corporate loans.

While ARC's Criteria are suitable to analyse all CLO transactions backed by corporate loans, most are backed by pools of leveraged loans, syndicated loans, or loans originated to small and medium sized enterprises ('SMEs'). The borrowing corporate entity(s) can additionally have diverse characteristics, either in their legal format, their industry, jurisdiction, and size, ranging from sole traders up to mid-sized companies having hundreds of employees.

Most CLO transactions rated by ARC are backed by open-ended, i.e., 'revolving', pools of leveraged loans issued to European SMEs and may be designated as a public securitisation (where the issued notes are sold to investors) or may be a warehousing structure. When the pools are open-ended or 'revolving', it means that subject to meeting certain eligibility criteria, and concentration limits set out in the terms and conditions of the notes, loans can be sold and bought by a collateral manager acting for the securitisation structure (or a "managed" structure).

CLO structures are typically issued as tranching structures, meaning that notes of differing seniority are issued. The seniority ranking is described by a priority of payments set out in the terms and conditions of the notes. Typically, the most senior-ranking notes receive cashflows before more junior-ranking notes, unless the priority of payments allows otherwise. The most junior tranche of a CLO is termed the 'first loss piece' as it receives available cashflows last. It may also be referred to as the 'equity tranche' or the 'subordinated note'. Conversely to how cashflows are allocated, losses on defaulted loans in the underlying loan pool, will, after the application of any mitigants such as excess spread, be allocated to the most junior tranches before being allocated to more senior-ranking tranches.

As note subordination is the principal form of credit enhancement in CLOs, the relative size of the senior, mezzanine and subordinated/equity tranches is a key driver of ARC's ratings.

Where there is provision for pro-rata redemption, that is, when all or some tranches can receive cashflows concurrently regardless of seniority, most CLO transactions will also feature overcollateralisation (OC) and/or interest coverage (IC) tests. When those tests are breached, the sequential distribution of cash flows begins or resumes.

In applying the Criteria, ARC's analysis considers the credit quality of the current (or future) corporate loan pool backing the note and the transaction structure as well as other qualitative and quantitative factors. Critically, due to the potentially concentrated or correlated nature of corporate loan pools, an assessment of the pool concentration and loan market concentration is also made.

A rating panel assigns ARC's ratings, considering the specific characteristics of each transaction. Please refer to ARC's Global Structured Finance Methodology for more details.

For the avoidance of doubt, this Criteria report applies to all CLO ratings issued by ARC, either when assigning new ratings or when monitoring existing ratings. It will be supplemented, if warranted by ARC's rating analysts, by additional analysis which will be disclosed in the transaction-specific report(s) and/or press release.

II. RELATED RESEARCH

This Criteria report should be read in conjunction with ARC's Global Structured Finance Rating Methodology, available on www.arcratings.com, which also applies to all CLO ratings. This Criteria report is an update of the version last published on 28 Feb 2022. The update to the Criteria will not have a rating impact on existing transactions rated by ARC.

III. KEY RATING DETERMINANTS

The following is a summary of the main steps of ARC's CLO rating analysis, which may not follow necessarily in this order, and which are supplemented in further detail later in these Criteria.

- Collating the data required for the analysis. A list of data requirements can be found in Appendix A.
- Evaluating the quality and probable performance of the loan originator, servicer, and/or collateral manager.
- Analysing the existing or future potential composition of the pool of corporate loans securitised in respect of their credit metrics, or rating where available, likely performance, concentration levels and inter-loan correlation.
- Reviewing the loan originators' historical performance data with respect to defaults and recoveries.
- Calculating the default distribution of the pool.
- Deriving stressed recovery rates applicable to each rating level.
- Obtaining the pool loss rates at each target rating level, using the information on probability of default and stressed recovery rates.
- Performing the transaction cash flow analysis, based on the transaction's specific liability structure:
 - Running sensitivity and scenario testing on default timing, recovery rates, recovery timings and interest rates as deemed applicable to assess the stability of the rating(s) under differing scenarios.
 - Assessing the percentage of the pool collateral that can default without the respective note experiencing a loss.
- Documentation review and legal analysis.

ASSESSING THE CREDIT QUALITY OF THE SECURITISED ASSETS

ARC's preference is to assign a full, monitored, ARC rating on the underlying loan or obligor which then can be read as a default probability from ARC's benchmark cumulative default probability tables (see Appendix D)¹.

¹ ARC may already rate another debt obligation from the same obligor, whereupon the rating may be adjusted to account for, inter alia, debt seniority or security.

The second option is that ARC may instead carry out a private credit assessment on the obligor or loan, which would be maintained privately for its own analytic purposes. This credit assessment is a point in time analysis of the creditworthiness of the borrower and/or obligation being securitised. Most credit assessments result in more conservative outputs than a full rating, given that they typically rely on reduced information versus a full rating.

Where an ARC rating or credit assessment is not available, ARC may instead rely on public ratings assigned by other Credit Rating Agencies ('CRAs') recognised as ECAI (see below). When multiple such public ratings exist, ARC will take the second-best available rating, and map these to ARC's own rating scale.

ARC may also notch, that is, adjust, these ratings if, for example, it would have applied a differing methodology to determine the ratings than the other CRA or, for example, where such rating has a negative outlook or is on review for potential downgrade.

Another method to obtain the underlying loan credit quality is where ARC will conduct a mapping exercise from the originator's internal rating scale to ARC's own rating scale, such operation being only available should ARC deem the internal rating scale sufficiently robust and statistically reliable.

As a final option, a loan's credit quality will be deemed to be very poor, in case that none of the above methods apply. For instance, unrated loans, which have not been individually assessed, would typically be assigned a CCC rating.

ARC expects any collateral manager or servicer to regularly, or as events warrant, provide it with sufficient information to allow it to update its credit assessments and/or mapping exercise, as necessary. In the absence of any of the above sources of information to assess the securitised loans, it may not be possible to effectively monitor the CLO or to maintain the credit assessment.

CONSIDERATIONS ON POOL COMPOSITION

Most CLOs are managed transactions, meaning that there is a party, typically a collateral manager, who can buy or sell assets into the securitisation vehicle. Such actions will be governed and limited by the CLO's transaction documentation. Given the manager's ability to trade and to reinvest principal proceeds, ARC bases its modelling of managed CLOs on assumptions derived from the transaction covenants, rather than the CLO's actual pool at any given time. Typically, this will be a "worst-case" pool, whereby the analyst will consider the riskiest possible mix of loans which the transaction documents allow. In situations where the "worst-case" pool purely from a credit risk perspective is not considered as the base case, the rating panel will approve the alternative scenario, and provide justification for the same in the published report(s).

Conversely, in a static transaction, where the manager has no ability to reinvest principal proceeds, ARC bases its assessment of the transaction on the current characteristics of the actual or proposed pool of securitised loans.

Factors that are considered by ARC's analysis and which can have a credit impact also include the loan pool's geographic and industry concentration, the loans' weighted average life and tenor, the loans' weighted average spread, the loan type, interest type and security type, amongst others.

The CLO transaction's performance triggers limiting pool composition, in relation to delinquency, default, loss and concentration limits will also be reviewed as part of ARC's rating process.

CORRELATION AND CONCENTRATION

Pools of loans that are granular and diversified are treated beneficially in ARC's credit analysis. If the securitised pool is or can become highly concentrated, additional stress scenarios may be considered in ARC's analysis such as increased default probabilities and reduced recovery rates.

ARC applies positive or negative adjustments to the correlation assumptions used in its modelling to account for asset correlation and pool concentration. Where the pool is not particularly granular or diversified, ARC may apply additional stresses to account for this.

ASSET LIFE

The life or tenor of an asset is considered in ARC's CLO analysis and is a key determinant in the establishment of base case cash flows. If the pool is not revolving, i.e., 'static,' the asset life assumed will be the Weighted Average Life ('WAL') of the pool after factoring in each asset's amortisation schedule. For revolving pools, the most stressful WAL would be computed based on applicable transaction limits.

DEFAULTS

The definition of default, as applied to the underlying loan, can vary by jurisdiction and even by asset type. The usual definition of a default is a failure to pay, by the borrower, of part or all its owed debt obligation, after a non-payment period, typically 90 days, has elapsed. Such default may or may not be preceded by the entity's bankruptcy. Non-standard default periods would be assessed on their merits.

RECOVERY RATE ANALYSIS

ARC has analysed historical loan-by-loan data for various corporate loan markets and CLO transactions, since the recovery rate assumption upon default of corporate loans forms a key part of the analysis.

However, these recovery rates may be lower in markets which have less creditor-friendly legal systems and/or where practical enforcement of creditors' rights is less predictable. Another determinant of recovery rates of a given corporate entity may be the amount of secured debt which it has issued: if the majority of the corporate's assets have been

pledged as security for other debt obligations, its debt obligation recovery rate will be reduced.

As such, ARC estimates recovery rates on a case-by-case basis by the rating panel for the current and future securitised pool.

The timing upon which recovery proceeds are received are also a key factor in ARC's analysis, as it changes the timing of cashflows received upon default of the underlying loan(s). A typical recovery proceeds receipt lag for corporate loans which have defaulted is 12-18 months post default, in developed loan markets. But again, this timing can vary depending on the underlying asset type and/or jurisdiction.

The recovery process and target timings may be set out in the CLO's governing transaction documentation, whereupon ARC assesses the servicer and/or collateral manager's skills and experience of recovering defaulted loan amounts, as part of its analysis of expected recovery amount timings.

ARC's assumed recovery rates for securitised corporate loans vary by target rating level. Furthermore, the recovery rates assumed vary also depending on the amount of data supporting the recovery rates, and/or, by the jurisdiction and/or by debt ranking. For example, if a transaction is presented to ARC where the sponsors can demonstrate significant historical data supporting recovery rates materially higher than ARC's standard recovery rates, ARC's rating panel may apply higher than standard recovery rates for that specific transaction for each target rating level. Absent any such significant data sources, ARC uses baseline recovery rates assumptions for each target rating level ranging from AAA (lowest recovery rate) to CCC (highest recovery rate). Such target recovery rates depend further on the debt's jurisdiction, debt type and issuer type. Debt issued in creditor-friendly markets, such as the U.S., is assumed to have higher recovery rates than other, less creditor-friendly, markets. Secured debt recovery rates are assumed to be higher than unsecured recovery rates, and government debt recovery rates may be lower than non-government debt recovery rates, given the difficulty of recovering from a defaulted sovereign or sub sovereign entity.

ORIGINATOR AND SERVICER REVIEW

ARC's analytical process includes a review of the Collateral Manager to understand its asset management processes. The Collateral Manager plays a crucial role in the transaction and as such, ARC will review the Collateral Manager's historic performance of managing such transactions, organisation, staffing, process and procedures, credit strategy, credit decision process in line with the transaction's features. This will form part of ARC's qualitative and, potentially, quantitative analysis. ARC will also scrutinise any replacement language within the CLO transaction documentation, if the appointment of the Collateral Manager is terminated, to assess the potential for any breaks in the normal servicing of the loan portfolio.

PORTFOLIO RISK CALCULATOR

ARC's analysis assesses the expected pool composition based on the transaction's eligibility criteria for revolving pools, or the existing pool, for static pools. This assessment of future pool mix (where applicable) may include a 'worst case' composition by industry and country breakdown, along with other asset characteristics such as interest rate type, security type, and loan redemption profile.

ARC next inputs the asset-by-asset credit risk (proxied by an ARC rating) and simulates the portfolio default probability distribution in its Portfolio Risk Calculator ('PRC') model based on pairwise correlation assumptions based on local (industry) and global (country) factors.

In this simulation method, a highly diversified pool in terms of number of obligors, loan size, industry and region would be expected to exhibit more stable performance than a non-diversified pool. Thus, diversified pools will have lower expected defaults at any given rating scenario than more concentrated pools in ARCs analysis.

MATHEMATICAL APPROACH TO MODELLING

Defaults, recoveries, and their resulting losses within the securitised pool are modelled using ARC's Portfolio Risk Calculator which is based on a standard single period Gaussian copula model using Monte Carlo simulations of (1) defaults (through correlated asset values), and (2) jurisdiction, seniority and rating scenario adjusted recovery rates.

Default events are simulated through correlated asset values following a standard Gaussian copula framework where each reference entity's default probability is a function of its rating and its maturity.

The default probability values are derived from ARC's benchmark default probabilities table, see Appendix D of this report.

The Gaussian copula model only has one volatility parameter, which is correlation. A higher correlation parameter corresponds to more volatile pool default rates, meaning that pool default rates that are higher than the mean pool default rate occur at a higher frequency than less correlated pools of loans.

The key inputs to the PRC model are loan default probabilities, the multi-factor correlation framework and loan recovery rates. The key output of the model is the distribution of pool default rates, recovery rates and loss rates. The distribution mean default rate is equivalent to ARCs base-case default rate scenario.

CORRELATION FRAMEWORK

ARC's analysis applies positive or negative factors within its model to account for industry correlation and country correlation.

ARC determines industry correlation by grouping the assets into twenty-six distinct industries (see Appendix B). The industry grouping allows the identification of individual industry concentrations, where ARC can then calculate the levels of correlation and their respective impact. Where the pool is not particularly granular or diversified ARC may apply more stringent stresses to account for this. The country correlation simply requires ascertaining the jurisdiction of the assets to be securitised.

To calibrate its correlation model, ARC compared default distributions produced by the PRC with ratings issued by other CRAs, using large homogenous, randomly selected pools that resembled the cohort pools underlying the historical default studies.

Applying this framework leads to six sub-matrices: global, regional, country, sector, industry global and industry local correlations. The framework is additive, whereby summing the sub-matrices results in the final correlation matrix for use in the model.

The final correlation matrix is symmetric (of size $n \times n$ where 'n' equals the number of assets) and positive definite, enabling a Cholesky decomposition of the matrix for the simulation run.

Please refer to the PRC model on ARCHub for correlation assumptions which were calibrated for a typical European leveraged loan CLO. The PRC model can be accessed at the following link.

TIMING OF DEFAULT VS AMORTISATION

In certain CLOs, the underlying assets may amortise, hence reducing the loan exposure at the time of default, thereby decreasing the loss severity post default.

The PRC model lets individual assets amortise by using their legal amortisation schedule. The amortisation schedule is specified in the PRC as a percentage which is applied to the par value of each loan in the securitised pool.

In each simulation the model will determine the month of default for each issuer. If the amortisation schedule was entered the model will register a loss based on the outstanding notional as at the time of default.

CASH FLOW AND STRUCTURAL ANALYSIS

ARC analyses the cash flows of the transaction in line with the proposed structure to determine if a tranche can meet its interest and principal payment obligations at a given rating level.

A failure is deemed to be when the notes fail to meet their interest or principal obligations, when legally due given that default scenario.

The available cash flows include principal, interest and recoveries collected on the loan pool. ARC aims to replicate the transaction structure as closely as possible in its analysis of the cash flows to accurately reflect the priority of payments, any relevant triggers or tests, and transaction covenants defined within the transaction documentation to the extent that they are relevant to the noteholders' expected cashflows.

ARC's analysis also considers all forms of credit enhancement which can protect noteholders from write-downs due to defaults, such as subordination of lower ranked notes, excess spread and guarantees.

ARC's analysis also considers the effect of any counterparty expenses on the available cashflows and would view as credit positive any measures to cap senior fees and expenses which typically rank ahead of all the rated notes.

INTEREST

A transaction's ratings may be sensitive to interest rate movements if either the assets or the liabilities earn interest on a floating rate basis. The transaction's account balances may also earn interest on a floating rate basis. ARC therefore runs a sensitivity analysis where certain movements of the relevant floating rate index are assumed. This movement is determined by analysing the historical behaviour of the relevant index and the expectations during the life of the transaction. ARC will disclose the relevant assumptions made in the relevant transaction publication.

HEDGING

Hedging, particularly of interest rates but potentially also of currency risk, is important in CLO analysis. ARC will expect appropriate hedges to be in place. Where such hedges are not in place, ARC will look to other proposed mitigants to ensure there is no interest rate or currency risk exposure in the transaction.

A swap may hedge (partly) the interest rate risk in a transaction. In this case ARC adds the swap mechanics to the cash flow analysis. ARC prefers the transaction's specific swap notional amount to follow the performing asset balance of the transaction.

LIQUIDITY

Liquidity is assessed within the cash flow analysis. Liquidity issues can arise in a CLO due to a mismatch in the frequency and quantum of liability payments compared to asset collection proceeds. Liquidity risks may occur even on well performing pools. ARC's assessment views as credit negative situations where liquidity risk is not mitigated by sources of liquidity such as third-party facilities, reserve accounts and/or interest deferral triggers.

LEGAL REVIEW

Please refer to ARC's Global Structured Finance Methodology, for a comprehensive description of ARC's approach to the legal and tax review of CLO transactions.

ARC expects to receive the complete set of transaction documentation as well as legal and tax opinions for review, which should confirm the structure as presented to it. ARC may request independent external counsel to review the legal opinion.

When there are unmitigated or unaddressed legal or tax risks that could have an impact on the performance of the CLO transaction or underlying loan pool, ARC may incorporate additional quantitative stresses to account for any such risks in its analysis. Alternatively, if the risks cannot be accurately quantified, ARC may decline to rate the CLO transaction. Please refer to ARC's global structured finance methodology for more details.

ENVIRONMENTAL, SOCIAL AND GOVERNANCE FACTORS

Please refer to ARC's Global Structured Finance Methodology which can be found at www.arcratings.com for more details.

IV. RATING MODIFIERS

An Indicative Rating – evidenced by the suffix (ind) – is a rating assigned by ARC to an issuer or an instrument when the assignment of a final rating is dependent upon the fulfilment of specific contingencies, as for instance, the case with indicative ratings prior to the closing of a transaction.

Where a financial obligation is considered a structured finance instrument, as defined by regulation, its rating shall carry an (sf) modifier.

Any material deviation in the fulfilment of these contingencies from the assumptions underlying the Indicative Rating can have a material impact on the final rating accorded, which accordingly may be fundamentally different to the initial Indicative Rating. Moreover, ARC reserves the right not to issue a final rating. Potential investors are advised to bear this in mind when considering any indicative rating.

V. QUALIFICATION

ARC Ratings only provides a rating of the rated securities and neither recommends nor will recommend how an issuer can or should achieve a particular rating outcome. A rating only considers the law, or tax, or reasonable macroeconomic prediction known at the time of assignment. Such rating does not cover unexpected or sudden changes in law, tax, or material changes in macroeconomic conditions, nor is it, nor can it be regarded as, an audit.

Moreover, ARC Ratings is not a party to any transaction documents of the instrument/transaction it is rating. Users of our ratings should familiarise themselves with the transaction documents. ARC Ratings does not act as a legal, tax, financial, investment or other advisor and users should seek professional advice from appropriate third parties where necessary.

VI. PERFORMANCE MONITORING

Upon each reporting period, typically monthly or quarterly, ARC will review the performance information provided and, for public transactions, ARC will publish a surveillance report. In addition, a formal rating review will be held annually at a minimum, or as events warrant. As noted on Section III ARC expects to receive regularly, or as events warrant, relevant information to allow it to update its credit assessments as necessary.

APPENDIX A: DATA REQUIREMENTS

To assess a CLO pool ARC expects to receive the following information:

- Originator's internal credit scoring/external credit ratings accorded.
- Originator's default data.
- Default data on a monthly/quarterly basis².
- Collection and prepayment data on a monthly/quarterly basis.
- Recovery data.
- Delinquency data split per delinquency bucket for each origination cohort.
- Concentration data including industry and geographic region.
- Interest rates applied.
- Amortisation schedule for assets.
- Weighted average life of assets.
- Proposed triggers and covenants.
- Capital structure.
- Origination date.
- Legal maturity date.
- An overview of the scheduled interest and principal to be received each month on the cut-off pool.

The above list is intended to be a non-exhaustive summary, and, for individual transactions, ARC may request additional or alternative information to support its analytical processes. Furthermore, if the historical data provided does not cover a full economic cycle, ARC may also use other sources to complement the originator's information.

Credit Assessments:

In respect of information required to be able to perform a credit assessment ARC typically deems the following information as essential:

- Last two years consolidated annual accounts, preferably audited.

² This should include number of loans, as well as par amount of originated per period and number of loans that default per cohort.

- All available accounts (balance sheet, profit & loss, cashflow) since the last audited full year financial statements and any updated financial information since then.
- Capital structure of the company's debt.
- Description of the seniority of the securitised position relative to other debt/equity of the company, including if there is a negative pledge clause.
- When assessing debt or preferred equity, the key terms, such as, senior versus subordinated, secured/unsecured, repayment term, maturity term, interest rate, the balance, and any financial loan covenants.
- Group structure/ownership chart of the corporate.
- Any available due diligence documents on the obligor.
- Principal clients (% of revenue for top ten clients), client and geographical concentration.
- Cashflow projections.

ARC also deems the following additional data as highly desirable when preparing a credit assessment:

- Consolidated annual accounts for 3-5 years.
- Latest available management forecasts/budgets.
- Any other internal corporate profile and performance data.

The absence of the essential or desirable information for preparing a credit assessment may result in a lower credit assessment than would otherwise be the case.

APPENDIX B: CORPORATE CORRELATION

Code	Industry
1	Banks
2	Mining
3	General Retail
4	Travel & Leisure
5	General Finance
6	Education
7	Life Insurance
8	Municipalities
9	Business Industrial
10	Healthcare Equipment & Services
11	Gas & Water
12	Household Goods
13	Recreational Services
14	Real Estate
15	Support Services
16	Industrial Engineering
17	Food Producers
18	Equity Investment Instruments
19	Industrial Transportation
20	Fixed Line Telecom
21	Sovereigns
22	Software & Computer Services
23	Chemicals
24	Mobile Telecom
25	General Industrials
26	Forestry and Paper

APPENDIX C: MATHEMATICAL APPROACH

The Gaussian copula model used by ARC's PRC assumes that a company defaults if the value of its assets falls below the value of its liabilities at debt maturity.

The representation of the Gaussian copula is given by the following equation:

$$Y_i = \beta X$$

Here Y_i is a latent variable associated with credit i in the pool.

The latent variable Y_i can hence represent the asset value for company i that is simulated in each run.

A default occurs if the latent variable Y_i falls below a threshold K_i . In the Gaussian copula the factor X is a standard normal random variable with zero mean and a standard deviation of one and β is a lower triangular matrix obtained by performing a Cholesky decomposition of the pairwise asset correlation matrix derived for the portfolio.

The specific functional form of the factor model Y_i is also a standard normal variable with a mean of zero and standard deviation of one. Therefore, to match the default probability P_i the threshold K_i is computed as the inverse of the cumulative random normal distribution of the default probability, i.e., $K = \Phi^{-1}(p_i)$. Company i defaults if, $Y_i < \Phi^{-1}(p_i) \leftrightarrow \Phi(Y_i) < p_i$

For more details of the mathematical framework, please refer to ARC Hub's [User Guide](#).

APPENDIX D: DEFAULT TABLES

Click [here](#) for ARC's cumulative expected defaults rates for each rating level and weighted average life.

DISCLAIMERS

ARC Ratings, S.A. is registered as a Credit Rating Agency with the European Securities and Markets Authority (ESMA), within the scope of the Regulation (EC) N° 1060/2009 of the European Parliament and of the Council, of 16 September, and recognised as External Credit Assessment Institution (ECAI).

ARC Ratings (UK) Limited is registered as a Credit Rating Agency with the United Kingdom Financial Conduct Authority, within the scope of the Statutory Instrument N° 266/2019, of 13 February, and recognised as ECAI.

Credit Ratings assigned by ARC Ratings are independent and forward-looking opinions on the capacity and willingness of an entity or the capacity of a transaction to make all required interest and principal payments on a given obligation in a timely manner interest and principal. The meaning of each rating category is explained in www.arcratings.com. ARC's credit ratings are based on ARC's published rating criteria.

Ratings do not constitute a recommendation or offer or solicitation to buy, sell or hold any investments that may be mentioned, and are only one of the factors that investors may wish to consider. The use of any rating is entirely at the user's own risk.

In the rating process, ARC Ratings adopts procedures and methodologies aimed at ensuring transparency, credibility and independence, and also that rating classifications are not influenced by conflicts of interest.

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